

**UNIT
1****Place Value and Money****CHAPTER 1 • SUPPORT MATERIALS**

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1-1	Benchmark Numbers and Estimation	R1-1, P1-1, E1-1	2–3
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CHAPTER 2 • SUPPORT MATERIALS

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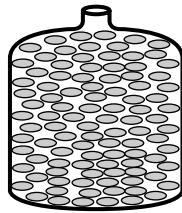
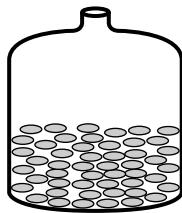
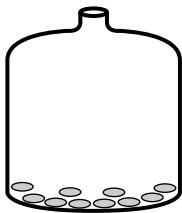
R—Reteach

P—Practice

E—Enrich

Benchmark Numbers and Estimation

You can use a lesser number or amount as a benchmark to estimate a greater number or amount. The first jar below holds 10 peppermint candies. Use Jar 1 as a benchmark to estimate the number of candies in the second and third jars.



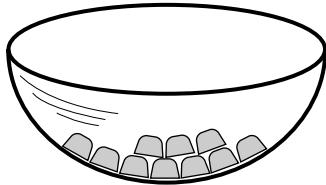
Jar 1: 10 candies

Jar 2: _____

Jar 3: _____

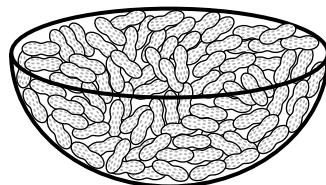
The numbers 10, 50, and 100 are good benchmark numbers. Use 10, 50, or 100 to estimate the number of objects in each bowl below.

1.



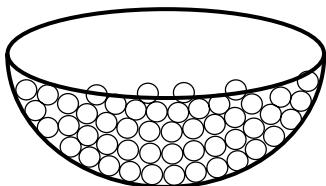
about _____ gumdrops

2.



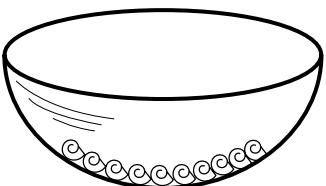
about _____ peanuts

3.



about _____ marbles

4.



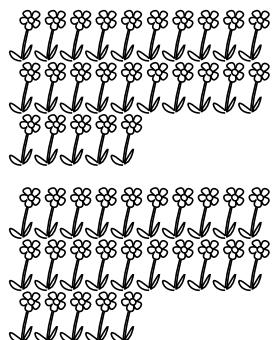
about _____ seashells

Benchmark Numbers and Estimation

Use a benchmark number to help you decide which estimate is more reasonable. Circle your choice.



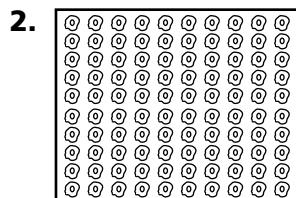
10 flowers



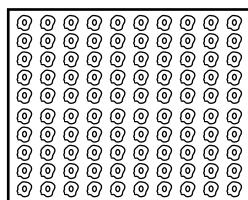
50 flowers

or

500 flowers



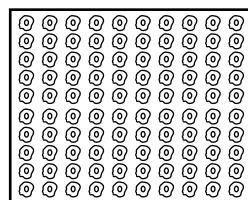
100 cookies



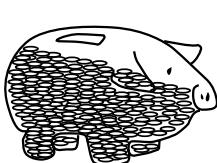
200 cookies

or

2,000 cookies



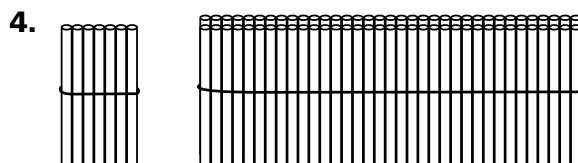
20 coins



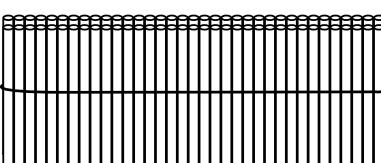
200 coins

or

2,000 coins



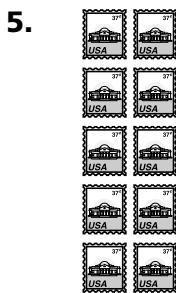
7 straws



70 straws

or

700 straws



10 stamps



100 stamps

or

1,000 stamps

Name _____

Benchmark Numbers and Estimation



Complete.

- Fill the box below with stars. Draw your stars the same size.

How many stars did you draw? _____ stars
This is your benchmark number.

- Estimate the number of stars that will fill the box below. Use your benchmark number to help you. Then draw the stars. The stars must be the same size as the ones you drew in Exercise 1.

My estimate: _____ stars

- How many stars did you actually draw?

_____ stars

- How did you use your benchmark number to estimate the number of stars you could draw in the larger box?

Place Value Through Hundred Thousands



In math, a period is a group of three digits. A comma separates each period. Numbers in the thousands have two periods.

Thousands			Ones		
Hundreds	Tens	Ones	Hundreds	Tens	Ones
8	7	4	0	4	2

Expanded form: $800,000 + 70,000 + 4,000 + 40 + 2$

Standard form: 874,042

Word form: eight hundred seventy-four thousand, forty-two

Complete. Finish writing the numbers in expanded form. Then finish the chart.

1. $9,842 = 9,000 + \underline{\hspace{2cm}} + 40 + \underline{\hspace{2cm}}$
2. $51,763 = \underline{\hspace{2cm}} + 1,000 + \underline{\hspace{2cm}} + 60 + \underline{\hspace{2cm}}$
3. $404,639 = 400,000 + \underline{\hspace{2cm}} + 600 + \underline{\hspace{2cm}} + \underline{\hspace{2cm}}$

	Standard Form	Expanded Form	Word Form
4.	_____	$20,000 + 4,000 + 300 + 40$	_____
5.	_____	$7,000 + 800 + 50 + 1$	_____
6.	_____	$300,000 + 40,000 + 9,000 + 700 + 2$	_____
7.	_____	$900,000 + 5,000 + 10 + 8$	_____

Name _____

Place Value Through Hundred Thousands



Write the word form and the expanded form for each number.

1. 2,703

2. 48,091

3. 562,448

4. 703,297

Write the value of each underlined digit.

5. 421,780 _____

6. 65,997 _____

7. 39,682 _____

8. 709,836 _____

Write each number in standard form.

9. two thousand, six hundred eleven _____

10. fifty-four thousand, nine _____

11. six hundred thirty-seven thousand, one hundred twenty _____

12. $700,000 + 40,000 + 300 + 90 + 5$ _____

For each number below, write the number that is 1,000 more and the number that is 1,000 less.

13. 3,882 _____; _____

14. 49,062 _____; _____

15. 271,005 _____; _____

16. 900,000 _____; _____

Place Value Through Hundred Thousands

You can use place value to help identify and extend patterns.

Write the next three numbers in each pattern. Complete the rule.

- 1.** 2,066, 3,066, 4,066, _____, _____, _____

Rule: The digit in the _____ place changes. Add _____.

- 2.** 75,164; 75,364; 75,564; _____; _____; _____

Rule: The digit in the _____ place changes. Add _____.

- 3.** 572,113; 582,113; 592,113; _____; _____; _____

Rule: The digit in the _____ place changes. Add _____.

- 4.** 367,150; 367,157; 367,164; _____; _____; _____

Rule: The digit in the _____ place changes. Add _____.

- 5.** 44,792; 43,792; 42,792; _____; _____; _____

Rule: The digit in the _____ place changes. Subtract _____.

- 6.** 9,551; 9,051; 8,551; _____; _____; _____

Rule: The digit in the _____ place changes. Subtract _____.

- 7.** 504,873; 404,873; 304,873; _____; _____; _____

Rule: The digit in the _____ place changes.

Subtract _____.

- 8.** 798,714; 768,714; 738,714; _____; _____; _____

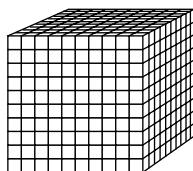
Rule: The digit in the _____ place changes. Subtract _____.

Explore: How Big Is a Million?

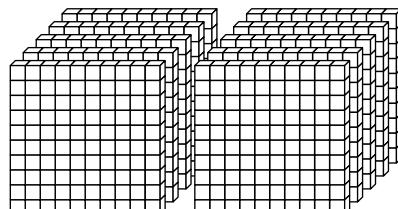
You can show numbers in different ways.

You can think of 1,000 in the following ways:

- 1 thousand
- 10 hundreds
- 100 tens
- 1,000 ones

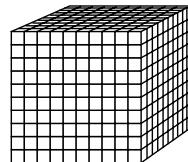
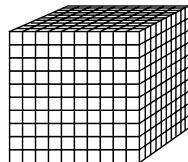
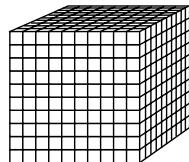
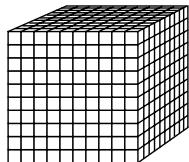
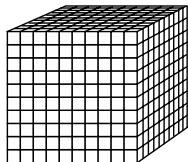
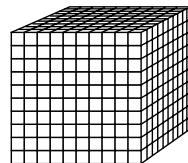
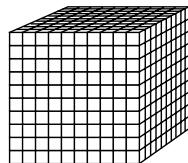
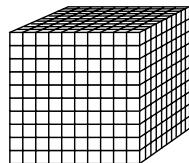
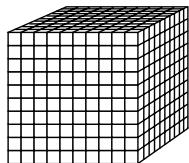
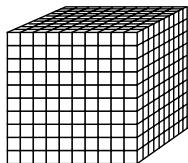


1 thousand



10 hundreds

- 1.** What number is shown below? _____



Complete. Name each number in different ways. You should see a pattern.

2. 10,000

_____ ten thousand

3. 100,000

_____ hundred thousand

4. 1,000,000

_____ million

_____ thousands

_____ ten thousands

_____ hundred thousands

_____ hundreds

_____ thousands

_____ ten thousands

_____ tens

_____ hundreds

_____ thousands

_____ ones

_____ tens

_____ hundreds

_____ ones

_____ tens

_____ ones

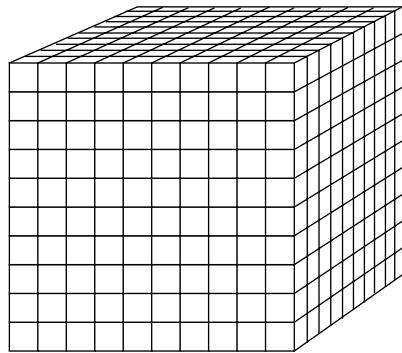
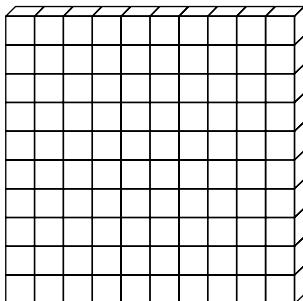
Name _____

Explore: How Big Is a Million?



Find the answer.

1. How many 10-by-10 grids would you need to make a thousand cube?
2. How many thousand cubes would you need to make a million?



3. How many hundreds are in 1,000? _____
4. How many hundreds are in 10,000? _____
5. How many thousands are in 1,000? _____
6. How many thousands are in 10,000? _____
7. How many thousands are in 100,000? _____
8. How many thousands are in 1,000,000? _____
9. How many ten thousands are in 10,000? _____
10. How many ten thousands are in 100,000? _____
11. How many ten thousands are in 1,000,000? _____
12. How many hundred thousands are in 100,000? _____
13. How many hundred thousands are in 1,000,000? _____

Explore: How Big Is a Million?

Skye just opened a pizza parlor. Her dream is to sell one million pizzas. She wants to see how long it will take. Answer these questions to help her find out.

1. Skye says, "If I sell 100 pizzas every day, I can sell 1,000,000 pizzas in _____ days!" She frowns. "That's a long time."

2. Suddenly Skye snaps her fingers. "I know! I'll open more stores! If I have 10 stores and each store sells 100 pizzas every day, it will take only _____ days to sell 1,000,000 pizzas!"

3. "Wait a minute!" she exclaims. "What if I have 100 stores and each store sells 100 pizzas every day? How long will it take to sell 1,000,000 pizzas?" _____

4. "Why don't you try to sell 1,000,000 pizzas in just 10 days?" Skye's friend Emma asks. "Hmmm," Skye murmurs. "If each of my stores sells 100 pizzas every day how many stores would I need to sell 1,000,000 pizzas in 10 days?"

-
5. What if you were Skye? What would be your plan for selling 1,000,000 pizzas? Tell about your plan.

Place Value Through Millions

Numbers in the millions have three periods.
Each period is separated by a comma.

Millions			Thousands			Ones		
Hundreds	Tens	Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones
7	0	1	2	2	1	3	5	4

Expanded form: $700,000,000 + 1,000,000 + 200,000 + 20,000 + 1,000 + 300 + 50 + 4$

Standard form: 701,221,354

Word form: seven hundred one million, two hundred twenty-one thousand, three hundred fifty-four

Complete. Write the numbers in expanded form. Finish the table.

1. $824,124 = \underline{\hspace{2cm}} + 20,000 + 4,000 + \underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}}$
2. $7,624,139 = 7,000,000 + \underline{\hspace{2cm}} + 20,000 + \underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}}$
3. $42,521,012 = \underline{\hspace{2cm}} + 2,000,000 + 500,000 + \underline{\hspace{2cm}} + \underline{\hspace{2cm}} + 10 + \underline{\hspace{2cm}}$

	Standard Form	Expanded Form	Word Form
4.	<u> </u>	$3,000,000 + 200,000 + 500 + 20$	<u> </u> <u> </u>
5.	<u> </u>	$2,000,000 + 400,000 + 50,000 + 7,000 + 800 + 20 + 1$	<u> </u> <u> </u> <u> </u>
6.	<u> </u>	$30,000,000 + 7,000,000 + 800,000 + 50,000 + 2,000 + 4$	<u> </u> <u> </u> <u> </u>
7.	<u> </u>	$200,000,000 + 40,000,000 + 9,000,000 + 300,000 + 50,000 + 2,000 + 6$	<u> </u> <u> </u> <u> </u>

Name _____

Place Value Through Millions



Write the expanded form and the word form for each number.

1. 1,420,316 _____

2. 2,672,400 _____

3. 12,060,072 _____

4. 785,004,012 _____

Write the value of each underlined digit.

5. 842,753 _____ 6. 6,782,141 _____

7. 153,428,090 _____ 8. 715,124,068 _____

Write each number in standard form.

9. one million, two hundred thousand, five _____
10. thirty-eight million, four hundred thousand, eight _____
11. five hundred eighty million, sixty-two thousand, seventeen _____
12. two hundred fifty-four million, seven thousand, five _____

Algebra Find the missing number.

13. $42,865 = 40,000 + \underline{\hspace{2cm}} + 800 + 60 + 5$

14. $168,943 = 100,000 + 60,000 + 8,000 + \underline{\hspace{2cm}} + 40 + 3$

15. $888,888 = 800,000 + \underline{\hspace{2cm}} + 8,000 + 800 + 80 + 8$

Place Value Through Millions

Complete. Use the digits below only once in each exercise.

1 2 3 4 5 6 7 8 9

1. What is the greatest number with 4 in the hundred millions place?

2. What is the greatest number with 5 in the hundred thousands place?

3. What is the least number with 6 in the millions place?

4. What is the least number with 3 in the ten thousands place?

5. What is the greatest number with 8 in the thousands place?

6. What is the greatest number with 1 in the ten millions place?

7. What is the least number with 9 in the millions place and 2 in the ten thousands place?

8. What is the greatest number with 7 in the hundred thousands place and 1 in the thousands place?

9. How did you use place value to help you make the greatest possible number? the least possible number?

Compare and Order Numbers

You can use a place value chart to compare numbers. Start at the left. Look for the first place where the digits are different.

Compare 4,872 and 4,892.

Thousands	Hundreds	Tens	Ones
4	8	7	2
4	8	9	2
same	same	different	same

The number 4,892 has more tens than 4,872. So, 4,892 ○ 4,872

Use each place value chart to compare the numbers. Write $>$, $<$, or $=$.

1. Compare 3,234 and 3,216. 3,234 ○ 3,216

Thousands	Hundreds	Tens	Ones
_____	_____	_____	_____
_____	_____	_____	_____

2. Compare \$9,060 and \$9,600. 9,060 ○ 9,600

Thousands	Hundreds	Tens	Ones
_____	_____	_____	_____
_____	_____	_____	_____

Compare. Write $>$, $<$, or $=$.

- | | |
|-----------------------|-----------------------|
| 3. 8,504 ○ 8,515 | 4. 2,516 ○ 2,112 |
| 5. 5,558 ○ 5,585 | 6. 6,117 ○ 6,117 |
| 7. 32,489 ○ 31,489 | 8. 50,281 ○ 51,002 |
| 9. 56,619 ○ 56,916 | 10. 28,545 ○ 29,345 |
| 11. 502,300 ○ 510,239 | 12. 832,077 ○ 822,077 |
| 13. 925,076 ○ 925,067 | 14. 980,498 ○ 890,498 |

Compare and Order NumbersCompare. Write $>$, $<$, or $=$.

- | | | |
|-----------------------|-----------------------|-----------------------|
| 1. 3,874 ○ 3,862 | 2. 5,741 ○ 5,862 | 3. 7,824 ○ 7,724 |
| 4. 14,624 ○ 1,462 | 5. 42,542 ○ 41,617 | 6. 32,145 ○ 32,264 |
| 7. 10,142 ○ 12,641 | 8. 25,632 ○ 25,632 | 9. 89,000 ○ 87,999 |
| 10. 150,420 ○ 100,042 | 11. 434,121 ○ 432,154 | 12. 187,654 ○ 197,541 |
| 13. 782,421 ○ 782,342 | 14. 642,134 ○ 642,134 | 15. 874,158 ○ 972,421 |

Order from greatest to least.

16. 3,421; 3,641; 3,481; 3,562 _____
17. 21,649; 21,842; 20,649 _____
18. 72,642; 71,848; 70,621 _____
19. 748,629; 747,832; 748,532 _____

Order from least to greatest.

20. 6,421; 6,878; 8,768; 6,543 _____
21. 25,421; 24,462; 24,416 _____
22. 324,621; 324,742; 325,697 _____
23. 524,607; 525,712; 524,872 _____

Problem Solving

Solve.

24. Sean has 1,575 bird stamps and Li has 2,075 bird stamps. Cindy has a number of stamps between Sean's and Li's numbers. Is the number 1,075 or 1,755? Explain.
25. Highway A is 1,275 miles long and Highway B is 1,850 miles long. Highway C is the longest of the three. Is the number 1,875 miles or 1,175 miles? Explain.

Compare and Order Numbers

Complete. Read the statements A through I. Look at the value of the number in each statement. Order the numbers from the least to the greatest in value. Let the letters at left stand for the number in each statement. Write the letters in the boxes below.

- A. There are 9,123 public libraries in the United States.
- B. There are 54,773 poodles registered with the United Kennel Club.
- C. There are 54,470 beagles registered with the United Kennel Club.
- D. The area of Mexico is 761,604 square miles.
- E. In the year ending December 31, 1997, there were 4,819 Maine coon cats registered in the United States.
- F. The area of the United States is 3,618,770 square miles.
- G. In the 1864 United States Presidential election, Abraham Lincoln received 2,216,067 votes.
- H. In the 1868 United States Presidential election, Ulysses S. Grant received 3,015,071 votes.
- I. The area of Japan is 145,856 square miles.

Problem Solving: Skill

Using the Four-Step Process

Penny has 58 marbles, Rashid has 20 marbles, and Jamal has 43 marbles. List the three people from the one who has the most marbles to the one who has the fewest.

Step 1
Read →

Read the problem. Identify the important information.

Penny has 58 marbles.
 Rashid has 20 marbles.
 Jamal has 43 marbles.

Step 2
Plan →

Make a plan for solving the problem.

Compare two people at a time. Order from the one with the most marbles to the one with the fewest.

Step 3
Solve →

Follow your plan. Solve the problem.

Penny and Jamal: $58 > 43$, so Penny has more marbles.
 Jamal and Rashid: $43 > 20$, so Jamal has more marbles.

The correct order is Penny, Jamal, and Rashid.

Step 4
Look Back →

Look back to see if your answer makes sense.

The answer is reasonable because it answers the question asked. A number with a 5 in the tens place is greater than a number with a 4 or a 2 in the tens place.

Practice

Solve.

1. A male elk weighs 600 pounds. A male moose weighs 1,000 pounds. A male caribou weighs 300 pounds. What is the order of the three animals from greatest to least weight?

2. What did you do to order the weights of the animals in problem 1?
-
-

Problem Solving: Skill Using the Four-Step Process

Solve. Use the four-step process.

1. A marlin can move at a speed of 50 miles per hour. A striped dolphin can move 19 miles per hour. A killer whale can move 55 miles per hour. List the animals in order from slowest to fastest.
-
-

3. A poll shows that 311 students have dogs, 424 students have cats, 96 students have birds, and 38 students have a different pet. Which kind of pet is owned by the most students?
-

5. Dylan spots 48 birds. Nicole spots 51 birds. Who spots fewer birds?
-

7. A bottle-nosed dolphin can weigh up to 440 pounds. A common dolphin can weigh up to 165 pounds. Which kind of dolphin is likely to be heavier?
-

2. Brandon, Timothy, and Norah have pet care services. Last year, Brandon earned \$712, Timothy earned \$1,110, and Norah earned \$650. List the business owners in order from who earned the greatest amount to who earned the least amount.
-

4. The pet shelter takes in 24 dogs in April, 41 dogs in May, and 39 dogs in June. List the months in order, beginning with the month in which the shelter took in the fewest dogs.
-

6. In 2002, about 36,000,000 people visited aquariums and about 86,000,000 people visited zoos. Did more people visit aquariums or zoos?
-

8. On Friday, 660 people go to Ocean National Park. On Saturday, 1,096 people go to the park. On Sunday, 998 people go. On which day did the most people go to the park?
-

Name _____



Problem Solving: Skill Using the Four-Step Process

Todd's Dogs walks 68 dogs per week. Doggie Express walks 57 dogs per week. Top Dog walks 101 dogs per week.

Write a plan for answering each question. Then solve.

1. What is the order of the dog walking services from least dogs walked per week to most dogs walked per week?

2. What is the total number of dogs walked by the three services?

3. How many dogs does Doggie Express walk in 2 weeks?

4. How many more dogs than Doggie Express does Todd's Dogs walk per week?

5. Hound Dog has just opened. The owner wants to walk more dogs than the three other dog walking services. To reach this goal, what is the fewest number of dogs the service must walk per week?

Name _____

Count Money and Make Change



To make change, start with the cost. Then count up to the amount of money given to you. Use the fewest number of bills and coins possible.

You sell a pen for \$2.49.

Someone gives you \$5.00 for the pen.

Cost



\$2.49



\$2.50



\$2.75



\$3.00



\$4.00

\$5.00

Count the bills and coins. How much change did you give? _____

Count up. Find the amount of change.

1. Amount given: \$6.00



\$5.34

Cost

Amount of change: _____

2. Amount given: \$10.00



\$3.79

Cost

Amount of change: _____

Name _____

Count Money and Make Change



Write the amount of money shown.

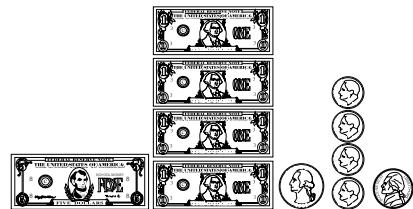
1.



2.



3.



Tell which coins and bills make the amount shown below.

4. \$0.89 _____

5. \$3.62 _____

6. \$7.67 _____

Find the amount of change.

7. Cost: \$0.59
Amount given: \$1.00

8. Cost: \$2.45
Amount given: \$5.00

9. Cost: \$7.81
Amount given: \$10.00

10. Cost: \$0.86
Amount given: \$5.00

11. Cost: \$3.09
Amount given: \$10.00

12. Cost: \$9.25
Amount given: \$10.00

Algebra Find each missing number.

13. \$7.50; \$7.60; _____; \$7.80 14. \$25.95; _____; \$35.95; \$40.95

Problem Solving

Solve.

15. Andy gives the cashier \$5.00 to pay for a \$3.75 calendar. How much change does he receive?

16. Lowanda receives 1 quarter, 2 dimes, and 1 nickel in change. How much money did she get?

Name _____

Count Money and Make Change



Use the clues to find which coins and bills are inside each bank.

1.



Clue: 6 coins

2.



Clue: 13 coins

3.



Clue: 10 coins

4.



Clue: 8 coins

5.



Clue: 19 coins, but only two kinds

6.



Clue: 3 bills, 3 coins

7.



Clue: 2 bills, 3 coins

8.



Clue: 5 bills, 3 coins

Compare and Order Money Amounts • Algebra

You can use a place value chart to compare money amounts.

Start at the left. Look for the first place where the digits are different.

Compare \$306.97 and \$319.23.

Hundred Dollars	Ten Dollars	One Dollar	Cents
3	0	6	97
3	1	9	23
same	different		

The amount \$319.23 has more ten dollars than \$306.97. So, \$319.23 ○ \$306.97

Use each place value chart to compare the money amounts. Write >, <, or =.

1. Compare \$542.75 and \$547.25. \$542.75 ○ \$547.25

Hundred Dollars	Ten Dollars	One Dollar	Cents
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

2. Compare \$803.48 and \$801.99. \$803.48 ○ \$801.99

Hundred Dollars	Ten Dollars	One Dollar	Cents
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Compare. Write >, <, or =.

3. \$25.16 ○ \$21.12

4. \$0.73 ○ \$0.37

5. \$4.92 ○ \$9.42

6. \$17.17 ○ \$16.18

7. \$0.02 ○ 2

8. \$50.82 ○ \$50.51

9. \$321.79 ○ \$341.02

10. \$682.45 ○ \$688.19

Compare and Order Money Amounts • AlgebraCompare. Write $>$, $<$, or $=$.

1. $\$0.33 \bigcirc \0.03

2. $\$0.73 \bigcirc \0.37

3. $\$0.92 \bigcirc \9.20

4. $\$45.16 \bigcirc \45.12

5. $\$0.09 \bigcirc \9.00

6. $\$4.73 \bigcirc \4.70

7. $\$67.95 \bigcirc \66.89

8. $\$30.72 \bigcirc \31.04

9. $\$55.91 \bigcirc \55.19

10. $\$127.43 \bigcirc \126.50

11. $\$275.33 \bigcirc \280.21

12. $\$360.44 \bigcirc \359.99

13. $\$710.03 \bigcirc \711.87

14. $\$549.36 \bigcirc \621.33

15. $\$852.93 \bigcirc \852.91

Order from greatest to least.

16. $\$0.55; \$1.59; \$0.56$ _____

17. $\$2.75; \$0.98; \$1.00$ _____

18. $\$43.89; \$43.98; \$43.79$ _____

19. $\$104.62; \$95.50; \$111.24$ _____

Order from least to greatest.

20. $\$0.59; \$0.09; \$0.90$ _____

21. $\$45.88; \$51.72; \$33.66$ _____

22. $\$106.45; \$93.88; \$102.29$ _____

23. $\$688.02; \$684.97; \$688.53$ _____

Problem Solving

Solve.

24. Carlos pays \$3.75 for a box of 48 crayons. Ellie pays \$3.95 for the same box at a different store. Who pays more for the box of crayons? Explain.
-

25. Al's stamp album costs \$12.75 and Li's album costs \$18.50. Cindy's album costs the most. Did it cost \$18.75 or \$11.75? Explain.
-

Compare and Order Money Amounts • Algebra

Use an amount from the box to complete each sentence.
You will not use every amount in the box.

\$154.98	\$20.75	\$0.04	\$2.84
\$3.67	\$283.74	\$1,094.66	
\$0.39	\$2,774.06	\$62.26	\$598.28

1. _____ is the greatest amount.

2. _____ is greater than \$50 and less than \$100.

3. _____ is greater than \$2.00 and less than \$3.50.

4. _____ is greater than \$100 and less than \$275.

5. _____ is the least amount.

6. _____ is less than \$599 and greater than \$400.

7. _____ is less than \$2,000 and greater than \$1,000.

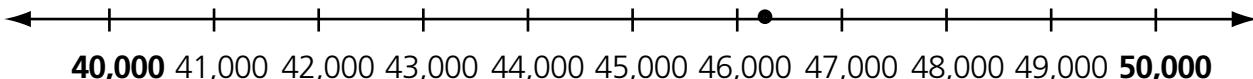
8. _____ is less than \$0.75 and greater than \$0.30.

Name _____

Round Numbers and Money



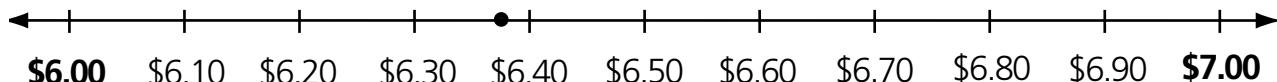
You can use a number line to help you round.



Round 46,208 to the nearest ten thousand.

Think: 46,000 is closer to 50,000 than 40,000.

So, 46,208 rounds up to 50,000.



Round \$6.38 to the nearest dollar.

Think: \$6.30 is closer to \$6.00 than \$7.00.

So, \$6.38 rounds down to \$6.00.

Round to the nearest ten thousand.

- | | | |
|-----------------|-----------------|-----------------|
| 1. 42,496 _____ | 2. 49,009 _____ | 3. 43,875 _____ |
| 4. 45,800 _____ | 5. 42,900 _____ | 6. 47,250 _____ |
| 7. 44,987 _____ | 8. 41,875 _____ | 9. 45,203 _____ |

Round to the nearest million.

- | | |
|---------------------|---------------------|
| 10. 7,450,000 _____ | 11. 7,550,000 _____ |
| 12. 7,832,010 _____ | 13. 7,289,999 _____ |
| 14. 7,362,800 _____ | 15. 7,512,300 _____ |

Round to the nearest dollar.

- | | | |
|-------------------|-------------------|-------------------|
| 16. \$12.60 _____ | 17. \$12.45 _____ | 18. \$12.13 _____ |
| 19. \$12.93 _____ | 20. \$12.53 _____ | 21. \$12.39 _____ |
| 22. \$12.25 _____ | 23. \$12.62 _____ | 24. \$12.59 _____ |

Round Numbers and Money

Round to the given place.

1. 923 to the nearest ten
-
2. \$0.93 to the nearest ten cents
-
3. \$6.49 to the nearest dollar
-

4. \$57.52 to the nearest dollar
-
5. 862 to the nearest hundred
-
6. \$46.47 to the nearest dollar
-

7. 4,357 to the nearest thousand
-
8. \$73.96 to the nearest ten cents
-
9. 8,553 to the nearest hundred
-

10. 380,256 to the nearest hundred thousand
-
11. 61,479 to the nearest ten thousand
-
12. 1,555 to the nearest hundred
-

13. \$34.06 to the nearest ten cents
-
14. 7,502,475 to the nearest million
-
15. 2,653,789 to the nearest hundred thousand
-

16. Find the place to which the first number is rounded. Complete the table.

Round to:					
Input	57,124	64,142	91,722	234,162	478,234
Output	60,000				

Problem Solving

Solve.

17. The radio announcer says that there have been 1,532 bluebird sightings on the island. To the nearest hundred, how many sightings does that make?
-
18. Joe's class buys a bird feeder for \$38.75. To the nearest dollar, what was the cost?
-

Round Numbers and Money

1. If you round me to the nearest hundred, you get 400.
If you round me to the nearest ten, you get 430.
The sum of my digits is 8.

What number am I? _____

2. If you round me to the nearest thousand, you get 3,000.
If you round me to the nearest hundred, you get 2,600.
Three of my digits are the same.
The sum of my digits is 17.

What number am I? _____

3. If you round me to the nearest thousand, you get 4,000.
The sum of my digits is 10.
If you read me forward or backward, I am the same.

What number am I? _____

4. If you round me to the nearest ten thousand, you get 50,000.
My first two digits add up to 10.
The digit in my hundreds place is one more than 2.
My last three digits add up to 8.
If you round my last three digits to the nearest hundred, you get 400.

What number am I? _____

5. The sum of my seven digits is 60. Six of the digits are the same.
Rounding me to the nearest ten, hundred, thousand, ten thousand,
or million will give you the same number.

What number am I? _____

6. If you round me to the nearest 100,000, you get 600,000.
Each of my six digits is the same.

What number am I? _____

Problem Solving: Strategy**Make a Table****Page 31, Problem 3**

Which type of fish has the greatest number of varieties listed in the chart?

Varieties of Tetras, Goldfish, and Angelfish		
black neon tetra		fantail goldfish
black moor goldfish		white skirt tetra
gold angel		silver dollar tetra
lemon tetra		marble angel
		lionhead goldfish
		diamond tetra
		silver angel

Step 1**Read****Be sure you understand the problem.**

Read carefully.

What do you know?

- There are different varieties of _____, _____, and _____.

What do you need to find?

- You need to know how many different varieties of _____, _____, and _____ are listed.

Step 2**Plan**

- **Make a Table or List**
- **Write a Number Sentence**
- **Work Backward**
- **Act It Out**
- **Find a Pattern**
- **Make a Graph**
- **Guess and Check**
- **Use Logical Reasoning**
- **Solve a Simpler Problem**
- **Draw a Picture**

Make a plan.

Choose a strategy.

A table can help you organize what you know.

Make a table to solve the problem.

Problem Solving: Strategy

Make a Table

Step 3**Solve****Carry out your plan.**

Make a table.

Tally the number of _____ for each fish. Write a number for each set of tallies. Compare the numbers.

Complete the table.

Type of Fish	Tally of Different Varieties	Total Tally
Tetras		
Goldfish	///	3
Angelfish		

There are _____ different kinds of tetras.

There are _____ different kinds of goldfish.

There are _____ different kinds of angelfish.

There are more varieties of _____ listed than either of the other two kinds of fish.

Step 4**Look Back****Is the solution reasonable?**

Reread the problem.

Does your answer match the data given in the problem?

Practice

1. Jack lists the fish in his aquarium. He has a fantail goldfish, a lionhead goldfish, a gold angel angelfish, a lemon tetra, and a black neon tetra. Of which type of fish does Jack have the least?

2. Alex, Brian, and Yumi each have a favorite breed of dog. The dog breed is either a terrier, a retriever, or a poodle. Alex does not like retrievers or terriers. Brian does not like poodles or retrievers. Yumi likes retrievers. Who likes poodles?

Problem Solving: Strategy

Make a Table

Make a table. Use data from the table to solve problems 1 and 2.

Favorite Kind of Pet			
Elliot—dog	Howard—dog	Jane—bird	Rebecca—bird
Marion—cat	Noriko—bird	Teri—cat	Melanie—cat
Tina—hamster	Yolanda—dog	Sarah—cat	Traci—dog
Paula—fish	Barry—cat	Bruce—dog	Noreen—fish
Sam—cat	Juan—dog	Mike—cat	Sylvia—cat

- 1.** Which pet got the most votes?
-

- 3.** Mark cuts out letters to make a sign. The sign says, "Get Pet Kittens for Free." How many different kinds of letters does Mark need to make?
-

- 2.** Which pet got the fewest votes?
-

- 4.** Which letter does Mark need to make the most of? How many of these letters does Mark have to make?
-

Mixed Strategy Review

Solve. Use any strategy.

- 5.** A pet store sells 137 bags of a dog food called Vet's Choice. It sells 249 bags of a dog food called Fido's Friend. How many more bags of Fido's Friend than Vet's Choice are sold?
-

Strategy: _____

- 6.** In 1999, the Pet Palace made about \$100,000. In 2000, the Pet Palace increased this amount by \$10,000. About how much did the Pet Palace make in 2000?
-

Strategy: _____

- 7. Science** Adult sun bears usually weigh from 60 to 100 pounds. Adult grizzly bears weigh from 350 to 500 pounds. Adult Asiatic black bears weigh about 250 pounds. Which bear weighs the least?
-

Strategy: _____

- 8. Write a problem** that you would make a table to solve. Share it with others.
-
-

Name _____

Problem Solving: Applying Math and Science

How Do You Compare?

Math & Science
WORKSHEET

Work with a partner. Answer the questions. Record your data.

	Student 1	Student 2	Compare: alike, close, different
1. Number of hours you sleep each night			
2. Number of push-ups you can do in 30 seconds			
3. Number of objects in your desk right now			
4. Number of cups of water you drank yesterday			
5. Number of cats and dogs you know			
6. Length of your arm from shoulder to wrist			
7. How long you can stand on one foot			
8. Number of times you breathe in one minute			
9. Your age			

Name _____

Problem Solving: Applying Math and Science

How Do You Compare?

**Math &
Science**
WORKSHEET

1. How many times did you and your partner have the same answer? Different answers?

2. Explain how you decided whether you and your partner had the same answer. Did the numbers have to be exactly alike? Why or why not?

3. In which areas did you vary the most from your partner?

4. In which areas did you vary the least from your partner?

5. What can you say about the amount of variation in nature?

**UNIT
2****Addition and Subtraction****CHAPTER 3 • SUPPORT MATERIALS**

Lesson	Title	Masters	Use with pages
3-1	Addition and Subtraction Expressions	R3-1, P3-1, E3-1	46–47
3-2	Properties of Addition	R3-2, P3-2, E3-2	48–50
3-3	Addition Patterns	R3-3, P3-3, E3-3	52–53
3-4	Add Whole Numbers and Money	R3-4, P3-4, E3-4	54–56
3-5	Use Mental Math to Add	R3-5, P3-5, E3-5	58–59
3-6	Estimate Sums	R3-6, P3-6, E3-6	60–61
3-7	Problem Solving: Skill Estimate or Exact Answer	R3-7, P3-7, E3-7	62–63

CHAPTER 4 • SUPPORT MATERIALS

Lesson	Title	Masters	Use with pages
4-1	Explore Addition and Subtraction Equations	R4-1, P4-1, E4-1	68–69
4-2	Subtraction Patterns	R4-2, P4-2, E4-2	70–71
4-3	Subtract Whole Numbers and Money	R4-3, P4-3, E4-3	72–74
4-4	Problem Solving: Strategy Write an Equation	R4-4, R4-4, P4-4	76–77
4-5	Use Mental Math to Subtract	R4-5, P4-5, E4-5	78–79
4-6	Estimate Differences	R4-6, P4-6, E4-6	80–81
4-7	Choose a Computation Method	R4-7, P4-7, E4-7	82–83
	Problem Solving: Decision Making	Worksheet	86–87

R—Reteach

P—Practice

E—Enrich

Addition and Subtraction

Expressions • Algebra

A variable is used in an expression to represent an unknown number. In the expression $5 + x$, the unknown number is represented by the variable x .

You can find the value of an expression by substituting different numbers for the variable.

Find the value of $5 + x$ when $x = 2$. $5 + x$ $5 + 2 = 7$ So, the value of $5 + x$ when $x = 2$ is 7.	Find the value of $5 + x$ when $x = 5$. $5 + x$ $5 + 5 = 10$ So, the value of $5 + x$ when $x = 5$ is 10.
Find the value of $m - 3$ when $m = 7$. $m - 3$ $7 - 3 = 4$ So, the value of $m - 3$ when $m = 7$ is 4.	Find the value of $m - 3$ when $m = 10$. $m - 3$ $10 - 3 = 7$ So, the value of $m - 3$ when $m = 10$ is 7.

Find the value of the expression.

- | | |
|------------------------------------|------------------------------------|
| 1. $m + 1$ when $m = 1$ _____ | 2. $5 + s$ when $s = 3$ _____ |
| 3. $7 - y$ when $y = 2$ _____ | 4. $b + 3$ when $b = 2$ _____ |
| 5. $c + 4$ when $c = 5$ _____ | 6. $f - 1$ when $f = 6$ _____ |
| 7. $a - 7$ when $a = 8$ _____ | 8. $8 + d$ when $d = 0$ _____ |
| 9. $3 + x$ when $x = 4$ _____ | 10. $10 - w$ when $w = 5$ _____ |
| 11. $z + 25$ when $z = 10$ _____ | 12. $30 + p$ when $p = 20$ _____ |
| 13. $31 - l$ when $l = 15$ _____ | 14. $k + 58$ when $k = 29$ _____ |
| 15. $e + 62$ when $e = 11$ _____ | 16. $r - 39$ when $r = 80$ _____ |
| 17. $p - 126$ when $p = 143$ _____ | 18. $252 + n$ when $n = 47$ _____ |
| 19. $102 + g$ when $g = 248$ _____ | 20. $500 - t$ when $t = 189$ _____ |

Addition and Subtraction

Expressions • Algebra

Find the value of the expression.

1. $9 - y$ for $y = 2$ _____
2. $m + 3$ for $m = 2$ _____
3. $3 + x$ when $x = 10$ _____
4. $12 - w$ when $w = 4$ _____
5. $z + 37$ when $z = 29$ _____
6. $54 + p$ when $p = 3$ _____
7. $71 - l$ when $l = 29$ _____
8. $k + 33$ when $k = 48$ _____
9. $p - 109$ when $p = 275$ _____
10. $288 + n$ when $n = 106$ _____
11. $121 + g$ when $g = 129$ _____
12. $500 - t$ when $t = 266$ _____

Write an expression for each situation.

13. 7 more than x _____
14. 5 and p more _____
15. 2 and m more _____
16. 3 more than g _____
17. 12 and y more _____
18. 25 and b more _____
19. 155 more than q _____
20. 341 and f more _____

Write an expression for the pattern.

21. $10 + 1, 10 + 2, 10 + 3, \dots$ _____
22. $45 - 5, 45 - 6, 45 - 7, \dots$ _____
23. $62 + 3, 62 + 4, 62 + 5, \dots$ _____

Problem Solving

Solve.

- 24.** George earns \$30 plus tips each day. Write an expression to show his total daily pay. If George received \$8 in tips yesterday, how much did he earn in all?

- 25.** Tanesha has 24 marbles. She gives away x number of marbles. Write an expression for the number of marbles she has left.

Name _____



Addition and Subtraction Expressions • Algebra

- Write any number. $n =$ _____
- Double n . _____
- Add 10. _____
- Divide by 2. _____
- Subtract n . _____
 - Use a different value for n . $n =$ _____
 - Double n . _____
 - Add 10. _____
 - Divide by 2. _____
 - Subtract n . _____
 - Use a different value for n . $n =$ _____
 - Double n . _____
 - Add 10. _____
 - Divide by 2. _____
 - Subtract n . _____
 - Use a different value for n . $n =$ _____
 - Double n . _____
 - Add 10. _____
 - Divide by 2. _____
 - Subtract n . _____

What do you notice? _____

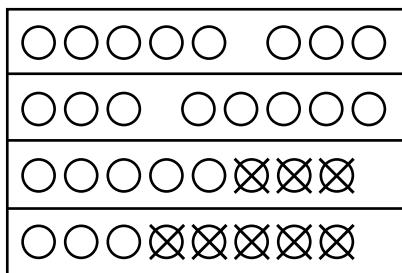
Name _____

Properties of Addition • Algebra



Every number sentence in a set of related number sentences uses the same numbers.

The model below shows a set of related number sentences.



$5 + 3 = 8$ } Commutative Property:

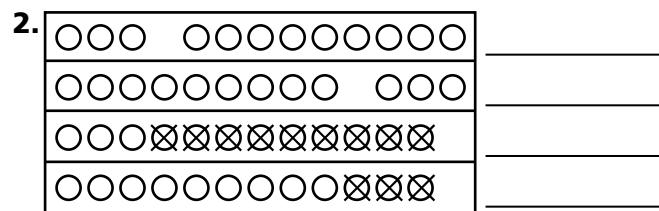
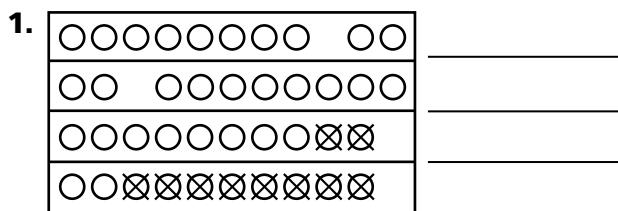
$3 + 5 = 8$ } $5 + 3 = 8$ is the same as $3 + 5 = 8$.

$$8 - 3 = 5$$

$$8 - 5 = 3$$

You can also use the properties and the idea of related sentences with greater numbers.

Look at each model. Write the related number sentences.



Find the sum. Write the related number sentences.

3. $8 + 3 = n$ _____

4. $2 + 7 = n$ _____

5. $18 + 0 = n$ _____

Write the related number sentences for the set of numbers.

6. 26, 17, 43

7. 0, 56, 56

8. 9, 45, 54

Name _____

Properties of Addition • Algebra



Find the value of the variable.

1. $a + 5 = 10$ _____

2. $12 + x = 20$ _____

3. $n + 4 = 8$ _____

4. $l + 0 = 6$ _____

5. $t + 12 = 15$ _____

6. $11 + b = 17$ _____

Find the sum or difference. Write the related number sentences.

7. $2 + 9 =$ _____

8. $35 + 4 =$ _____

9. $54 + 0 =$ _____

Write the related number sentences for each set of numbers.

10. 4, 5, 9

11. 11, 24, 35

12. 0, 46, 46

13. 17, 18, 35

14. 6, 42, 48

15. 30, 50, 80

Problem Solving

Solve.

16. Ken has 6 coins in his collection.
Barb has 5 more coins than Ken.
How many coins does Barb have?

17. Meg has 13 coins in her collection.
Then she gives 7 coins to her cousin.
How many coins does Meg have now?

Name _____

Properties of Addition • Algebra



Complete each number sentence. Then write the property or rule you used.

1. $M + N = M$ $N =$ _____

2. $A + B = B +$ _____

3. $C - D = C$ $D =$ _____

4. $H - H =$ _____

5. _____ + $J = J$ _____

6. $Z - 0 =$ _____

7. _____ + $Q = Q + P$ _____

8. _____ + $0 = W$ _____

Write the related number sentences.

9. $A + N = B$

10. $D + E = F$

Addition Patterns • Algebra

You can use addition facts and patterns to add multiples of ten mentally. Add the front digits. Then write a zero to match each place value.

$$5 + 7 = 12$$

$$\begin{array}{r} 5 \\ + 7 \\ \hline 12 \end{array}$$

$$5,000 + 7,000 = 12,000$$

$$\begin{array}{r} 5,000 \\ + 7,000 \\ \hline 12,000 \end{array}$$

$$50 + 70 = 120$$

$$\begin{array}{r} 50 \\ + 70 \\ \hline 120 \end{array}$$

$$50,000 + 70,000 = 120,000$$

$$\begin{array}{r} 50,000 \\ + 70,000 \\ \hline 120,000 \end{array}$$

$$500 + 700 = 1,200$$

$$\begin{array}{r} 500 \\ + 700 \\ \hline 1,200 \end{array}$$

$$500,000 + 700,000 = 1,200,000$$

$$\begin{array}{r} 500,000 \\ + 700,000 \\ \hline 1,200,000 \end{array}$$

Complete the pattern.

1. $3 + 8 = n$ _____

$30 + 80 = n$ _____

$300 + 800 = n$ _____

$3,000 + 8,000 = n$ _____

$30,000 + 80,000 = n$ _____

$300,000 + 800,000 = n$ _____

2. $5 + 9 = n$ _____

$50 + 90 = n$ _____

$500 + 900 = n$ _____

$5,000 + 9,000 = n$ _____

$50,000 + 90,000 = n$ _____

$500,000 + 900,000 = n$ _____

Add mentally.

3. $800 + 600 =$ _____

4. $9,000 + 7,000 =$ _____

5. $80,000 + 80,000 =$ _____

6. $5,000 + 4,000 =$ _____

7. $900 + 500 =$ _____

8. $700,000 + 600,000 =$ _____

9. $800,000 + 700,000 =$ _____

10. $60,000 + 50,000 =$ _____

11. $300 + 700 =$ _____

12. $80,000 + 90,000 =$ _____

Addition Patterns • Algebra

Write the number that makes each sentence true.

1. $8 + 8 = n$ _____

$80 + 80 = n$ _____

$800 + 800 = n$ _____

$8,000 + 8,000 = n$ _____

$80,000 + 80,000 = n$ _____

$800,000 + 800,000 = n$ _____

3. $5 + 9 = n$ _____

$50 + 90 = n$ _____

$500 + 900 = n$ _____

$5,000 + 9,000 = n$ _____

$50,000 + 90,000 = n$ _____

$500,000 + 900,000 = n$ _____

2. $7 + 6 = n$ _____

$70 + 60 = n$ _____

$700 + 600 = n$ _____

$7,000 + 6,000 = n$ _____

$70,000 + 60,000 = n$ _____

$700,000 + 600,000 = n$ _____

4. $8 + 9 = n$ _____

$80 + 90 = n$ _____

$800 + 900 = n$ _____

$8,000 + 9,000 = n$ _____

$80,000 + 90,000 = n$ _____

$800,000 + 900,000 = n$ _____

Add mentally.

5. $500 + 400 =$ _____

7. $30,000 + 80,000 =$ _____

9. $600 + 500 =$ _____

11. $100,000 + 900,000 =$ _____

6. $3,000 + 9,000 =$ _____

8. $700 + 800 =$ _____

10. $70,000 + 30,000 =$ _____

12. $800,000 + 500,000 =$ _____

Problem Solving

Solve.

- 13.** A music store made \$50,000 selling CDs and tapes in December. In January, the store made \$30,000. How much did the store make in all?

- 14.** The Green Hornets sold 800,000 copies of their first CD. They sold 500,000 copies of their second CD. How many CDs did the Green Hornets sell in all?

Name _____

Addition Patterns • Algebra



The triangle below is called Pascal's Triangle. Each row begins and ends with the number 1. Every other number is the sum of the two numbers above it.

Complete this Pascal's Triangle.

Row 1

1

Row 2

1 1

Row 3

1 2 1

Row 4

1 3 3 1

Row 5

1 _____ 6 _____ 1

Row 6

1 _____ _____ _____ _____ 1

Row 7

1 _____ _____ _____ _____ _____ 1

Now complete this Pascal's Triangle. Each row begins and ends with 200.

Row 1

200

Row 2

200 200

Row 3

200 400 200

Row 4

200 600 600 200

Row 5

200 _____ 1,200 _____ 200

Row 6

200 _____ _____ _____ _____ 200

Row 7

200 _____ _____ _____ _____ 200

Add Whole Numbers and MoneyAdd $587 + 269$.**Step 1**

Add the ones.

Regroup if necessary.

H	T	O
	1	
5	8	7
+ 2	6	9

$$7 \text{ ones} + 9 \text{ ones} = 16 \text{ ones}$$

$$16 \text{ ones} = 1 \text{ ten } 6 \text{ ones}$$

Step 2

Add the tens.

Regroup if necessary.

H	T	O
	1	
5	8	7
+ 2	6	9

$$1 \text{ ten} + 8 \text{ tens} + 6 \text{ tens}$$

$$= 15 \text{ tens}$$

$$15 \text{ tens} = 1 \text{ hundred } 5 \text{ tens}$$

Step 3

Add the hundreds.

Regroup if necessary.

H	T	O
	1	
5	8	7
+ 2	6	9

$$1 \text{ hundred} + 5 \text{ hundreds} +$$

$$2 \text{ hundreds} = 8 \text{ hundreds}$$

Find each sum.

1. $\begin{array}{r} 413 \\ + 228 \\ \hline \end{array}$

2. $\begin{array}{r} 336 \\ + 574 \\ \hline \end{array}$

3. $\begin{array}{r} \$4.80 \\ + 2.57 \\ \hline \end{array}$

4. $\begin{array}{r} 327 \\ + 425 \\ \hline \end{array}$

5. $\begin{array}{r} \$828 \\ + 16 \\ \hline \end{array}$

6. $\begin{array}{r} 187 \\ + 219 \\ \hline \end{array}$

7. $\begin{array}{r} 534 \\ + 394 \\ \hline \end{array}$

8. $\begin{array}{r} \$9.34 \\ + 3.68 \\ \hline \end{array}$

9. $\begin{array}{r} 692 \\ + 810 \\ \hline \end{array}$

10. $\begin{array}{r} \$7.99 \\ + 7.99 \\ \hline \end{array}$

11. $\begin{array}{r} 1,245 \\ + 3,717 \\ \hline \end{array}$

12. $\begin{array}{r} \$31.15 \\ + 85.29 \\ \hline \end{array}$

13. $\begin{array}{r} 6,289 \\ + 764 \\ \hline \end{array}$

14. $\begin{array}{r} 8,147 \\ + 3,988 \\ \hline \end{array}$

15. $\begin{array}{r} 5,326 \\ + 383 \\ \hline \end{array}$

16. $\begin{array}{r} 71,128 \\ + 3,511 \\ \hline \end{array}$

17. $\begin{array}{r} 87,421 \\ 2,032 \\ + 5,857 \\ \hline \end{array}$

18. $\begin{array}{r} 25,784 \\ 4,408 \\ + 64,726 \\ \hline \end{array}$

19. $\begin{array}{r} 399,625 \\ 99,990 \\ + 437,487 \\ \hline \end{array}$

20. $\begin{array}{r} \$62.41 \\ 7.38 \\ + 1.21 \\ \hline \end{array}$

Name _____

Add Whole Numbers and Money



Find each sum.

1. 688
 $+ 207$

2. 574
 $+ 434$

3. 757
 $+ 529$

4. $\$8.72$
 $+ 1.38$

5. $\$2.98$
 $+ 0.59$

6. 989
 $+ 624$

7. $8,489$
 $+ 2,467$

8. $\$3,824$
 $+ 962$

9. $5,174$
 $+ 327$

10. $\$12.57$
 $+ 7.43$

11. $6,672$
 $+ 878$

12. $\$78.29$
 $+ 45.32$

13. $12,345$
 $+ 67,890$

14. $43,802$
 $+ 7,526$

15. $24,316$
 $+ 893$

16. $183,462$
 $+ 570,184$

17. $3,421$
 $1,657$
 $+ 728$

18. $24,177$
 410
 $+ 4,586$

19. $341,249$
 $85,278$
 $+ 203,655$

20. $\$275.35$
 62.80
 $+ 9.82$

21. $\$7.77 + \$6.66 =$ _____ 22. $7,709 + 3,047 =$ _____

Algebra Find each sum. Use properties to help you.

23. $432 + 215 + 308 =$ _____ 24. $5,780 + 750 + 130 =$ _____

Problem Solving

Solve.

25. At the Lakeside School, 522 students ride the bus and 714 students walk or are driven to school. How many students attend Lakeside School?

26. Last week, \$325 worth of play tickets and \$729 worth of carnival tickets were sold. How much money was collected altogether?

Add Whole Numbers and Money



The Hindu people of ancient India added numbers by starting on the left and moving to the right.

Here is an example of Hindu addition.

Add the hundreds.

$$\begin{array}{r} 589 \\ + 782 \\ \hline 12 \end{array}$$

Next, add the tens.

$8 + 8 = 16$. Regroup to the hundreds place.

$$\begin{array}{r} 589 \\ + 782 \\ \hline 126 \\ 3 \end{array}$$

Last, add the ones.

Regroup to the tens place. The sum is 1,371.

$$\begin{array}{r} 589 \\ + 782 \\ \hline 1261 \\ 37 \end{array}$$

Use the Hindu method of addition to find each sum. Show your work.

1. $\begin{array}{r} 56 \\ + 35 \\ \hline \end{array}$

2. $\begin{array}{r} 96 \\ + 87 \\ \hline \end{array}$

3. $\begin{array}{r} 538 \\ + 247 \\ \hline \end{array}$

4. $\begin{array}{r} 322 \\ + 489 \\ \hline \end{array}$

5. $\begin{array}{r} 289 \\ + 556 \\ \hline \end{array}$

6. $\begin{array}{r} \$9.63 \\ + 8.75 \\ \hline \end{array}$

7. $\begin{array}{r} 238 \\ + 849 \\ \hline \end{array}$

8. $\begin{array}{r} 766 \\ + 984 \\ \hline \end{array}$

9. $\begin{array}{r} \$1.87 \\ + 7.58 \\ \hline \end{array}$

10. $\begin{array}{r} 874 \\ + 496 \\ \hline \end{array}$

11. $\begin{array}{r} 385 \\ + 496 \\ \hline \end{array}$

12. $\begin{array}{r} \$6.11 \\ + 9.97 \\ \hline \end{array}$

Compare the Hindu method of addition to the method of addition you use. Which method do you like better? Explain.

Use Mental Math to Add



You can use these two strategies to add mentally.

Compensation

Use compensation when a number is close to a ten or a hundred.

$$\begin{array}{r}
 197 \rightarrow 200 \\
 + 254 \rightarrow + 251 \\
 \hline
 451
 \end{array}
 \quad \begin{array}{l}
 \text{Add 3 to make 200: } 197 + 3 = 200. \\
 \text{Subtract 3 from the other number: } 254 - 3 = 251.
 \end{array}$$

Zigzag

Use the zigzag method to add $356 + 627$.

Take apart 627.

$$627 = 600 + 20 + 7$$

Then add each place separately.

$$\begin{array}{r}
 356 \\
 + 627 \\
 \hline
 956
 \end{array}
 \quad
 \begin{array}{r}
 356 \\
 + 600 \\
 \hline
 976
 \end{array}
 \quad
 \begin{array}{r}
 956 \\
 + 20 \\
 \hline
 976
 \end{array}
 \quad
 \begin{array}{r}
 976 \\
 + 7 \\
 \hline
 983
 \end{array}$$

Add mentally.

1. $62 + 39 =$ _____
2. $54 + 17 =$ _____
3. $202 + 248 =$ _____
4. $\$316 + \$455 =$ _____
5. $\$625 + \$330 =$ _____
6. $437 + 128 =$ _____
7. $499 + 252 =$ _____
8. $697 + 140 =$ _____
9. $\$29 + \$56 =$ _____
10. $\$62 + \$78 =$ _____
11. $\$268 + \$441 =$ _____
12. $298 + 465 =$ _____
13. $365 + 113 =$ _____
14. $232 + 657 =$ _____
15. $849 + 52 =$ _____
16. $723 + 245 =$ _____
17. $2,377 + 196 =$ _____
18. $1,783 + 5,097 =$ _____
19. $3,398 + 1,343 =$ _____
20. $6,512 + \$950 =$ _____
21. $\$6,512 + \$950 =$ _____
22. $1,783 + 5,097 =$ _____
23. $1,783 + 5,097 =$ _____
24. $1,783 + 5,097 =$ _____

Use Mental Math to Add

Add mentally.

1. $32 + 45 =$ _____

2. $21 + 64 =$ _____

3. $35 + 13 =$ _____

4. $\$39 + \$24 =$ _____

5. $48 + 31 =$ _____

6. $298 + 311 =$ _____

7. $595 + 409 =$ _____

8. $255 + 344 =$ _____

9. $238 + 495 =$ _____

10. $730 + 214 =$ _____

11. $891 + 108 =$ _____

12. $\$256 + \$222 =$ _____

13. $4,524 + 3,173 =$ _____

14. $8,999 + 1,333 =$ _____

15. $2,295 + 2,124 =$ _____

16. $1,487 + 1,511 =$ _____

Algebra Write the value of each missing number.

17. $36 + a = 86$ _____

18. $b + 61 = 81$ _____

19. $\$498 + c = \698 _____

20. $d + 298 = 598$ _____

21. $e + 657 = 957$ _____

22. $\$63 + h = \243 _____

23. $\$725 + k = \$1,125$ _____

24. $m + 837 = 1,137$ _____

25. $1,650 + n = 3,300$ _____

26. $r + \$750 = \$1,500$ _____

Problem Solving

Solve.

27. There are 38 dogs and 24 cats at the pet show. How many cats and dogs are there in all?

28. The pet show committee spends \$316 on dog treats and \$299 on cat treats. How much does the committee spend on treats?

Use Mental Math to Add

Move from left to right. Add each pair of numbers mentally.
 Shade any box that is the sum of the previous two boxes.

Example:

In row 1, add 19 and 53. The sum is 72. Shade the box with 72 in it.
 Add 53 and 72. If the sum is 125, then shade the box with 125 in it.

19	53	72	125	197	232	429	661	1,090	1,000	3,090	4,090
195	302	402	67	469	12	480	115	595	110	805	915
17	21	37	58	95	22	127	149	270	199	39	238
34	51	99	154	253	307	560	857	1,317	174	399	573
79	15	94	109	203	311	514	825	1,339	2,064	2,213	4,277

1. Look at the shaded boxes. What number do the boxes form? _____
2. Which method did you use to add pairs of numbers mentally when:
 - the sum of the digits was less than 9? _____
 - one number was close to 10, 100, or 1,000? _____
 - the sum of the digits was greater than 9? _____

How is mental math different from estimation?

Estimate Sums

To estimate a sum, first round each number. Then add the rounded numbers.

Estimate: $252 + 49$.

Round each number
to the nearest ten.
 $\begin{array}{r} 252 + 49 \\ \downarrow \quad \downarrow \\ 250 + 50 \end{array}$

Add. $250 + 50 = 300$

So, $252 + 49$ is about 300.

Estimate: $\$5.95 + \7.25 .

Round each number to the
nearest dollar.
 $\begin{array}{r} \$5.95 + \$7.25 \\ \downarrow \quad \downarrow \\ \$6.00 + \$7.00 \end{array}$

Add. $\$6.00 + \$7.00 = \$13.00$

So, $\$5.95 + \7.25 is about $\$13.00$.

To which place will you round each number? Circle the digits in that place. Then estimate each sum. Show how you rounded.

1. $\$7.89 + \5.29

2. $\$0.32 + \0.48

3. $6,714 + 8,217$

4. $27,822 + 2,321$

5. $5,214 + 642$

6. $38,629 + 5,927$

Estimate each sum.

7. $469 + 563$ _____

8. $\$9.08 + \12.75 _____

9. $143 + 431$ _____

10. $5,723 + 3,501$ _____

11. $1,827 + 764$ _____

12. $2,357 + 8,605$ _____

13. $\$38,956 + \$7,653$ _____

14. $\$46.90 + \327.54 _____

15. $896,455 + 11,321$ _____

16. $477,995 + 865,311$ _____

Name _____

Estimate Sums



Estimate each sum. Show your work.

1. $478 + 597$ _____
2. $\$8.65 + \7.15 _____
3. $\$0.32 + \0.65 _____
4. $4,990 + 405$ _____
5. $2,188 + 5,621$ _____
6. $47,522 + 3,721$ _____
7. $863,122 + 254,087$ _____

Add. Estimate to check if your answer is reasonable.

8. $621 + 308 =$ _____
9. $2,188 + 5,621 =$ _____
10. $\$4.20 + \$8.12 =$ _____
11. $601,128 + 328,125 =$ _____

Compare. Write $>$ or $<$ to make a true sentence.

12. $176 + 335 \bigcirc 400$
13. $243 + 50 \bigcirc 300$
14. $500 \bigcirc 251 + 127$
15. $900 \bigcirc 895 + 68$
16. $1,348 + 2,489 \bigcirc 5,000$
17. $4,725 + 321 \bigcirc 3,923 + 289$
18. $9,000 \bigcirc 4,487 + 5,672$
19. $8,000 \bigcirc 6,081 + 950$
20. $22,152 + 28,174 \bigcirc 60,000$
21. $49,912 + 2,839 \bigcirc 5,000$

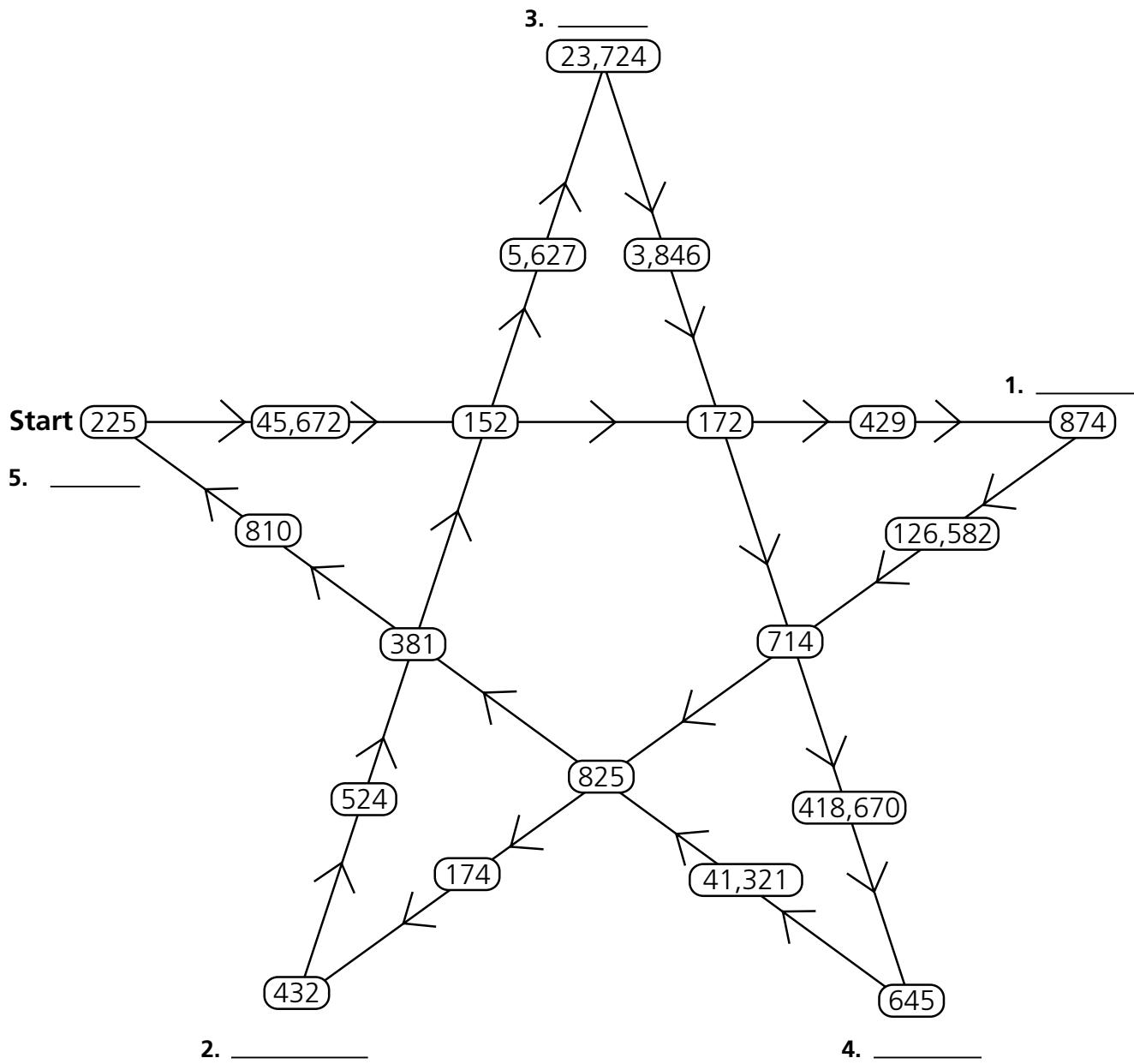
Problem Solving

Solve.

22. Julio wants to buy drawing paper for \$8.50 and brushes for \$19.95. About how much will he spend?
23. The fourth-grade students make 268 posters about bicycle safety. The fifth-grade students make 229. About how many posters do the students make altogether?

Estimate Sums

There are five paths in the star below. Each path has six numbers. Round each number to the nearest hundred. Then estimate the sum of the rounded numbers on each path of the star. Write your estimate on the line at the end of each path.



Problem Solving: Skill

Estimate or Exact Answer

Estimate an answer when you do not need an exact answer.

Find an **exact** answer when you need to find exactly how much.

Estimate the answer.

Sally has 315 stamps, Joan has 209 stamps, and Karen has 523 stamps. Do the girls have more than 1,000 stamps altogether?

Estimate $315 + 209 + 523$

Round down $300 + 200 + 500 = 1,000$

Think: The numbers were rounded down. The exact sum is greater than the estimate.

The girls have more than 1,000 stamps.

Find the exact answer.

Ethan has 275 stickers, Zack has 403 stickers, and Ricky has 377 stickers. How many stickers do the boys have altogether? Find the sum of $275 + 403 + 377$.

275

403

$$\begin{array}{r} + 377 \\ \hline \end{array}$$

1,055

The boys have 1,055 stickers altogether.

Choose the correct answer.

Paco has 129 toy cars. His brother has 167 toy cars. How many toy cars do they have in all?

- 1.** Which plan can help you solve the problem?

- A** Estimate the sum of 129 and 167.
B Add 129 and 167.
C Compare 129 and 167.

- 2.** How many toy cars do the boys have in all?

- F** 300
G 296
H 200

Hiroshi has 429 football cards, 278 baseball cards, and 97 hockey cards. Does Hiroshi have more than 1,000 cards in all?

- 3.** Which plan can help solve the problem?

- A** Find the exact sum for $429 + 278 + 97$.
B Estimate to tell if $429 + 278$ is greater than 1,000.
C Estimate to tell if $429 + 278 + 97$ is greater than 1,000.

- 4.** Does Hiroshi have more than 1,000 cards in all?

- F** No.
G Yes.
H Hiroshi has exactly 1,000 cards.

Name _____

Problem Solving: Skill Estimate or Exact Answer



Solve. Explain why you gave an estimate or exact answer.

1. James, Max, and Melba collect baseball cards. James has 870 cards, Max has 569 cards, and Melba has 812 cards. Do the three friends have more than 2,000 baseball cards?

2. Nicki has a collection of 79 shells and 64 rocks. How many items are in her collection?

3. Kelly has a coin collection. Her quarters are worth \$104.50. Her dimes are worth \$75.10. Her nickels are worth \$27.75. What is the total value of Kelly's coin collection?

4. The Comic Book Show sells 474 tickets on Friday and 396 tickets on Saturday. About how many tickets does the Comic Book Show sell?

Mixed Strategy Review

Use data from the table for problems 5–6.

5. How many people visited the museum on Saturday and Sunday?

6. About how many people visited the museum on Wednesday, Thursday, and Friday?

Museum Visitors	
Wednesday	377
Thursday	405
Friday	529
Saturday	836
Sunday	915

Problem Solving: Skill

Estimate or Exact Answer

Ms. Ramirez has a dentist's appointment at 3:45 P.M. Before her appointment she goes to the bank, takes a 1-hour exercise class, and works in the library for 1/2 hour.

Use the table to answer questions about Ms. Ramirez's travels.

From	To	Travel Time
Home	Bank	20 min
Bank	Gym	15 min
Gym	Library	8 min
Library	Dentist	30 min

1. Ms. Ramirez leaves her home at 11:15 A.M. and drives to the bank. Does she arrive by 11:45 A.M.? _____
2. The exercise class begins at exactly 1:00 P.M. At what time does the exercise class end? _____
3. Ms. Ramirez leaves the bank at 12:30 P.M. and drives to the gym. She takes 10 minutes to change into her exercise clothes. Is Ms. Ramirez ready by the time the exercise class begins? _____
4. Ms. Ramirez takes 10 minutes to change into her street clothes. Then she drives to the library. At what time does she reach the library? _____
5. Ms. Ramirez leaves the library at 3:00 P.M. How long did she work in the library? More than 1/2 hour or less than 1/2 hour? _____
6. Ms. Ramirez drives from the library to the dentist's office. Did she arrive early, late, or on time for her appointment? _____

Explore Addition and Subtraction

Equations • Algebra

You can use pennies to model and solve equations.

Solve $n + 3 = 5$ for n .

Step 1

Use pennies to show the given number.

$$\begin{array}{r} \text{¢ ¢ ¢} \\ n + 3 = 5 \end{array}$$

Step 2

Draw a circle to represent the variable n .

$$\begin{array}{c} \bigcirc \\ n + 3 = 5 \end{array}$$

Step 3

Put 5 pennies to the right of the circle.

$$\begin{array}{c} \bigcirc \\ n + 3 = 5 \end{array}$$

Step 4

Put pennies in the circle so that the number of pennies on each side of the equal sign is the same.

$$\begin{array}{c} \bigcirc \text{¢ ¢} \\ \text{¢ ¢ ¢ ¢} \end{array}$$

$$n + 3 = 5$$

Step 5

Write the value of n for the equation $n + 3 = 5$. Check your answer.

$$n = 2 \quad n + 3 = 5$$

$$2 + 3 = 5$$

Use models to find the value of the variable.

1. $n + 2 = 6$

$n =$ _____

$$\begin{array}{r} \bigcirc \text{¢ ¢ ¢} \\ + \text{¢ ¢} = \text{¢ ¢ ¢ ¢ ¢} \end{array}$$

2. $2 + n = 8$

$n =$ _____

$$\begin{array}{r} \text{¢ ¢} \\ + \bigcirc \text{¢ ¢ ¢ ¢ ¢ ¢} = \text{¢ ¢ ¢ ¢ ¢ ¢ ¢} \end{array}$$

3. $n - 1 = 5$

$n =$ _____

$$\begin{array}{r} \bigcirc \text{¢ ¢ ¢ ¢} \\ - \text{¢} = \text{¢ ¢ ¢} \end{array}$$

4. $n - 4 = 3$

$n =$ _____

$$\begin{array}{r} \bigcirc \text{¢ ¢ ¢ ¢ ¢} \\ - \text{¢ ¢ ¢} = \text{¢} \end{array}$$

Name _____

Explore Addition and Subtraction

Equations • Algebra



Use models to find the value of the variable.

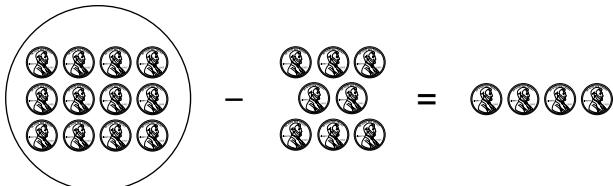
1. $x + 7 = 9$

$x = \underline{\hspace{2cm}}$



2. $p - 8 = 4$

$p = \underline{\hspace{2cm}}$



3. $s - 2 = 1$

$s = \underline{\hspace{2cm}}$



4. $b + 6 = 11$

$b = \underline{\hspace{2cm}}$



Solve each equation. Check your answer.

5. $2 + v = 4$

$v = \underline{\hspace{2cm}}$

6. $d + 8 = 13$

$d = \underline{\hspace{2cm}}$

7. $s - 5 = 2$

$s = \underline{\hspace{2cm}}$

8. $11 + x = 15$

$x = \underline{\hspace{2cm}}$

9. $7 + p = 10$

$p = \underline{\hspace{2cm}}$

10. $b - 7 = 11$

$b = \underline{\hspace{2cm}}$

11. $l + 3 = 5$

$l = \underline{\hspace{2cm}}$

12. $g - 5 = 6$

$g = \underline{\hspace{2cm}}$

13. $a - 1 = 12$

$a = \underline{\hspace{2cm}}$

14. $u + 0 = 10$

$u = \underline{\hspace{2cm}}$

15. $m - 8 = 1$

$m = \underline{\hspace{2cm}}$

16. $h - 2 = 17$

$h = \underline{\hspace{2cm}}$

17. $c + 4 = 16$

$c = \underline{\hspace{2cm}}$

18. $12 + k = 13$

$k = \underline{\hspace{2cm}}$

19. $f + 9 = 19$

$f = \underline{\hspace{2cm}}$

20. $n - 0 = 0$

$n = \underline{\hspace{2cm}}$

21. $r - 4 = 10$

$r = \underline{\hspace{2cm}}$

22. $z + 16 = 16$

$z = \underline{\hspace{2cm}}$

Explore Addition and Subtraction

Equations • Algebra



Complete. Solve the problems.

- 1.** $1 + w = 13$
- 2.** $8 + b = 9$
- 3.** $d - 0 = 13$
- 4.** $n - 2 = 2$
- 5.** $x + 2 = 12$
- 6.** $x + 3 = 9$
- 7.** $v + 2 = 7$
- 8.** $3 + z = 14$
- 9.** $11 + p = 14$
- 10.** $y - 2 = 12$
- 11.** $0 + s = 8$
- 12.** $c - 6 = 3$
- 13.** $r + 3 = 10$
- 14.** $m - 4 = 11$
- 15.** $9 + a = 11$
- 16.** $e + 10 = 10$

Code

- | |
|----------------------|
| 10 = S |
| 9 = A |
| 4 = U |
| 7 = T |
| 8 = C |
| 11 = N |
| 3 = V |
| 6 = E |
| 1 = M |
| 15 = I |
| 0 = N |
| 5 = O |
| 14 = A |
| 12 = A |
| 2 = O |
| 13 = O |

Solve the riddle. Match each answer with a number in the code box at right. Write the letter you find on the line above the appropriate problem number.

Riddle: What animal is gray and has a trunk?

Subtraction Patterns • Algebra

You can use subtraction facts and patterns to subtract multiples of ten mentally.

Subtract the front digits. Then write a zero to match each place value.

$12 - 7 = 5$	12	$12,000 - 7,000 = 5,000$	12,000
	$\begin{array}{r} - 7 \\ \hline 5 \end{array}$		$\begin{array}{r} - 7,000 \\ \hline 5,000 \end{array}$
$120 - 70 = 50$	120	$120,000 + 70,000 = 50,000$	120,000
	$\begin{array}{r} - 70 \\ \hline 50 \end{array}$		$\begin{array}{r} - 70,000 \\ \hline 50,000 \end{array}$
$1,200 - 700 = 500$	1,200	$1,200,000 + 700,000 = 500,000$	1,200,000
	$\begin{array}{r} - 700 \\ \hline 500 \end{array}$		$\begin{array}{r} - 700,000 \\ \hline 500,000 \end{array}$

Write the number that makes each sentence true.

1. $11 - 8 = n$ _____

$110 - 80 = n$ _____

$1,100 - 800 = n$ _____

$11,000 - 8,000 = n$ _____

$110,000 - 80,000 = n$ _____

$1,100,000 - 800,000 = n$ _____

2. $14 - 5 = n$ _____

$140 - 50 = n$ _____

$1,400 - 500 = n$ _____

$14,000 - 5,000 = n$ _____

$140,000 - 50,000 = n$ _____

$1,400,000 - 500,000 = n$ _____

Subtract mentally.

3. $1,400 - 600 =$ _____

4. $\$16,000 - \$7,000 =$ _____

5. $160,000 - 80,000 =$ _____

6. $1,200 - 500 =$ _____

7. $\$1,500 - \$700 =$ _____

8. $110,000 - 50,000 =$ _____

9. $14,000 - 8,000 =$ _____

10. $\$1,700,000 - \$900,000 =$ _____

11. $1,800,000 - 900,000 =$ _____

12. $120,000 - 40,000 =$ _____

Name _____

Subtraction Patterns • Algebra



Write the number that makes each sentence true.

1. $12 - 8 = n$ _____

$120 - 80 = n$ _____

$1,200 - 800 = n$ _____

$12,000 - 8,000 = n$ _____

$120,000 - 80,000 = n$ _____

$1,200,000 - 800,000 = n$ _____

3. $11 - 5 = n$ _____

$110 - 50 = n$ _____

$1,100 - 500 = n$ _____

$11,000 - 5,000 = n$ _____

$110,000 - 50,000 = n$ _____

$1,100,000 - 500,000 = n$ _____

2. $16 - 7 = n$ _____

$160 - 70 = n$ _____

$1,600 - 700 = n$ _____

$16,000 - 7,000 = n$ _____

$160,000 - 70,000 = n$ _____

$1,600,000 - 700,000 = n$ _____

4. $15 - 8 = n$ _____

$150 - 80 = n$ _____

$1,500 - 800 = n$ _____

$15,000 - 8,000 = n$ _____

$150,000 - 80,000 = n$ _____

$1,500,000 - 800,000 = n$ _____

Subtract mentally.

5. $1,200 - 600 =$ _____

6. $\$8,000 - \$3,000 =$ _____

7. $600,000 - 500,000 =$ _____

8. $70,000 - 50,000 =$ _____

9. $\$13,000 - \$9,000 =$ _____

10. $160,000 - 80,000 =$ _____

11. $140,000 - 50,000 =$ _____

12. $1,200,000 - 600,000 =$ _____

Problem Solving

Solve.

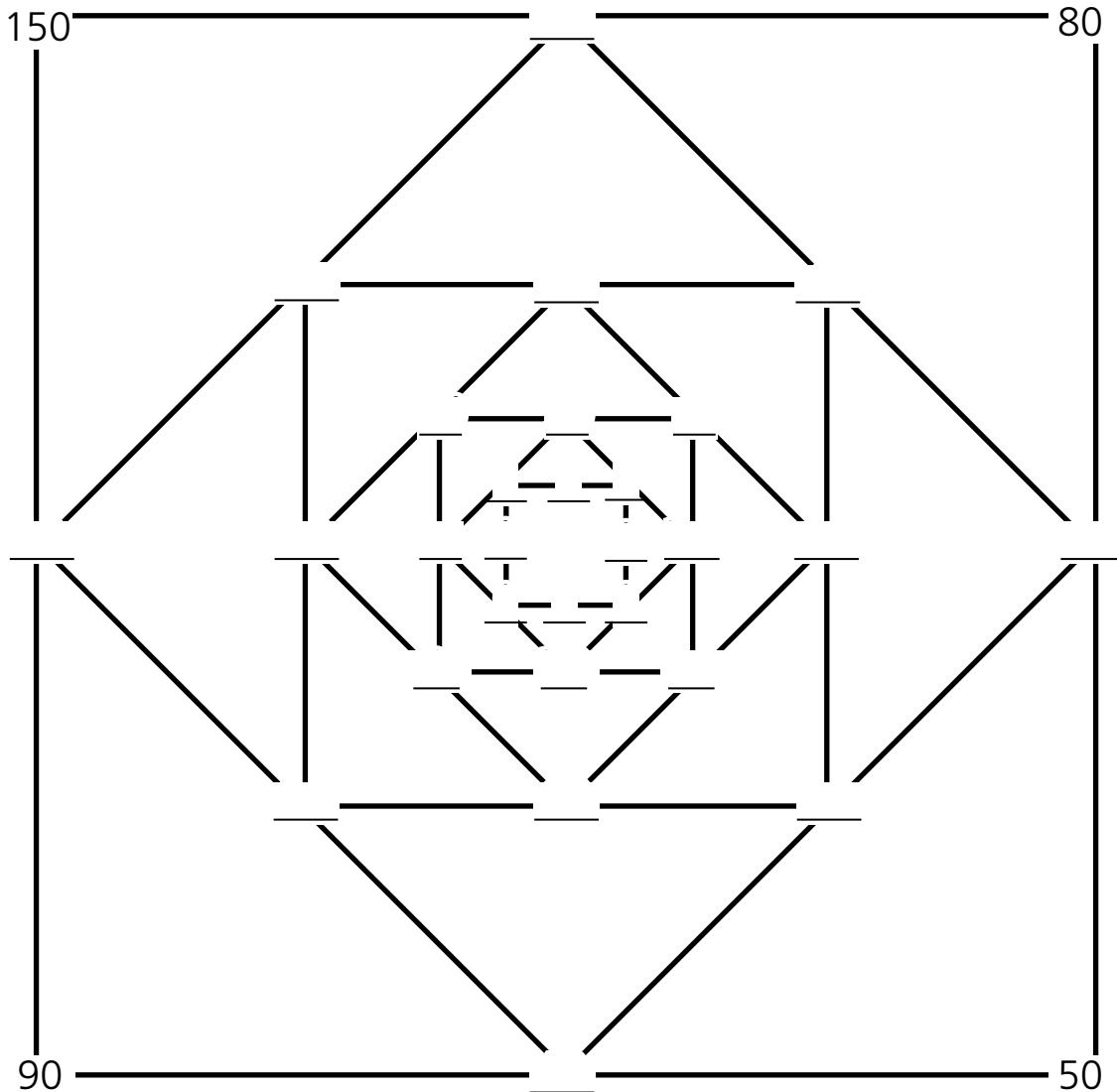
13. A video store rented 900,000 videos last year. This year the store rented 1,500,000 videos. How many more videos did it rent this year?

14. The price for a house is \$120,000. Ms. Smith decides to make an offer that is \$30,000 less than the price. How much does Ms. Smith offer for the house?

Subtraction Patterns • Algebra

Find each missing number to finish the subtraction squares.

- Subtract any two corner numbers in each square.
- Write the difference in between the numbers.
- Continue subtracting until you finish the center square.



What happens in the center of the squares?

What do you think will happen if you choose four other corner numbers for the largest square? Try it and check your prediction.

Subtract Whole Numbers and Money

Subtract $500 - 185$.

Step 1

No ones.

No tens.

Regroup the hundreds.

H	T	O
4	10	0
b	0	0
- 1	8	5

$$\begin{array}{r} 5 \text{ hundreds} = 4 \text{ hundreds} \\ 10 \text{ tens} \end{array}$$

There are not enough ones to subtract 5 ones.

Step 2

Regroup the tens.

H	T	O
4	9	10
b	10	0
- 1	8	5

$$10 \text{ tens} = 9 \text{ tens} 10 \text{ ones}$$

Subtract the ones, the tens, and then the hundreds.

Step 3

Subtract the ones, the tens, and then the hundreds.

H	T	O
4	9	10
b	10	0
- 1	8	5
	1	5

$$\begin{array}{r} 10 \text{ ones} - 5 \text{ ones} = 5 \text{ ones} \\ 9 \text{ tens} - 8 \text{ tens} = 1 \text{ ten} \\ 4 \text{ hundreds} - 1 \text{ hundred} = 3 \text{ hundreds} \end{array}$$

Subtract. Check by adding.

1. 602
 $\underline{- 314}$

2. 872
 $\underline{- 465}$

3. $\$900$
 $\underline{- 306}$

4. 800
 $\underline{- 523}$

5. $\$2.49$
 $\underline{- 0.98}$

6. $\$4,000$
 $\underline{- 1,527}$

7. $2,005$
 $\underline{- 1,083}$

8. $3,000$
 $\underline{- 2,225}$

9. $12,435$
 $\underline{- 8,679}$

10. $6,000$
 $\underline{- 1,326}$

11. $68,000$
 $\underline{- 11,770}$

12. $\$56,716$
 $\underline{- 39,897}$

13. $74,800$
 $\underline{- 27,862}$

14. $\$40,050$
 $\underline{- 32,037}$

15. $743,219$
 $\underline{- 19,733}$

16. $300,077 - 124,364 =$ _____

17. $\$2,000.08 - \$1,870.53 =$ _____

18. $107,006 - 84,119 =$ _____

19. $906,004 - 205,457 =$ _____

20. $24,652 - 9,788 =$ _____

21. $\$500,600 - \$50,250 =$ _____

Name _____

Subtract Whole Numbers and Money



Subtract. Check by adding.

$$\begin{array}{r} 757 \\ - 28 \\ \hline \end{array}$$

$$\begin{array}{r} \$582 \\ - 492 \\ \hline \end{array}$$

$$\begin{array}{r} 693 \\ - 516 \\ \hline \end{array}$$

$$\begin{array}{r} 600 \\ - 58 \\ \hline \end{array}$$

$$\begin{array}{r} \$2.48 \\ - 1.95 \\ \hline \end{array}$$

$$\begin{array}{r} 2,345 \\ - 1,658 \\ \hline \end{array}$$

$$\begin{array}{r} \$67.89 \\ - 18.95 \\ \hline \end{array}$$

$$\begin{array}{r} \$11,321 \\ - 979 \\ \hline \end{array}$$

$$\begin{array}{r} 8,000 \\ - 2,450 \\ \hline \end{array}$$

$$\begin{array}{r} 3,523 \\ - 2,846 \\ \hline \end{array}$$

$$\begin{array}{r} \$33,572 \\ - 13,689 \\ \hline \end{array}$$

$$\begin{array}{r} 74,125 \\ - 65,239 \\ \hline \end{array}$$

$$\begin{array}{r} 49,785 \\ - 8,998 \\ \hline \end{array}$$

$$\begin{array}{r} 98,142 \\ - 617 \\ \hline \end{array}$$

$$\begin{array}{r} \$224.20 \\ - 15.87 \\ \hline \end{array}$$

$$\begin{array}{r} \$4,561.71 \\ - 291.68 \\ \hline \end{array}$$

$$\begin{array}{r} 389,243 \\ - 136,354 \\ \hline \end{array}$$

$$\begin{array}{r} \$900,000 \\ - 98,276 \\ \hline \end{array}$$

$$\begin{array}{r} 914,617 \\ - 117,814 \\ \hline \end{array}$$

$$\begin{array}{r} \$7,211.53 \\ - 5,926.84 \\ \hline \end{array}$$

$$21. 500 - 124 = \underline{\hspace{2cm}}$$

$$22. \$9.12 - \$7.58 = \underline{\hspace{2cm}}$$

$$23. 42,625 - 9,846 = \underline{\hspace{2cm}}$$

$$24. 70,000 - 52,087 = \underline{\hspace{2cm}}$$

$$25. \$311.42 - \$4.65 = \underline{\hspace{2cm}}$$

$$26. \$578,423 - \$89,743 = \underline{\hspace{2cm}}$$

$$27. (276,410 + 39,257) - 6,413 = \underline{\hspace{2cm}}$$

Problem Solving

Solve.

28. A toy factory made 32,154 board games on Monday. On Tuesday it made 31,687 board games. How many more board games did the factory make on Monday?

29. A store earned \$12,415 selling puzzles this week. Last week it earned \$9,326 selling puzzles. How much more did the store earn this week?

Subtract Whole Numbers and Money

Sumer was an ancient civilization. The people of Sumer developed one of the first written number systems. The system had five number symbols. This chart shows the value of each symbol.

1	10	60	600	3,600

The symbols were combined to represent numbers.

Example:



$$3,600 + 600 + 60 + 10 + 10 = 4,280$$

Solve the Sumerian subtraction problems. Translate the Sumerian symbols to the numbers in our system and subtract. Then write the difference using Sumerian symbols.

1.

$$\begin{array}{r}
 7\ 7\ <\ y\ y\ y \\
 - 7\ 7\ y\ y\ y\ y \\
 \hline
 \end{array}$$

2.

$$\begin{array}{r}
 6\ 0\ 0\ <\ <\ < \\
 - 6\ 0\ <\ <\ y\ y\ y\ y\ y \\
 \hline
 \end{array}$$

3.

$$\begin{array}{r}
 3\ 6\ 0\ 0\ <\ < \\
 - 3\ 6\ 0\ <\ <\ <\ y \\
 \hline
 \end{array}$$

4.

$$\begin{array}{r}
 6\ 0\ 0\ <\ <\ < \\
 - 6\ 0\ <\ <\ <\ < \\
 \hline
 \end{array}$$

Problem Solving: Strategy

Write an Equation

Page 77, Problem 3

Ms. Green had 29 buttons to sew on the dolls she is making. She has 14 buttons left. How many buttons has she already sewn on?

Step 1**Read** →**Be sure you understand the problem.**

Read carefully.

What do you know?

- Ms. Green had _____ buttons to sew on dolls.
- She has _____ buttons left.

What do you need to find?

- You need to find how many _____.

Step 2**Plan** →**Make a plan.**

Choose a strategy.

You can write an equation to solve the problem.

Since you know the original total and the number left, you can write a subtraction equation.

Strategies

- Find a Pattern
- Work Backward
- Use Logical Reasoning
- Write an Equation
- Make a Table or List
- Guess and Check
- Make a Graph
- Solve a Simpler Problem

Problem Solving: Strategy

Write an Equation

Step 3**Solve****Carry out your plan.**

- You know Ms. Green had _____ buttons to sew on dolls.
- You know she has _____ buttons left.

Write a subtraction equation to represent the situation.

$$\begin{array}{r} 29 \\ \text{number of buttons she had} \\ - \quad n \\ \hline \end{array} = \begin{array}{r} 14 \\ \text{buttons left} \\ \hline \end{array}$$

buttons already sewn on

Then use a related equation to solve.

$$\begin{array}{r} \underline{\hspace{1cm}} \\ \text{number of buttons she had} \end{array} - \begin{array}{r} \underline{\hspace{1cm}} \\ \text{buttons left} \end{array} = \begin{array}{r} \underline{\hspace{1cm}} \\ \text{buttons already sewn on} \end{array}$$

She has already sewn on _____ buttons.

Step 4**Look Back****Is the solution reasonable?**

Reread the problem.

Does your answer make sense? Yes No

Did you answer the question? Yes No

How can you check your answer? _____

What other strategies could you use to solve the problem?

Practice

Write an equation to solve.

1. Keshawn spends \$45 on glass and copper molding. He pays with a hundred-dollar bill. How much change does Keshawn get back?

2. Melanie sells a model sailing ship and a model airplane for a total of \$40.95. She receives \$23.49 for the ship. How much money does Melanie receive for the airplane?

Problem Solving: Strategy

Write an Equation

Write an equation to solve.

1. Meg buys candle-making supplies for \$37. She has \$25 left. How much money did Meg have before she bought the supplies?

2. Sally has finished 86 squares in her quilt. The quilt will have 100 squares. How many squares does Sally still have to make?

3. Eric sells a painting for \$125. He sells a sculpture for \$390. How much money does Eric earn in all?

4. Noah has saved \$42. How much more money does he need to buy a rare coin for \$90?

Mixed Strategy Review

Solve. Use any strategy.

5. Howard has 75 shells. On a trip, he collects another 16 shells. How many shells does he have now?

6. Tom makes letters for a sign that says "Arts and Crafts Fair." Which letter does Tom need to make the most of?

Strategy: _____

Strategy: _____

7. **Social Studies** During the 1800s, sailors made carvings called scrimshaw on whale teeth, whalebone, and tortoise shells. Suppose a sailor made a carving in 1805. A collector buys the carving in 2000. How many years old is the carving?

Strategy: _____

8. **Write a problem** that you could write an equation to solve. Share it with others.

Use Mental Math to Subtract

You can use compensation to subtract mentally.

Compensation

Use compensation when one number is close to a ten or a hundred.

Add or subtract the same number from both numbers.

$$\begin{array}{r} 95 \\ - 28 \\ \hline 67 \end{array} \rightarrow \begin{array}{r} 97 \\ - 30 \\ \hline \end{array}$$

Add 2 to 28 to make 30: $28 + 2 = 30$.
 Add 2 to the other number: $95 + 2 = 97$.

$$\begin{array}{r} 103 \\ - 45 \\ \hline 58 \end{array} \rightarrow \begin{array}{r} 100 \\ - 42 \\ \hline \end{array}$$

Subtract 3 from 103 to make 100: $103 - 3 = 100$.
 Subtract 3 from 45: $45 - 3 = 42$.

Subtract mentally.

1. $26 - 7 =$ _____
2. $84 - 32 =$ _____
3. $79 - 31 =$ _____

4. $\$58 - \$17 =$ _____
5. $94 - 38 =$ _____
6. $86 - 24 =$ _____

7. $196 - 49 =$ _____
8. $\$253 - \$42 =$ _____

9. $395 - 91 =$ _____
10. $888 - 277 =$ _____

11. $245 - 197 =$ _____
12. $\$428 - \$117 =$ _____

13. $482 - 204 =$ _____
14. $613 - 307 =$ _____

15. $354 - 99 =$ _____
16. $\$755 - \$402 =$ _____

17. $519 - 404 =$ _____
18. $505 - 301 =$ _____

19. $\$535 - \$122 =$ _____
20. $350 - 198 =$ _____

21. $657 - 312 =$ _____
22. $648 - 305 =$ _____

Use Mental Math to Subtract

Subtract mentally.

1. $46 - 7 =$ _____

2. $81 - 36 =$ _____

3. $53 - 19 =$ _____

4. $99 - 19 =$ _____

5. $\$78 - \$49 =$ _____

6. $92 - 28 =$ _____

7. $74 - 38 =$ _____

8. $95 - 37 =$ _____

9. $64 - 37 =$ _____

10. $687 - 48 =$ _____

11. $\$273 - \$58 =$ _____

12. $394 - 86 =$ _____

13. $\$704 - \$589 =$ _____

14. $745 - 597 =$ _____

15. $782 - 203 =$ _____

16. $613 - 309 =$ _____

17. $555 - 299 =$ _____

18. $998 - 145 =$ _____

19. $578 - 465 =$ _____

Write the number that makes each equation true.

20. $648 - a = 548$ _____

21. $b - 60 = 340$ _____

22. $c - 412 = 388$ _____

23. $d - 235 = 665$ _____

24. $950 - e = 400$ _____

25. $823 - h = 123$ _____

26. $k - 599 = 301$ _____

27. $450 - m = 100$ _____

28. $775 - n = 200$ _____

29. $r - 300 = 1,456$ _____

Problem Solving

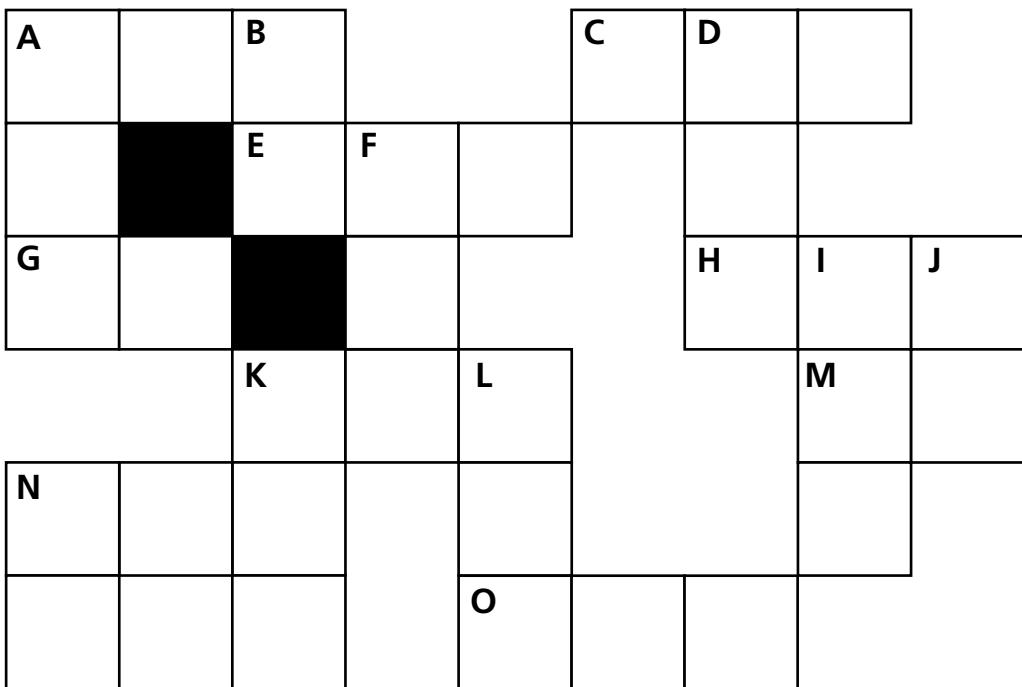
Solve.

30. Josh buys a wooden horse for \$4.89.
He gives the cashier \$5.00. How
much change should Josh receive?
-

31. A bicycle shop has 309 water bottles
in stock. Ashley buys 259 bottles.
How many bottles are left?
-

Use Mental Math to Subtract

Subtract mentally to complete the crossnumber puzzle.

**Across**

- A.** $596 - 111$
- C.** $879 - 65$
- E.** $281 - 28$
- G.** $192 - 95$
- H.** $383 - 99$
- K.** $1,253 - 599$
- M.** $194 - 162$
- N.** $448 - 203$
- O.** $662 - 25$

Down

- A.** $626 - 197$
- B.** $360 - 308$
- D.** $237 - 105$
- F.** $591 - 76$
- I.** $950 - 113$
- J.** $765 - 723$
- K.** $686 - 28$
- L.** $635 - 179$
- N.** $228 - 199$

Look at N down. What method did you use to subtract mentally?

Estimate Differences

To estimate a difference, you can round each number.
Then subtract the rounded numbers.

Estimate $486 - 27$.

Round each number
to the nearest ten. $486 - 27$
 ↓ ↓
 490 - 30

Subtract. $490 - 30 = 460$

So, $486 - 27$ is about 460.

Estimate $\$6.98 - \4.59 .

Round each number
to the nearest dollar. $\$6.98 - \4.59
 ↓ ↓
 \$7.00 - \$5.00

Subtract. $\$7.00 - \$5.00 =$
 \$2.00

So, $\$6.98 - \4.59 is about \$2.00.

To which place will you round each number? Circle the digits in that place.
Then estimate each difference. Show how you rounded.

1. $\$14.95 - \8.35

2. $\$0.78 - \0.29

3. $7,842 - 799$

4. $\$589.10 - \85.25

5. $53,425 - 20,741$

6. $425,697 - 289,721$

Estimate each difference.

7. $529 - 158$ _____

8. $\$683 - \475 _____

9. $947 - 349$ _____

10. $5,522 - 1,378$ _____

11. $\$12.48 - \3.98 _____

12. $3,241 - 678$ _____

13. $52,745 - 47,523$ _____

14. $72,393 - 8,088$ _____

15. $232,500 - 83,900$ _____

16. $809,765 - 528,750$ _____

Estimate Differences

Estimate each difference. Show your work.

1. $467 - 215$ _____

2. $2,835 - 1,487$ _____

3. $\$13.95 - \7.25 _____

4. $65,074 - 15,472$ _____

5. $174,921 - 18,421$ _____

Subtract. Estimate to check that each answer is reasonable.

6. 835	7. $\$81.79$	8. $6,984$	9. $242,003$	10. $654,026$
$- 487$	$- 31.55$	$- 322$	$- 49,887$	$- 529,620$

11. $\$0.88 - \$0.35 =$ _____ 12. $787,008 - 117,584 =$ _____

Algebra Compare. Write $>$ or $<$ to make the sentence true.

13. $4,173 - 2,589$ \bigcirc 2,000 14. $8,329 - 957$ \bigcirc 7,000

15. $\$300.00$ \bigcirc $\$367.20 - \59.45 16. 600 \bigcirc $938 - 452$

17. $15,425 - 3,535$ \bigcirc 10,000 18. $8,053 - 7,645$ \bigcirc 1,000

19. $42,345 - 16,174$ \bigcirc 20,000 20. $48,592 - 961$ \bigcirc 4,000

Problem Solving

Solve.

21. Last year, 787,897 copies of *Science Monthly* were sold. This year, 914,632 copies were sold. About how many more copies were sold this year than last year?
-

22. The Hoop Store spends \$129.99 for an ad in *Science Monthly*. The store spends \$19.29 for an ad in the *Allentown News*. About how much more does the store spend on advertising in *Science Monthly* than in the *Allentown News*?
-

Estimate Differences

Estimate each difference. Circle the correct answer.
Use your answers to find the path through the maze.

1. $961 - 472$

- A.** 400
B. 500
C. 600

2. $874 - 215$

- A.** 500
B. 600
C. 700

3. $4,971 - 2,364$

- A.** 3,000
B. 2,000
C. 1,000

4. $729 - 346$

- A.** 300
B. 400
C. 500

5. $526 - 481$

- A.** 0
B. 100
C. 200

6. $\$8.16 - \1.92

- A.** \$5.00
B. \$6.00
C. \$7.00

7. $\$72.59 - \24.71

- A.** \$30.00
B. \$40.00
C. \$50.00

8. $9,742 - 6,381$

- A.** 2,000
B. 3,000
C. 4,000

9. $5,692 - 3,766$

- A.** 1,000
B. 2,000
C. 3,000

10. $42,874 - 16,422$

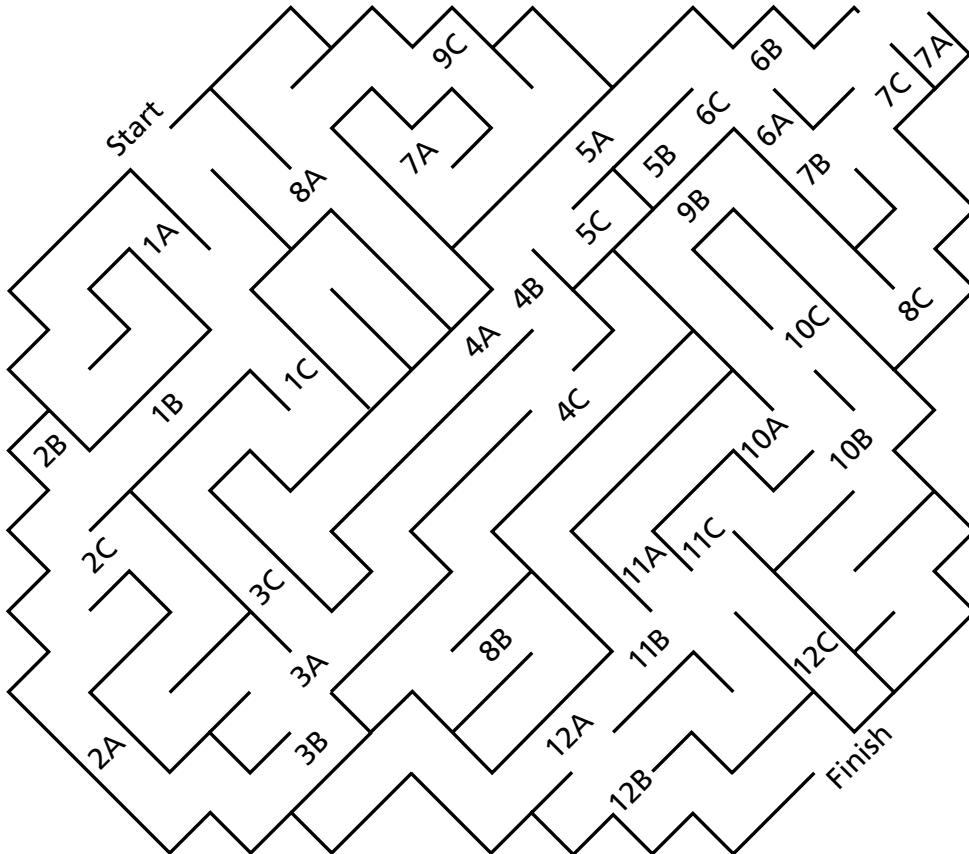
- A.** 20,000
B. 30,000
C. 40,000

11. $69,124 - 31,346$

- A.** 40,000
B. 30,000
C. 20,000

12. $892,617 - 85,600$

- A.** 700,000
B. 800,000
C. 900,000



Choose a Computation Method

**Mental Math**

$$\begin{array}{r} 39,000 \\ - 6,000 \\ \hline 33,000 \end{array}$$

Use mental math when you see several zeros in both numbers.

Paper and Pencil

$$\begin{array}{r} 2,753 \\ + 3,129 \\ \hline 5,882 \end{array}$$

Use paper and pencil when you need to regroup just once or twice.

Calculator

$$\begin{array}{r} 46,852 \\ - 17,995 \\ \hline 28,857 \end{array}$$

Use a calculator when you need to do a lot of regrouping.

Add or subtract. Tell which method you used. Write *mental math*, *paper and pencil*, or *calculator*.

1. $\begin{array}{r} 300 \\ + 500 \\ \hline \end{array}$

2. $\begin{array}{r} 651 \\ - 327 \\ \hline \end{array}$

3. $\begin{array}{r} 8,755 \\ - 2,499 \\ \hline \end{array}$

4. $\begin{array}{r} 4,200 \\ + 1,700 \\ \hline \end{array}$

5. $\begin{array}{r} \$68.79 \\ + 39.57 \\ \hline \end{array}$

6. $\begin{array}{r} \$274.59 \\ - 12.10 \\ \hline \end{array}$

7. $3,041 - 1,282 =$ _____

8. $\$1,500 + \$2,000 =$ _____

9. $\$485.50 - \$78.25 =$ _____

10. $4,070 + 135 =$ _____

Name _____

Choose a Computation Method



Add or subtract. Tell which method you used.

1. 375

$+ 624$

2. 894

$- 695$

3. $2,900$

$+ 2,100$

4. $3,799$

$- 1,799$

5. $\$74.66$

$+ 35.91$

6. $\$274.88$

$- 99.19$

7. $7,991 - 6,382 =$

8. $200 + 15 + 85 =$

9. $\$150 + \$230 =$

10. $388,261 - 68,937 =$

Problem Solving

Solve.

11. There were 25,899 people at the baseball game on Saturday. There were 1,997 more people at the game on Sunday than on Saturday. How many people were at the game on Sunday?

12. There were 18,362 people at the basketball game on Wednesday. There were 563 fewer people at the game on Friday than on Wednesday. How many people were at the game on Friday?

Name _____

Choose a Computation Method



The table shows data about several different vacation spots.
Use the data to solve the problems below.

Vacation Spot	Visitors in May	Visitors in June	Visitors in July
Sun Island	24,988	29,561	35,299
Key Mountain	7,835	8,400	8,000
Paradise Park	10,007	10,907	12,800
Water World	16,971	18,971	20,000

Solve. Use any strategy.

1. How many more people visited Sun Island than Water World in May?

2. How many more people visited Paradise Park in June than in May?

3. How many people visited Water World in June and July?

4. How many fewer people visited Key Mountain than Paradise Park in June?

5. How many fewer people visited Water World in May than in June?

6. How many people visited Sun Island in May and June?

Use the data to write your own questions. Then solve. Use any method.

7. _____

8. _____

Name _____

Problem Solving: Decision Making

**Decision
Making**
WORKSHEET

Record your data. Answers may vary.

Store	Cost of 20 Pounds of Clay	Cost of Gas for Trip to Store
Art Supply		
Art World		
The Art Place		
Discount Art Supplies		

Your Decision

What is your recommendation for Stacia? Explain.

**UNIT
3****Time, Data, and Graphs****CHAPTER 5 • SUPPORT MATERIALS**

Lesson	Title	Masters	Use with pages
5-1	Tell Time	R5-1, P5-1, E5-1	98–100
5-2	Elapsed Time	R5-2, P5-2, E5-2	102–103
5-3	Calendar	R5-3, P5-3, E5-3	104–105
5-4	Range, Median, and Mode	R5-4, P5-4, E5-4	106–107
5-5	Collect and Organize Data	R5-5, P5-5, E5-5	108–110
5-6	Problem Solving: Skill Identify Extra and Missing Information	R5-6, P5-6, E5-6	112–113

CHAPTER 6 • SUPPORT MATERIALS

Lesson	Title	Masters	Use with pages
6-1	Pictographs	R6-1, P6-1, E6-1	118–119
6-2	Bar Graphs	R6-2, P6-2, E6-2	120–122
6-3	Problem Solving: Strategy Use Logical Reasoning	R6-3, R6-3, P6-3	124–125
6-4	Coordinate Graphing	R6-4, P6-4, E6-4	126–127
6-5	Explore Making Line Graphs	R6-5, P6-5, E6-5	128–129
6-6	Interpreting Line Graphs	R6-6, P6-6, E6-6	130–131
6-7	Choose the Best Graph	R6-7, P6-7, E6-7	132–133
	Problem Solving: Reading Math and Science	Worksheets	136–137

R—Reteach

P—Practice

E—Enrich

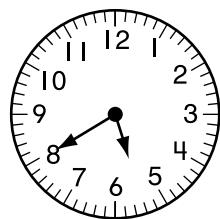
Name _____

Tell Time



You can read time in different ways.

1. five-forty



2. forty minutes
after five

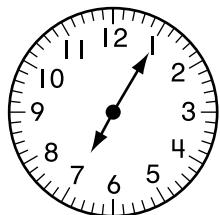


3. twenty minutes before
(or to) six

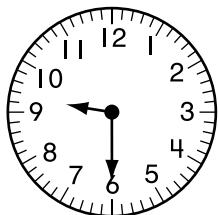
Write: 5:40

Write the time in as many different ways as you can.

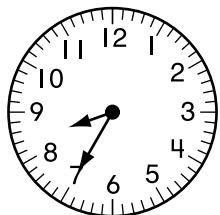
1.



2.



3.



4.



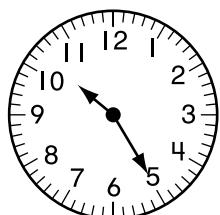
5.



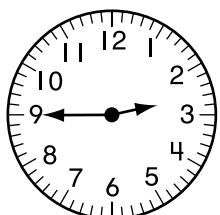
6.



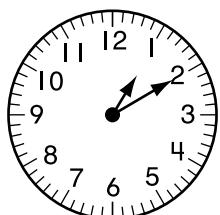
7.



8.



9.



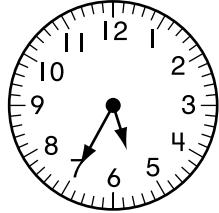
Name _____

Tell Time

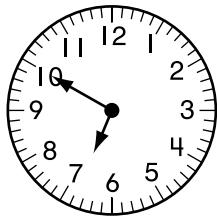
P 5-1
PRACTICE

Write the time in two ways.

1.



2.



3.



Tell how much time.

4. 120 minutes = hours

5. seconds = 3 minutes

6. $\frac{1}{2}$ hour = minutes

7. 15 minutes = hour

8. minutes = $2\frac{1}{2}$ hours

9. minutes = $1\frac{1}{4}$ hours

Algebra Describe and complete the conversion patterns.

10.

Minutes	60	120	180	240	300
Hours	1	2	<input type="text"/>	<input type="text"/>	<input type="text"/>

11.

Minutes	1	2	3	4	5
Seconds	60	120	<input type="text"/>	<input type="text"/>	<input type="text"/>

12. Debbie spends 45 minutes at the dentist. What part of an hour does she spend at the dentist?

13. Ben spends $5\frac{1}{2}$ hours in school. Does he spend more or less than 300 minutes in school? Explain.

Name _____

Tell Time

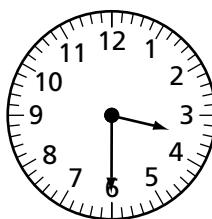
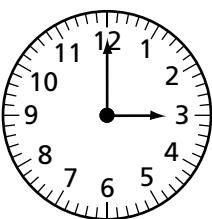
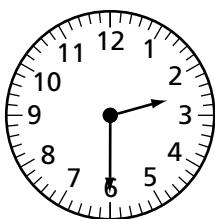


The times shown on the clocks are in a pattern.

What time would the next clock show?

What is the pattern?

1.



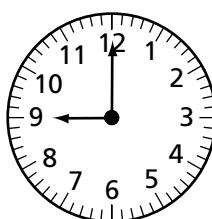
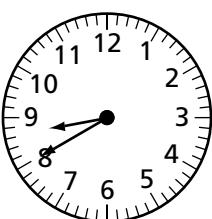
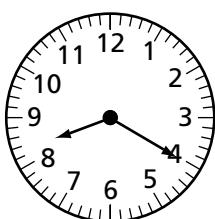
Pattern: Increase by _____ hour. Next clock: _____

2.



Pattern: Decrease by _____ hour. Next clock: _____

3.



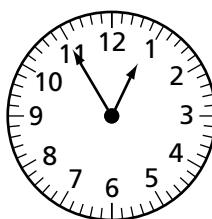
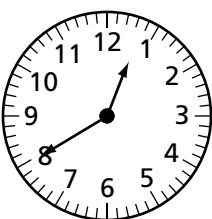
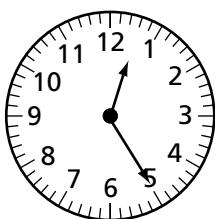
Pattern: Increase by _____ hour. Next clock: _____

4.



Pattern: Decrease by _____ hour. Next clock: _____

5.

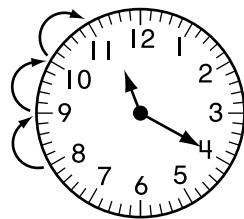
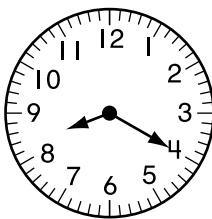


Pattern: Increase by _____ hour. Next clock: _____

Elapsed Time

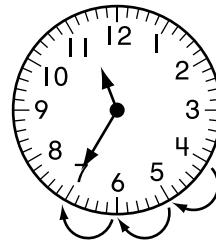
Elapsed time is the amount of time that passes from the start to the end of an action. Follow these steps to find how much time has elapsed from 8:20 A.M. to 11:35 A.M.

First count the number of hours.



From 8:20 to 11:20 is 3 hours.

Then count the number of minutes.

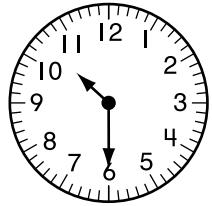


From 11:20 to 11:35 is 15 minutes.

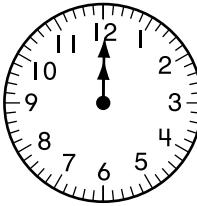
So, 3 hours 15 minutes have passed.

How much time has passed?

1. Begin



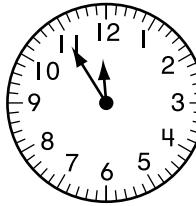
End



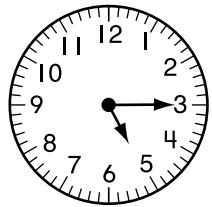
2. Begin



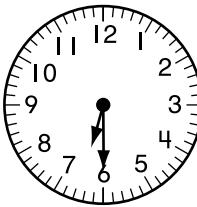
End



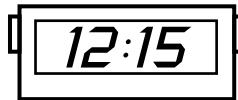
3. Begin



End



4. Begin



End



5. Begin



End



6. Begin



End



Name _____

Elapsed Time

How much time has passed?

1. Begin: 12:00 P.M.

End: 2:20 P.M.

2. Begin: 1:15 A.M.

End: 1:50 A.M.

3. Begin: 11:05 P.M.

End: 1:00 A.M.

4. Begin: 2:25 A.M.

End: 5:40 A.M.

5. Begin: 3:40 P.M.

End: 12:00 A.M.

6. Begin: 5:45 A.M.

End: 12:15 P.M.

7. Begin: 8:10 P.M.

End: 1:55 A.M.

8. Begin: 9:30 A.M.

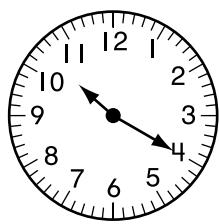
End: 2:10 P.M.

9. Begin: 10:35 P.M.

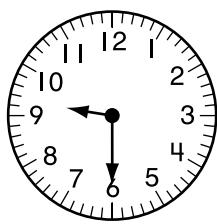
End: 8:00 A.M.

What time will it be in 1 hour 20 minutes?

10.



11.



12.



Write the missing numbers.

13. 5:16 A.M. is _____ minutes after 5:00 A.M.

14. 2:45 P.M. is _____ minutes before 3:00 P.M.

15. 7:22 P.M. is _____ hours _____ minutes after 7:00 P.M.

16. 9:58 A.M. is _____ minutes before _____ A.M.

Problem Solving

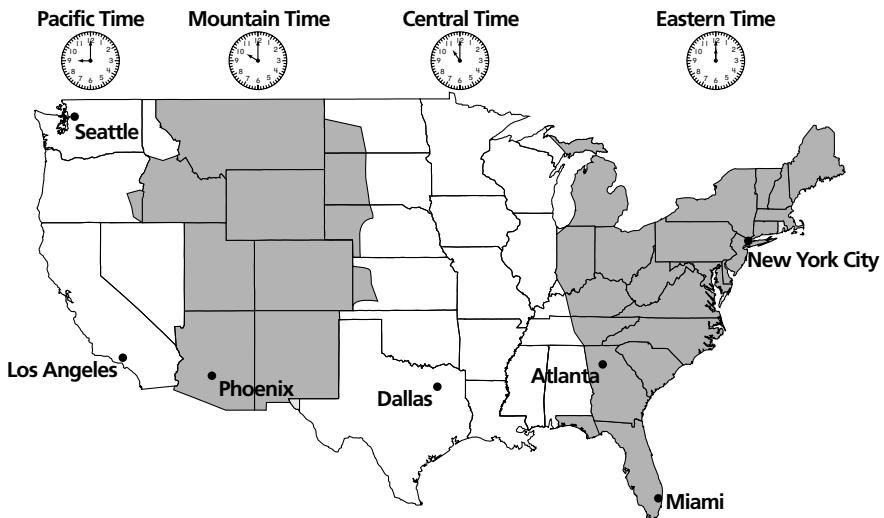
Solve.

17. Lisa leaves her house at 8:45 A.M. She gets to karate class 35 minutes later. At what time does Lisa get to karate class?

18. The Big Beach bus leaves the city at 6:40 P.M. The bus arrives at the beach at 8:25 P.M. How long is the trip to the beach?

Elapsed Time

Use the time zone map to answer each question. Show your answer in local time. Remember to include the time zone; for example, 7:00 A.M. Central Time.



- It takes a plane about 5 hours to fly from Los Angeles to New York City. If a plane leaves Los Angeles at 8:00 A.M., at what time will it arrive in New York City? _____
- It takes 4 hours 30 minutes for a plane to fly from Atlanta to Phoenix. If a plane departs from Atlanta at 10:00 A.M., at what time will it arrive in Phoenix? _____
- A plane flew from Seattle to Atlanta. It arrived in Atlanta at 1:05 A.M. The flight lasted for 5 hours 40 minutes. At what time did it depart from Seattle? _____
- The flight between Dallas and Miami takes 2 hours 41 minutes. Complete the flight schedule below.

Depart Dallas	Arrive Miami	Depart Miami	Arrive Dallas
7:00 A.M. CT		2:30 P.M. ET	
9:10 A.M. CT		4:45 P.M. ET	
11:20 A.M. CT		6:57 P.M. ET	

- How did you adjust for the time zones in your answers?

Calendar

You can use a calendar to find elapsed time.

Suppose today is May 8. How many days is it until Mother's Day?

Count on from May 8 to May 14. It is 6 days from May 8 to May 14.

May 2000						
S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
Mother's Day						
21	22	23	24	25	26	27
28	29	30	31			

June 2000						
S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
Father's Day			Flag Day			
18	19	20	21	22	23	24
25	26	27	28	29	30	

Use the calendars above for problems 1–8.

1. How long is it from Flag Day to Father's Day?
-

3. Sports camp runs from June 19 through June 30. How long is camp?
-

5. On what day of the week is Flag Day?
-

7. Dave will return from vacation on the Monday after Flag Day. On what date will he return?
-

2. How long is it from Mother's Day to the following Sunday?
-

4. How many weeks are there from May 1 to June 5?
-

6. Memorial Day is celebrated on the last Monday in May. What date is that?
-

8. The last day of school is June 7. Tom's birthday is 5 days before that. When is Tom's birthday?
-

Calendar

Use the calendars for July and August for problems 1–8.

July 2000						
S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
		Independence Day				
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

August 2000						
S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

1. What is the date of the fourth Thursday in July?

2. On what day of the week is Independence Day?

3. Cindy will return from vacation on the Monday after Nick arrives. On what date will Cindy return?

4. If soccer camp runs from July 7 through the following Saturday, how long is soccer camp?

5. Justin is moving to a new town on August 1. The movers are coming 4 days before that. On what date will the movers arrive?

6. Jason has a violin lesson every Wednesday. How many lessons will he have in July and August?

7. Nick will leave on August 30. For how many weeks will he visit?

8. Pat saw the dentist on July 25. He has another appointment 10 days later. On what date is Pat's appointment?

Calendar

Use the calendar to solve the problems.

January	February	March	April	May	June
S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
July	August	September	October	November	December
S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

1. Jamie will start basketball practice on the first Monday in September. She plans to buy sneakers at least two weeks before practice begins. On what date will basketball practice begin? What is the latest date on which she can buy her sneakers?
-

3. George's team has its first game on May 15. They plan to spend four Saturdays practicing. Then they will spend a week practicing every day after school. What is the latest date on which they should start practicing?
-

2. John plans to go on a skiing trip the third Friday in December. He must buy his ticket 14 days in advance of the flight. He wants to make the plane reservations 4 weeks before buying the ticket. What is the latest date on which he should make his plane reservations?
-

4. Holly wants to run her best race the second Saturday in June. To train, she wants to do speed workouts for 5 weeks. Before she begins speed training, she must do practice runs for 4 weeks. What is the latest date on which she should begin training?
-

Range, Median, and Mode



You can analyze data using the range, median, and mode.
Use the table to help you find the range, median, and mode.

Range: the difference between the greatest and least numbers

$$\text{Range: } 10 - 1 = 9$$

Median: the middle number when the data is arranged in order from least to greatest

1, 3, 5, 5, 10



The median is 5.

Mode: the number that occurs most often

There are two 5s, so 5 is the mode.

Votes for Class President	
Student	Number of Votes
John	5
Carlos	10
Mike	3
Annie	1
Shavaughn	5

Order the data from least to greatest. Then find the range, median, and mode.

1. Data: 6, 4, 3, 3, 0, 5, 8

List in order from least to greatest: _____, _____, _____, _____, _____, _____, _____

$$\text{Range: } \underline{\quad} - 0 = \underline{\quad}$$

Median: _____

Mode: _____

2. Data: 83, 96, 72, 91, 83

List in order from least to greatest: _____, _____, _____, _____, _____

$$\text{Range: } 96 - \underline{\quad} = \underline{\quad}$$

Median: _____

Mode: _____

3. Data: 56, 88, 100, 34, 96, 56, 92

List in order from least to greatest: _____, _____, _____, _____, _____, _____, _____

Range: _____

Median: _____

Mode: _____

Range, Median and Mode

The fourth-grade class at Blue Hill School collects and recycles aluminum cans. The table shows how many cans the students collected in March. Use data from the table for problems 1–3.

- 1.** Find the range, median, and mode from the table.

Range: _____

Median: _____

Mode: _____

- 2.** What does the mode tell you about this data?
- _____
- _____

- 3.** What does the median tell you about this data?
- _____
- _____
- _____

Aluminum Cans Collected in March	
Student	Number of Cans
Eddie	24
Maria	32
Emilio	29
Jennifer	26
Mai Ling	28
Frank	29
Tanesha	27

Complete the table.

Data	Order Data from Least to Greatest	Range	Median	Mode
4. 6, 8, 8, 9, 5, 4, 8, 7, 5				
5. 30, 35, 29, 42, 35, 35, 40				
6. 30, 19, 21, 17, 25, 23, 25				
7. 20, 80, 40, 50, 90, 60, 50				
8. 78, 85, 100, 100, 95, 92, 88				
9. \$9, \$13, \$23, \$15, \$13				

Range, Median, and Mode

Ms. Lee's math class is divided into three groups. Each group found the range, median, and mode of the group's scores.

Use the data for each group to find the missing scores.

1.

Group 1's Test Scores	
Range	18
Median	88
Mode	94

Students' Scores for Group 1			
Megan	80	Joe	90
Stephanie	92	Chris	76
Gregory	84	Alison	94
Brian	86	Nancy	

2.

Group 2's Test Scores	
Range	18
Median	91
Mode	94

Students' Scores for Group 2			
Jason		Ann	88
Steven	82	Karen	94
Melissa	94	Leroy	90
Serena	98	Carl	80

3.

Group 3's Test Scores	
Range	16
Median	92
Mode	92

Students' Scores for Group 3			
Sam		Jamal	92
Beth	92	Sally	96
Susan	88	Bill	82
Mario	86	Rita	92

- 4.** Explain how you found each missing test score.

Collect and Organize Data

Marcia counted the number of letters in each word in a story. The data is shown below.

Number of Letters in Words in a Story												
3	3	5	6	4	2	1	5	6	3	4	7	
3	2	3	5	2	8	4	5	3	3	5	2	
5	6	3	5	1	4							

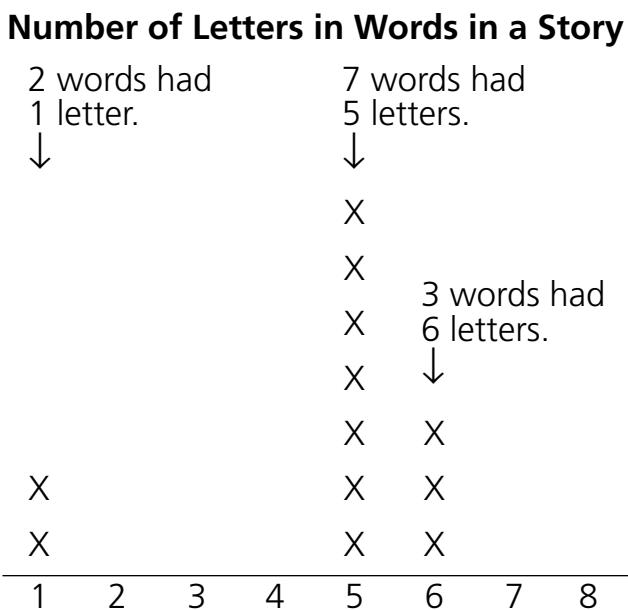
You can **organize** the data in a tally table.

To **compare** the data, you can make a line plot.

Example: For the first number, 3, make a tally mark in the table. Cross out the 3 in the data above. Then record and cross out the remaining 3s. In the line plot, use an X to stand for each word in the story.

Complete the tally table and the line plot.

Number of Letters in Words in a Story		
Number of Letters in Words	Tally	Total Number of Words
1		2
2		
3		8
4		
5		
6		
7		
8		



Use the line plot. How many words had:

1. 3 letters? _____
2. 2 letters? _____
3. 8 letters? _____
4. more than 3 letters? _____
5. less than 3 letters? _____
6. How many letters did the greatest number of words have? _____

Collect and Organize Data

1. Complete the tally table and line plot for the following data.

Number of Miles Run Each Day by the Members of the Fleet-Footed Club

3	2	5	4	6	3	1	5	4	3	2	6
4	3	5	3	2	2	1	5	4	3	6	3
2	5	3	1	4	2	5	6	2	3	2	

Number of Miles Run Each Day by the Members of the Fleet-Footed Club		
Number of Miles	Tally	Total
1		
2		
3		
4		
5		
6		

Number of Miles Run Each Day by Members of The Fleet-Footed Club

1 2 3 4 5 6

Use the line plot to answer the questions.

2. How many miles did the greatest number of students run? _____
3. How many members ran 6 miles a day? _____
4. How many members ran 4 miles or more a day? _____
5. How many more members ran 4 miles a day than ran 1 mile a day? _____
6. How many members are in the club? _____
7. Use the data below to make a stem-and-leaf plot on a separate sheet of paper.

Ages of Fleet-Footed Club Members

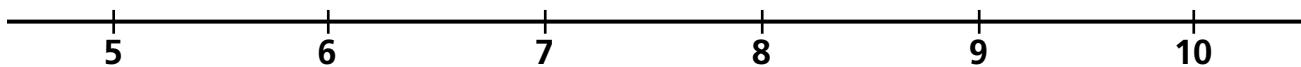
15	17	19	28	31	16	18	22	32	20
20	13	18	25	23	30	27	20	14	21

8. What statement can you make about the data in your stem-and-leaf plot?

Collect and Organize Data

Use the information below to complete the line plot.

Number of Books Read in September by Students in Fourth Grade



- There are 4 students who read 5 books a month and 3 times as many who read 7 books a month.
- The number of students who read 6 books a month is 7 less than the number of students who read 7 books a month.
- The number of students who read 10 books a month is half the number who read 7 books a month.

- The number of students who read 8 books a month is 2 less than the number of students who read 6 and 9 books a month combined.
- The number of students who read 9 books a month is twice as many as the number of the students who read 6 books a month.

Use the line plot to answer the questions.

1. How many students were surveyed? _____

2. How many books were read by the greatest number of students each month?
About how many was that a week? _____

3. How many books were read by the least number of students? _____

Problem Solving: Skill

Identify Extra and Missing Information

A problem is **missing information** when you cannot solve it unless you have more information. A problem has **extra information** when it gives more information than needed to solve it.

Missing Information

Problem Jack started his homework at 4:15 P.M. and finished at 5:30 P.M. Jenny started her homework at 4:00 P.M. Who spent more time doing their homework, Jack or Jenny?

You cannot solve the problem unless you know when Jenny finished her homework.

Extra Information

Problem Sue started raking leaves at 2:00 P.M. and finished at 3:10 P.M. She then started practicing her violin and finished at 3:35 P.M. How long did Sue take to rake the leaves?

To solve the problem, you do not need to know how long it took Sue to practice.

Choose the correct answer.

Flight 81 leaves Salt Lake City at 2:55 P.M. and arrives in Phoenix at 4:30 P.M. Flight 62 from Salt Lake City, which is sold out, arrives in Phoenix at 3:45 P.M. Which flight is faster?

1. Which of the following statements is false?
 - A Flight 81 takes less than 2 hours.
 - B Flight 62 arrives in Phoenix after Flight 81 does.
 - C Flight 62 is sold out.
 - D Flight 81 arrives in Phoenix before 5:00 P.M.
2. What information is missing?
 - F the time that Flight 81 leaves Salt Lake City
 - G the time that Flight 81 arrives in Phoenix
 - H the time that Flight 62 leaves Salt Lake City
 - I the time that Flight 62 arrives in Salt Lake City

An express train leaves Grand Terminal at 5:05 P.M. The train arrives at the first stop at 5:21 P.M., the second stop at 5:46 P.M., and the last stop at 6:04 P.M. How long is the train ride?

3. What information is not needed?
 - A the time the train leaves Grand Terminal
 - B the time the train arrives at the second stop
 - C the time the train arrives at the last stop
 - D none of the above
4. How long is the train ride?
 - F 16 minutes
 - G 41 minutes
 - H 59 minutes
 - I 61 minutes

Problem Solving: Skill

Identify Extra and Missing Information

Solve. Identify extra or missing information in each problem.

- 1.** A round-trip first-class ticket from St. Louis to San Diego costs \$1,600. A round-trip coach ticket costs \$359. The Howards buy 3 tickets. How much do they spend?
-
-
-

- 2.** A train leaves Rocky Mount, NC, at 1:16 P.M. The train arrives in Petersburg, VA, at 2:45 P.M. and in Richmond, VA, at 3:22 P.M. How long is the trip from Rocky Mount to Richmond?
-
-
-

- 3.** A bus leaves the terminal at 6:10 P.M. It makes its first stop at 6:30 P.M. and its second stop at 6:55 P.M. When will the bus arrive at its third stop?
-
-
-
-

- 4.** Samantha takes a train to New York City. She catches the train at 7:25 A.M. The train stops in Newark at 7:41 A.M. The train arrives in New York at 7:59 A.M. How much time does Samantha's ride take?
-
-
-
-

Mixed Strategy Review

Solve. Use any strategy.

- 5.** Denzel has 3 rows of shelves in his bedroom. Books, games, or CDs occupy each shelf. The middle shelf holds CDs. If the top shelf does not hold books, which shelf holds games?
-

Strategy: _____

- 6.** Arlene spent \$30 for a jacket. She now has \$5 left. How much money did Arlene have before she bought the jacket?
-

Strategy: _____

Problem Solving: Skill

Identify Extra and Missing Information

On Saturday afternoon, John, Eddie and Connie will go to the movies. They will choose a movie based on each person's likes and dislikes.

JOHN

- does not like movies about space
- does not want to leave home until at least 2:20 P.M.
- wants to read from 12:00 noon until 12:30 P.M. on Saturday afternoon

EDDIE

- does not like animal movies
- wants to spend 1 hour playing soccer on Saturday afternoon
- wants to leave the movie theater by 4:30 P.M.

CONNIE

- does not want to leave home until at least 12:00 noon.
- likes movies about families
- does not like movies that are longer than 2 hours

What information below can help the friends choose a movie? What information is missing? What information is extra?

Movie	Starring	Specials
<i>One Summer Day</i>	John Roberts	Popcorn, Giant Size, \$1.00
<i>Spider Girl</i>	Ted Williams	
<i>Galaxy Trek</i>	Juliet Nichols	
<i>My Pet Curly</i>	Curly, the dog	All you can drink, any flavor, \$1.00
<i>Monster Madness</i>	Tom Schmooze	
<i>Brothers and Sisters</i>	Ben and Jane	

How would you go about solving the problem?

Pictographs

Evan and Jenny surveyed students to find out whether their favorite color is red, blue, or yellow. This is the data they collected: 10 students said red, 11 said blue, and 6 said yellow.

Here is how to make a pictograph of the data.

Step 1: Write a title. List the categories.

Step 2: Choose a picture to show the data.
You can use 1 picture to represent 2 students. So half of a picture will represent 1 student. Use the picture to make a key.

Step 3: Use the key to draw pictures to show the data for each category.

Favorite Colors	
Red	
Blue	
Yellow	

Key: Each  stands for 2 students.
Each  stands for 1 student.

Use the data from the table at left to complete the pictograph.

Answer the questions to help you.

1. How many people chose oranges?

How many faces will you draw?

2. How many people chose apples?

How many faces will you draw?

Favorite Fruit		
Fruit	Tally	Total
Apples		9
Pears		5
Oranges		10
Plums		4

Favorite Fruit	
Apples	
Pears	
Oranges	
Plums	

Key: Each  stands for 2 people.

Each  stands for 1 person.

Pictographs

1. Complete the table. Then use the table to complete the pictograph.

Which Modern Invention Do You Like the Most?		
Invention	Tally	Total
Computer		
CD Player		
Car		
Television		

Which Modern Invention Do You Like the Most?	
Computer	
CD Player	
Car	
Television	

Key: Each  stands for ____ people.

Use the pictograph for problems 2–5.

2. Which item do people like the most? _____
3. How many more people like their computers than their televisions? _____
4. How many people were surveyed? _____
5. What key would you use if 80 people were surveyed? Explain.
- _____
- _____
- _____

Use the table to make a pictograph on a separate piece of paper. Then answer each question.

Favorite Lunches	
Lunch	Tally
Pizza	
Hamburgers	
Spaghetti	
Chicken	

7. How many more students like pizza more than spaghetti?

8. How many students took part in the survey?

Name _____

Pictographs



Use the information below to complete the pictograph.

Sarah's Stamp Collection	
Stamps of famous people	
Stamps of famous landmarks	
Stamps of famous events	
Stamps of birds	
Stamps from other countries	
Stamps of flowers	

Key: Each  stands for 2 stamps.

Stamps in Sarah's Collection

- Sarah has 9 stamps of famous people.
- Sarah has 5 fewer stamps from other countries than stamps of famous people.
- Sarah has twice as many stamps of famous events as stamps from other countries.
- Sarah has 3 more stamps of famous landmarks than stamps from other countries.
- Sarah has 1 more than twice as many bird stamps as stamps of famous events.
- If Sarah had 6 more flower stamps, she would have an amount equal to the number of bird stamps.

Would you use 1 stamp to stand for 8 stamps in the key? Why or why not?

Bar Graphs

You can use single bar graphs or double bar graphs to show data. A single bar graph presents one set of data. A double bar graph presents two sets of data.

When you create a double bar graph, you need to make a key to represent each set of data. Write a title and headings for the vertical and horizontal sides. Select a scale just as you would for a single bar graph. Remember to include different headings for both sets of data.

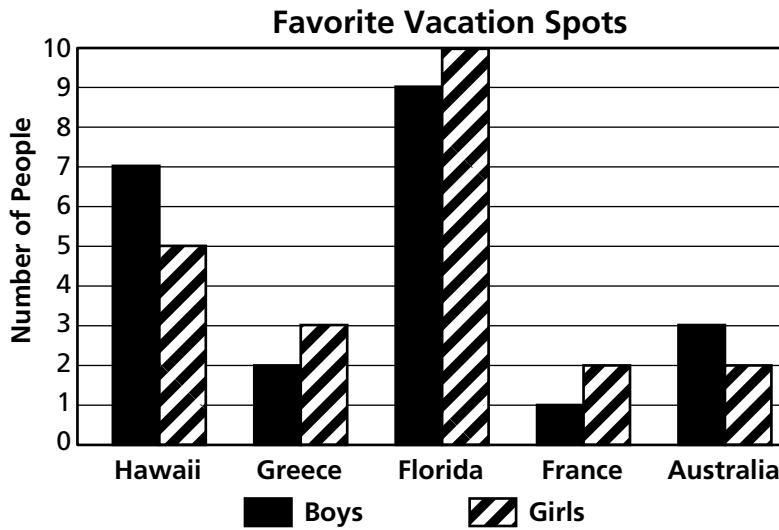
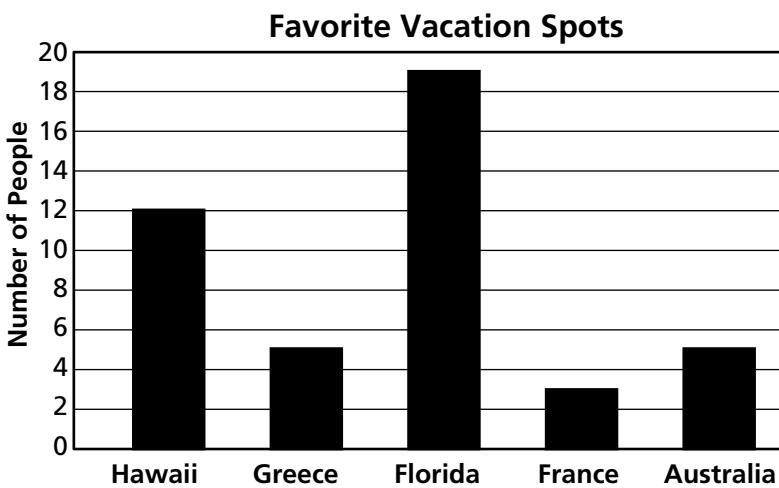
Use the graphs to answer the questions.

- 1.** What is the favorite vacation spot? How many people chose it?

- 2.** Did more people choose France, Hawaii, or Greece as their favorite vacation spot?

- 3.** How many more boys than girls chose Hawaii as their favorite vacation spot?

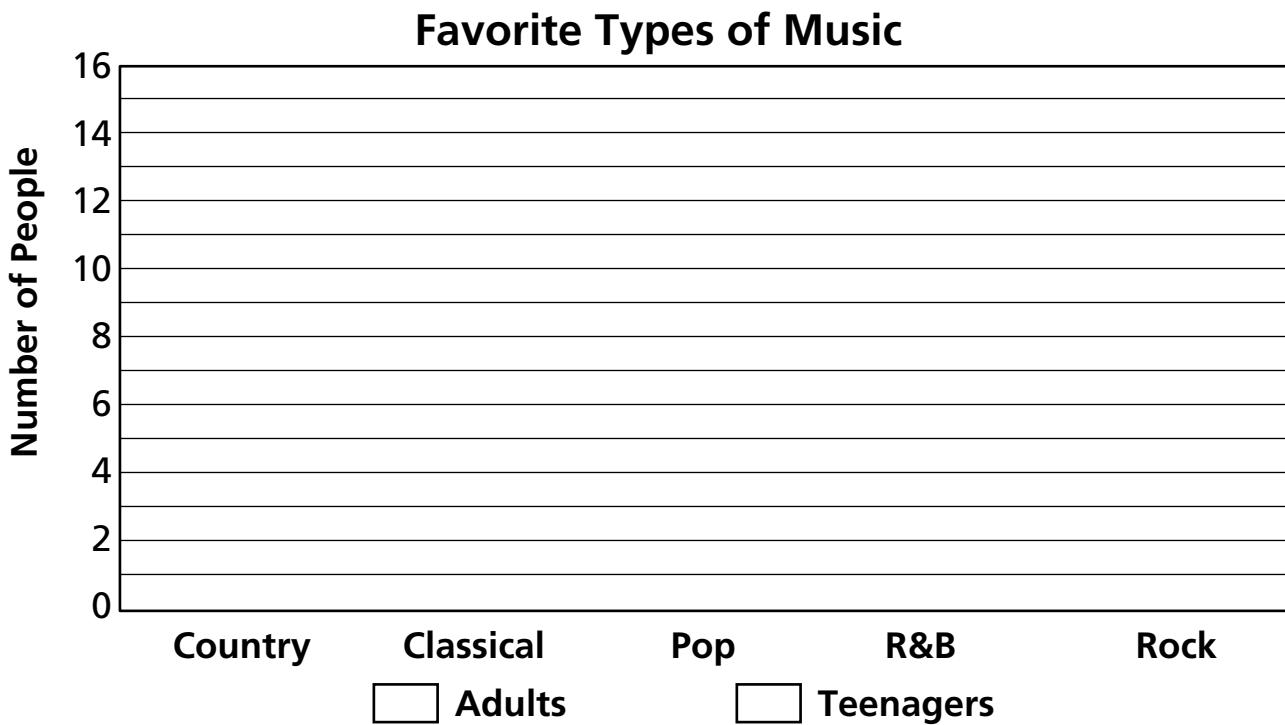
- 4.** Which vacation spot shows the greatest difference between boys and girls?



Bar Graphs

Complete the table below. Use the data to fill in the double bar graph and to answer problems 1–4.

Favorite Types of Music				
	Adults		Teenagers	
Type of Music	Tally Marks	Total	Tally Marks	Total
Country				
Classical				
Pop				
R&B				
Rock				



- How many teenagers chose rock music? _____
- Which type of music was chosen about the same number of times by adults and teenagers? _____
- Which type of music do adults like the most? _____
- Did more adults or teenagers choose pop as their favorite music?

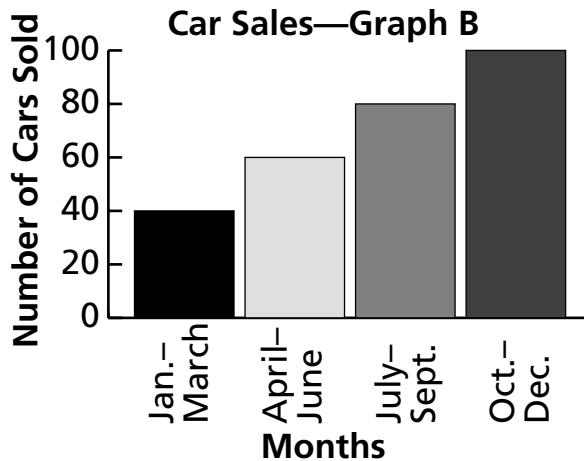
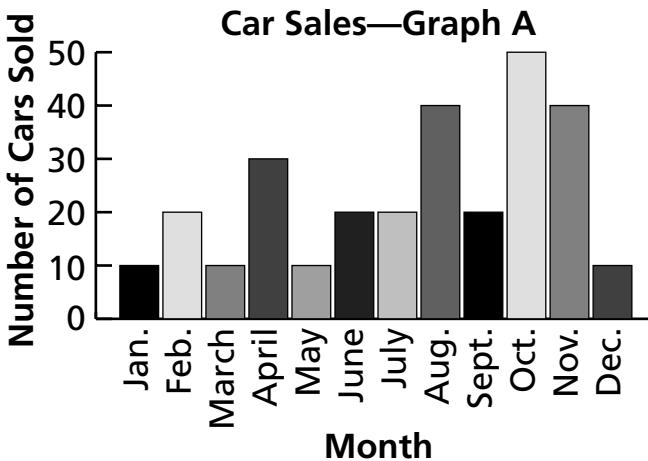
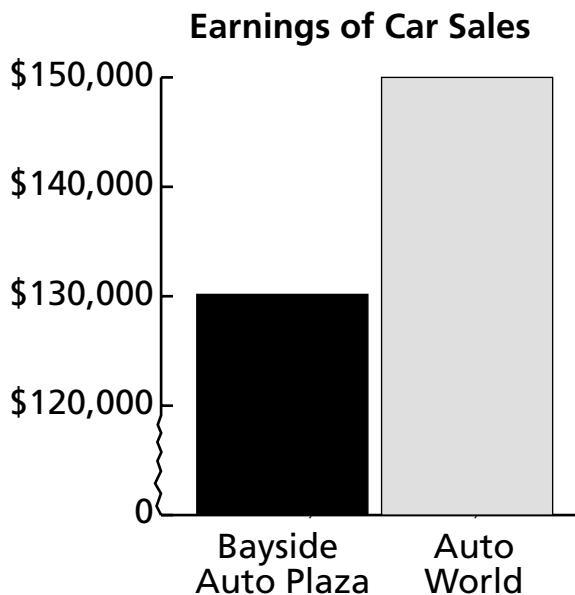
Bar Graphs

The bar graph shows the earnings of Bayside Auto Plaza and Auto World.

- The bar for Auto World is twice as high as the bar for Bayside Auto Plaza. Does this mean that Auto World earns twice as much as Bayside Auto Plaza?
-

- What is the actual difference in the earnings of the two stores?
-

- Is the graph misleading? Explain.
-
-
-



- Do both bar graphs show the same data? _____
 - Which graph do you think the salesperson showed her boss? Tell why.
-
-
-

Problem Solving: Strategy

Use Logical Reasoning

Page 125, Problem 7

In the 4th grade at Roosevelt School, 42 students ride the bus home, 74 students walk, and 17 students sometimes walk and sometimes ride the bus. Make a Venn diagram to show this information.

Step 1
Read ➔**Be sure you understand the problem.**

Read carefully.

What do you know?

- _____ students ride the bus.
- _____ students walk.
- _____ students sometimes walk and sometimes take the bus.

What do you need to do?

- You need to _____.

Step 2
Plan ➔**Make a plan.**

Choose a strategy.

You can use logical reasoning to solve the problem.

Since you know the number of students for each way of getting home, you can show the information in a Venn diagram.

- Use Logical Reasoning
- Draw a Picture
- Make a Graph
- Act It Out
- Make a Table or List
- Find a Pattern
- Guess and Check
- Write an Equation
- Work Backward
- Solve a Simpler Problem

Problem Solving: Strategy

Use Logical Reasoning

Step 3**Solve** →**Carry out your plan.**

- You know _____ students ride the bus.
- You know _____ students walk.
- You know _____ students sometimes walk and sometimes take the bus.

Draw a Venn diagram with two overlapping circles. Label each circle with one way students get home. Look at the number of students for each way of getting home and place the number in that part of the Venn diagram.

Step 4**Look Back** →**Is the solution reasonable?**

Reread the problem.

Does your Venn diagram make sense? Yes No

Do you like where you put the numbers? Yes No

Practice

Of all the 4th graders at Smithfield School, 27 students eat a sandwich for lunch, 38 eat soup, and 14 sometimes eat a sandwich and other times eat soup. Make a Venn diagram to show this information.

Problem Solving: Strategy

Use Logical Reasoning

1. Use the data in this chart to draw a Venn diagram.

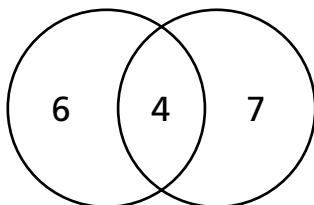
Students with brown hair	14
Students with blue eyes	10
Students with both	2

2. Use the data in this chart to draw a Venn diagram.

Animals with long tails	6
Animals with sharp teeth	7
Animals with both	5

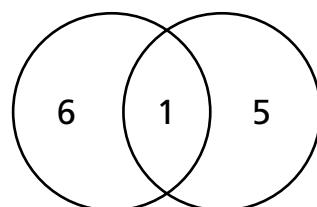
3. Draw conclusions. Read this Venn diagram. How many students have both dogs and cats as pets? _____

Students Who Have Pet Dogs Students Who Have Pet Cats



4. Draw conclusions. Read this Venn diagram. How many of Jack's T-shirts are red but are not striped? _____

Jack's Red T-shirts Jack's Striped T-shirts



Mixed Strategy Review

Solve. Use any strategy.

5. Alexander earned \$5.00 on Saturday for raking leaves and \$7.00 on Sunday for mowing the lawn. How much money did Alexander earn in all?

Strategy: _____

6. Pizza Palace gives 2 soft drinks with the purchase of 1 pizza, 4 drinks with 2 pizzas, 6 drinks with 3 pizzas, and so on. How many drinks would Pizza Palace give with 5 pizzas?

Strategy: _____

Coordinate Graphing

The grid shows the location of rides at an amusement park.

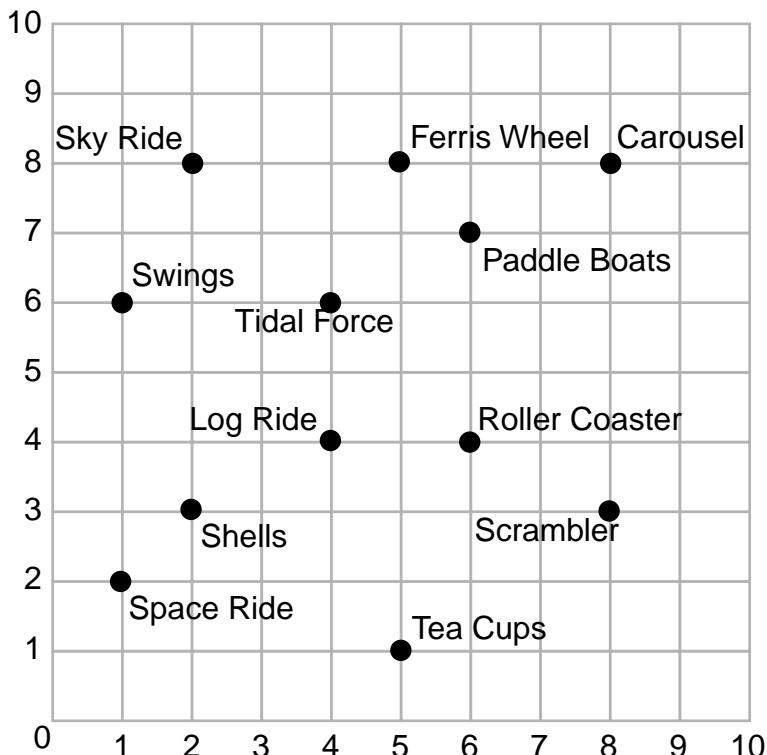
Where is the Space Ride located?
Start at 0. Go right 1, and then go up 2. You can write the location of the Space Ride as the **ordered pair** (1, 2).

In an ordered pair, the first number tells you how far to go to the right. The second number tells you how far to go up.

Try this. Go right 5, and then go up 1.

(5, 1) ← ordered pair

Which ride do you find?



Complete. Use the grid above.

1. Start at 0. Go right 8, and then go up 3.

The ordered pair is (8, ____).

What is here? _____

3. Start at 0. Go right 2, and then go up 8.

The ordered pair is _____.

What is here? _____

2. Start at 0. Go right 4, and then go up 4.

The ordered pair is (____, 4).

What is here? _____

4. Start at 0. Go right 6, and then go up 7.

The ordered pair is _____.

What is here? _____

Use the grid above to tell which is at each location.

5. (5, 8) _____

6. (2, 3) _____

7. (4, 6) _____

8. (1, 6) _____

9. (6, 4) _____

10. (8, 8) _____

Name _____

Coordinate Graphing

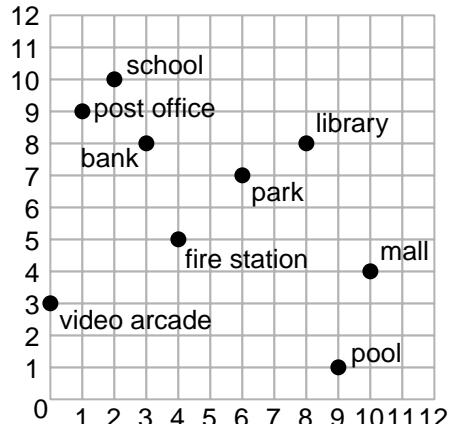
P 6-4
PRACTICE

Write the ordered pair for each of the following places on the grid.

1. mall _____
2. library _____
3. park _____
4. school _____
5. video arcade _____

Name the place at each location.

6. $(9, 1)$ _____
7. $(1, 9)$ _____
8. $(4, 5)$ _____
9. $(3, 8)$ _____

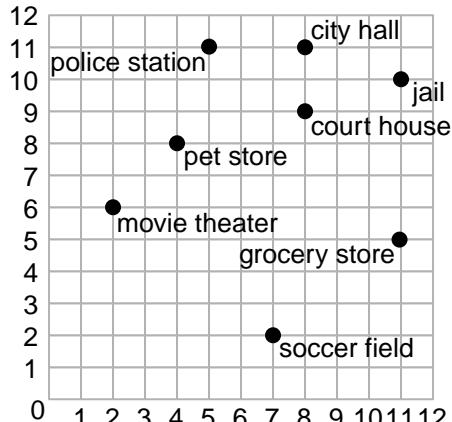


Write the ordered pair for each place on the grid.

10. jail _____
11. movie theater _____
12. police station _____
13. grocery store _____

Name the place at each location.

14. $(7, 2)$ _____
15. $(8, 11)$ _____
16. $(8, 9)$ _____
17. $(4, 8)$ _____



Problem Solving

Solve.

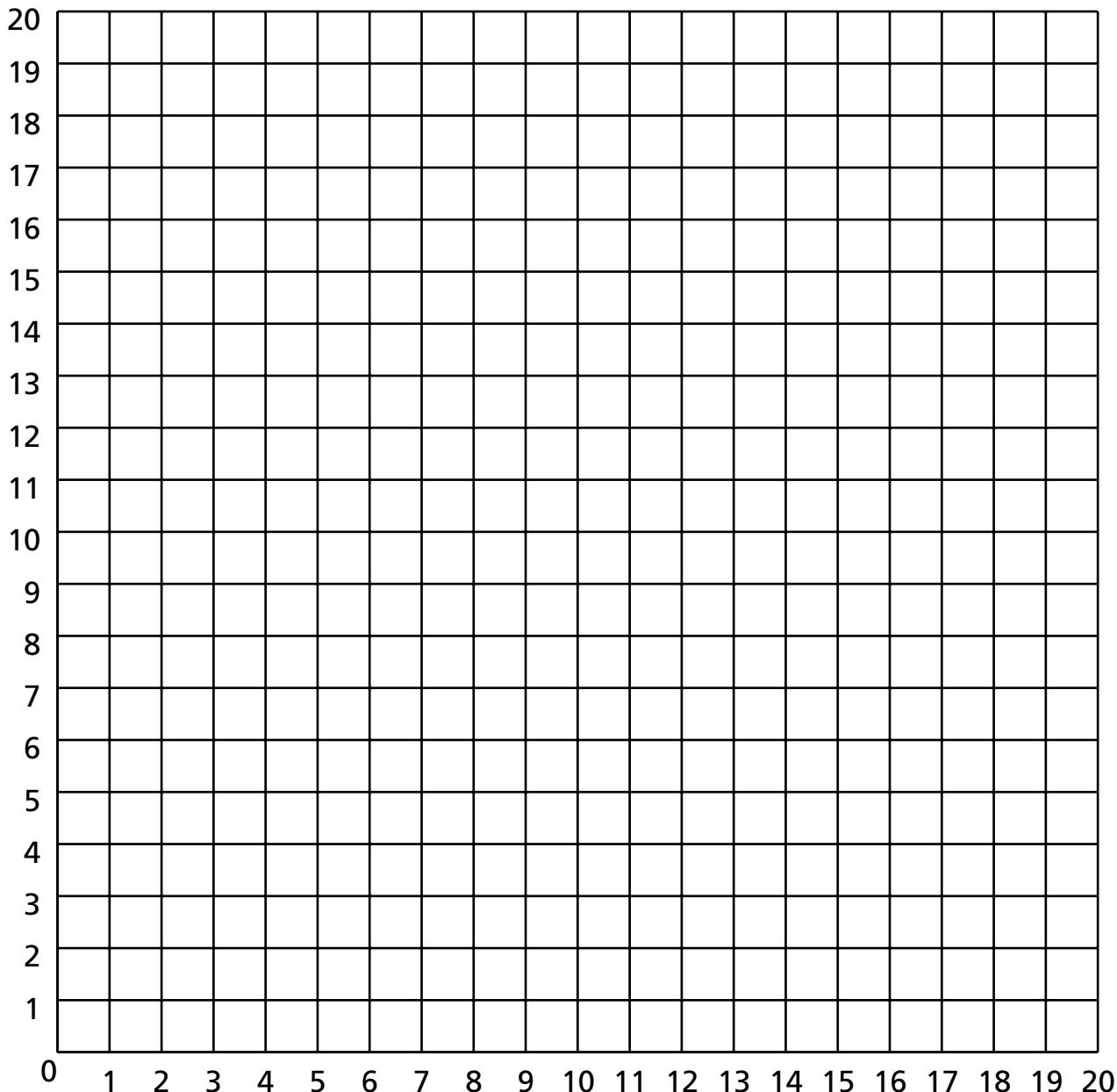
18. A drive-in diner is being built 3 blocks down from the pet store. Write the ordered pair for this location.

19. A parking garage is being built between the city hall and the court house. Write the ordered pair for the garage's location.

Coordinate Graphing

Locate each ordered pair on the grid below. Label it with the problem number. Then connect the dots in order.

- | | | | |
|---------------------|---------------------|---------------------|---------------------|
| 1. (17, 3) | 2. (11, 7) | 3. (10, 0) | 4. (9, 7) |
| 5. (3, 3) | 6. (7, 9) | 7. (0, 10) | 8. (7, 11) |
| 9. (3, 17) | 10. (9, 13) | 11. (10, 20) | 12. (11, 13) |
| 13. (17, 17) | 14. (13, 11) | 15. (20, 10) | 16. (13, 9) |



Explore Making Line Graphs

A line graph shows change over a period of time.

The table below shows the number of ice-cream cones sold over six months at the Ice-Cream Cottage. You can also show this information in a line graph.

Ice-Cream Cone Sales	
Month	Number
July	800
August	900
September	700
October	650
November	350
December	100

Show the data from the table in the line graph.

- In October, 650 cones were sold.

Place a point above October and across from 650 on the graph's scale (650 is half way between 600 and 700).

- Place a point for each of the other month's number of sales.
- Connect the points.



Use the line graph to answer the questions.

- 1.** In which month was the greatest number of ice-cream cones sold?

- 3.** How many more ice-cream cones were sold in July than in December?

- 2.** How many ice-cream cones were sold in July?

- 4.** Between which two months did sales decrease the most?

Explore Making Line Graphs

Use the table to complete the line graph.

Toy Sales at Toy City	
Month	Amount
July	\$1,700
August	\$1,000
September	\$1,700
October	\$2,500
November	\$2,700
December	\$3,200



Use the line graph to answer the questions.

1. In which month was the greatest dollar amount of toys sold at Toy City?
-

2. In which two months were sales the same?
-

3. During which month did sales decrease?
-

4. Between which months did sales increase the most?
-

5. What is the difference in sales between the highest and lowest points on the graph?
-

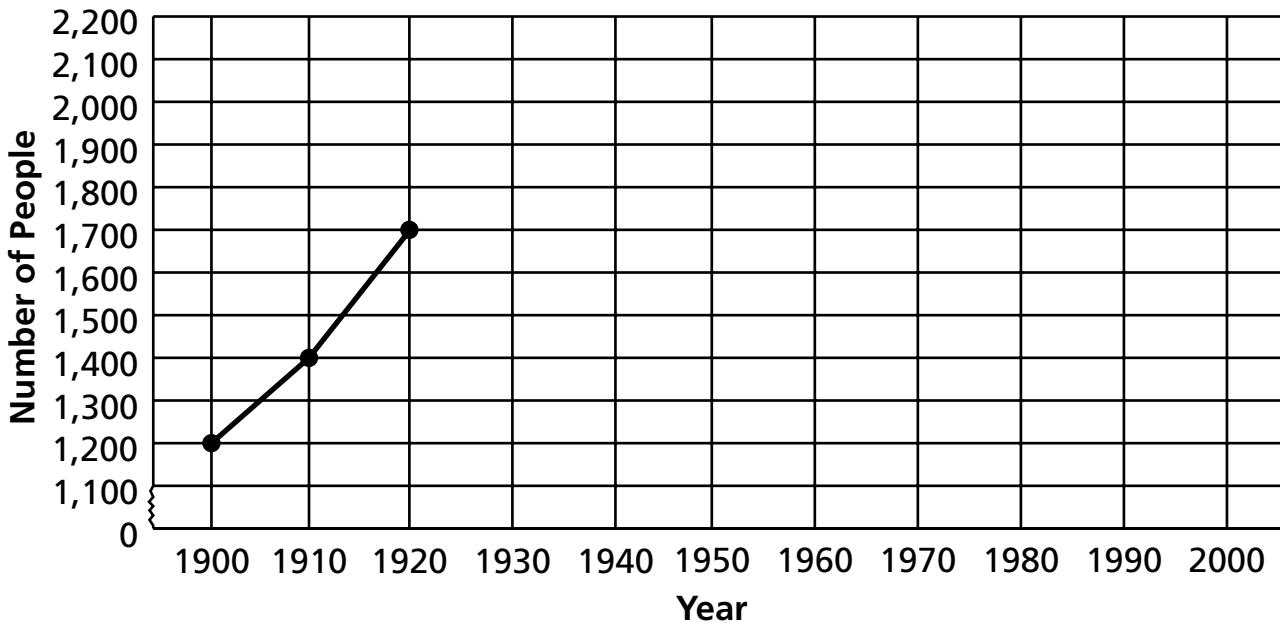
6. In how many months did Toy City sell more than \$1,600 worth of toys?
-

Explore Making Line Graphs

Use the information below to complete the line graph.

- Foxwood had 200 more people in 1930 than it did in 1920.
- The population was the same in 1940 as it was in 1930.
- Between 1940 and 1950, the number of people increased by 200.
- There were 1,600 people living in Foxwood in 1960.
- The number of people decreased by 200 between 1960 and 1970.
- The number of people decreased by 100 between 1970 and 1980.
- The population in 1990 was 200 more than in 1980.

Population Changes in Foxwood



Write the years during which each event most likely happened.

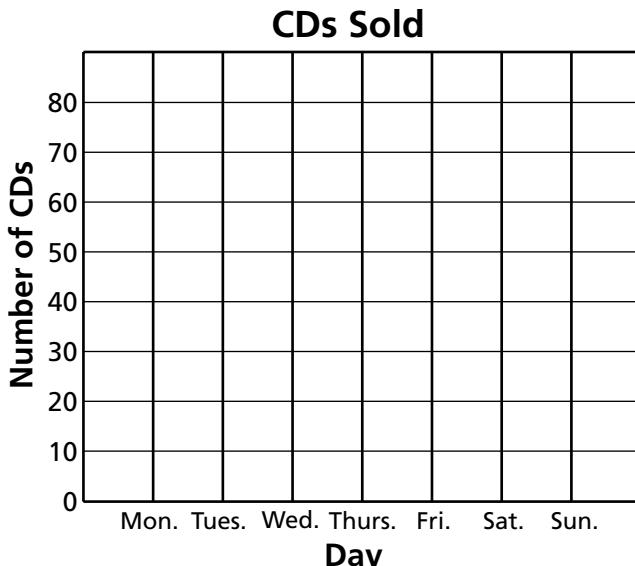
Event	Years
For the first time in 30 years, the population began growing again.	between _____ and _____
A computer factory opened. People moved to Foxwood for jobs.	between _____ and _____
The town's toy factory closed. Many people lost their jobs.	between _____ and _____

Interpreting Line Graphs

A line graph can be used to explain information.

The table below shows the number of CDs sold last week. You can make a line graph to show the number of CDs sold each day.

CD Sales	
Day	Number
Monday	15
Tuesday	10
Wednesday	30
Thursday	50
Friday	45
Saturday	70
Sunday	60



Show the data from the table in the line graph.

- On Monday, 15 CDs were sold. Place a point above Monday and across from 15.
 - Place a point for the sales for each of the other days.
 - Connect the points with straight lines.
-

Use the line graph to answer the questions.

1. On which day were the most CDs sold?
-

2. What is the range between the highest number sold and the lowest number sold?
- ____ - ____ = ____

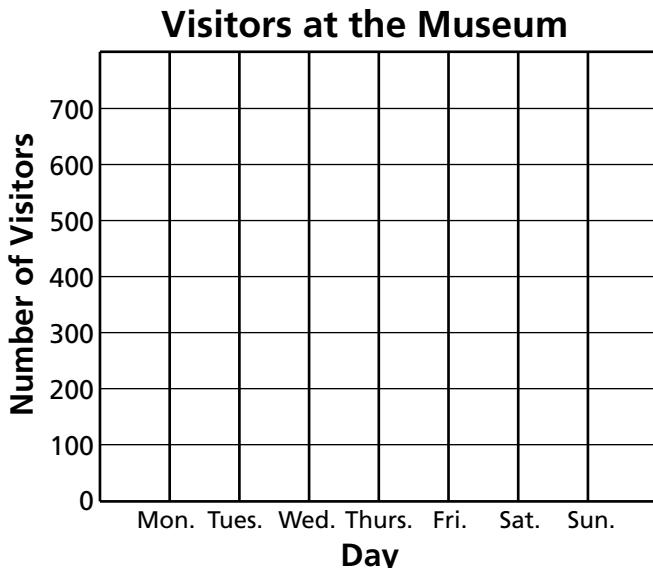
3. Did sales increase or decrease from Friday to Saturday?
-

4. Did sales increase or decrease from Thursday to Friday?
-

Interpreting Line Graphs

1. Use the data from the table to complete the line graph.

Museum Visitors	
Day	Number
Monday	150
Tuesday	200
Wednesday	100
Thursday	350
Friday	650
Saturday	700
Sunday	550



Problem Solving

Solve. Use the line graph to answer the questions.

2. What was the most popular day to visit the museum?
-

3. What is the range of the number of visitors?
-

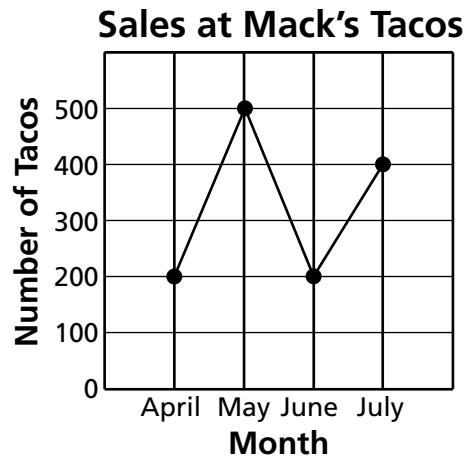
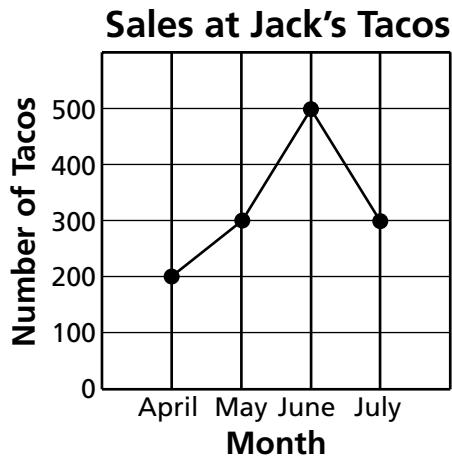
4. Did the number of visitors increase or decrease from Thursday to Friday?
-

5. Did the number of visitors increase or decrease from Tuesday to Wednesday?
-

6. Write a problem using data from the graph. Solve.
-
-
-

Interpreting Line Graphs

Jack and Mack own stores that sell tacos. They each made a line graph to show taco sales over a four-month period.



Use the line graphs. Write *true* or *false* for each statement.

1. The range of tacos sold at Jack's is greater than the range of tacos sold at Mack's.
-

2. Taco sales increased from April to May at both stores.
-

3. Taco sales decreased from June to July at both stores.
-

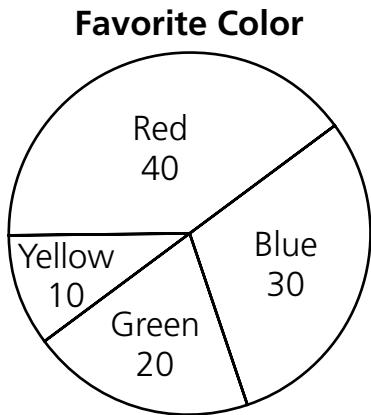
4. The same number of tacos were sold at both stores over the four-month period.
-

5. Use the line graphs to write a true statement. Explain why your statement is true.
-
-

Choose the Best Graph

Different types of graphs are used to show different types of data.

Use a circle graph to compare numbers.



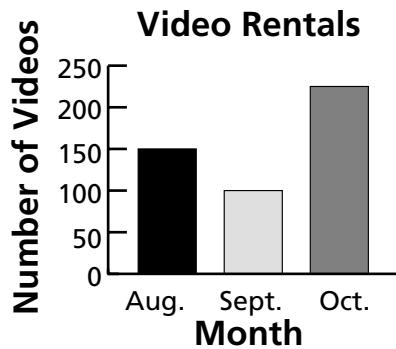
Use a pictograph to show multiples of numbers.

Population Comparison

City	Population
Ludwick	4,000
Marston	3,000
Marketville	5,000

Key: Each stands for 1,000 people.

Use a bar graph to compare numbers.

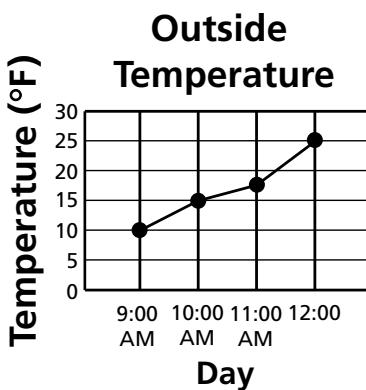


Use a stem-and-leaf plot to show information organized by place value.

Ages of Chess Club Members

Stem	Leaves
1	0 0 1 2
2	1 3
3	0 0 4

Use a line graph to show changes over time.



Make an appropriate graph for the data given.

1. Length of Objects

Object	Length
Desk	2 feet
Board	4 feet
Computer	1 foot
Bookcase	3 feet

2. Newspapers Sold

Day	Number
Wednesday	20
Thursday	15
Friday	25
Saturday	30

Choose the Best Graph

Make an appropriate graph for the data given.

1. Ms. Adams' Earnings

Month	Earnings
January	\$1,200
February	\$1,300
March	\$1,000
April	\$600
May	\$200

2. City Populations

City	Population
Danville	8,000
Essex	4,500
Oxford	7,000
Ashton	6,500
Barnard	3,000

3. Favorite Animals

Animal	Votes
Cat	10
Dog	5
Horse	3
Snake	2

4. Test Scores

Student	Score
Bill	81
Juan	93
Mia	80
Frannie	95

Problem Solving

Solve. Choose the best type of graph for the data. Explain your choice.

5. The number of students in each grade _____

6. The temperature readings over a five-hour period _____

7. The number of votes in an election _____

8. The ages of family members _____

Name _____

Choose the Best Graph



Conduct a survey of your classmates.

1. What is the topic of your survey? _____
2. What question will you ask? _____
3. Conduct your survey. Make a table to show the results.

4. Make an appropriate graph that shows the data in your survey results.

Name _____

Problem Solving: Applying Math and Science

Does Eating Improve Performance?

Math & Science
WORKSHEET

Wait at least 30 minutes after eating before exercising.

Record your data from your experiment in the chart.

Number of Sit-ups		
Student	Before Lunch	After Lunch

1. Did you do more sit-ups before or after lunch?

2. How many more sit-ups did you do? Show your work.

Work Space

Name _____

Problem Solving: Applying Math and Science

Does Eating Improve Performance?

Math & Science
WORKSHEET

- 3.** Find out how many more sit-ups you did before or after lunch.
Show the difference.

Work Space

- 4.** Can you conclude that the food from lunch gave you more energy?
Why or why not?

- 5.** In what way could you improve this experiment?

- 6.** Explain your conclusions in terms of energy conversion. For example, what gives you more energy to do sit-ups?

**UNIT
4****Multiplication and Division Facts****CHAPTER 7 • SUPPORT MATERIALS**

Lesson	Title	Masters	Use with pages
7-1	Explore the Meaning of Multiplication	R7-1, P7-1, E7-1	148–149
7-2	Properties of Multiplication	R7-2, P7-2, E7-2	150–151
7-3	Multiply by 2, 3, 4, and 6	R7-3, P7-3, E7-3	152–155
7-4	Multiply by 5, 7, 8, 9, 10	R7-4, P7-4, E7-4	156–158
7-5	Problem Solving: Skill Choose an Operation	R7-5, P7-5, E7-5	160–161
7-6	Explore Square Numbers	R7-5, P7-5, E7-5	162–163
7-7	Multiplication Table and Patterns	R7-5, P7-5, E7-5	164–165

CHAPTER 8 • SUPPORT MATERIALS

Lesson	Title	Masters	Use with pages
8-1	Explore the Meaning of Division	R8-1, P8-1, E8-1	170–171
8-2	Relate Multiplication and Division	R8-2, P8-2, E8-2	172–173
8-3	Divide by 2 through 12	R8-3, P8-3, E8-3	174–176
8-4	Missing Factors	R8-4, P8-4, E8-4	178–181
8-5	Problem Solving: Strategy Work Backward	R8-4, R8-4, P8-4	182–183
8-6	Expressions and Equations	R8-4, P8-4, E8-4	184–186
	Problem Solving: Decision Making	Worksheet	190–191

R—Reteach

P—Practice

E—Enrich

Explore the Meaning of Multiplication • Algebra



The numbers you multiply are the **factors**.

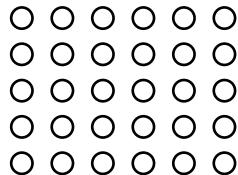
The answer is the **product**.

First factor:

number of rows 5

Second factor:

number in each row 6



Complete the table.

	Number of Rows	Number in Each Row	Number in All	Multiplication Sentence
1. ○ ○ ○ ○ ○ ○ ○				
2. ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○				
3. ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○				

Find each product. Use models to help.

$$\begin{array}{r} 4 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 5. \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 6. \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 7. \\ \times 0 \\ \hline \end{array}$$

$$\begin{array}{r} 8. \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 9. \\ \times 4 \\ \hline \end{array}$$

10. $2 \times 5 =$ _____ **11.** $5 \times 3 =$ _____ **12.** $9 \times 3 =$ _____ **13.** $5 \times 5 =$ _____

14. $4 \times 7 =$ _____ **15.** $8 \times 3 =$ _____ **16.** $5 \times 9 =$ _____ **17.** $6 \times 2 =$ _____

Name _____

Explore the Meaning of Multiplication • Algebra



Write a multiplication equation for each model.

1. ○ ○ ○ ○ ○

○ ○ ○ ○ ○

2. ○ ○ ○ ○ ○ ○ ○ ○ ○

3. ○ ○ ○ ○
○ ○ ○ ○
○ ○ ○ ○

4. ○ ○ ○ ○ ○ ○ ○ ○ ○
○ ○ ○ ○ ○ ○ ○ ○ ○

5. ○ ○ ○
○ ○ ○
○ ○ ○
○ ○ ○
○ ○ ○
○ ○ ○

6. ○ ○ ○ ○ ○ ○
○ ○ ○ ○ ○ ○
○ ○ ○ ○ ○ ○
○ ○ ○ ○ ○ ○
○ ○ ○ ○ ○ ○
○ ○ ○ ○ ○ ○
○ ○ ○ ○ ○ ○

Find each product. Use models to help.

7. $\begin{array}{r} 6 \\ \times 6 \\ \hline \end{array}$

8. $\begin{array}{r} 7 \\ \times 7 \\ \hline \end{array}$

9. $\begin{array}{r} 3 \\ \times 5 \\ \hline \end{array}$

10. $\begin{array}{r} 7 \\ \times 3 \\ \hline \end{array}$

11. $\begin{array}{r} 6 \\ \times 0 \\ \hline \end{array}$

12. $\begin{array}{r} 7 \\ \times 5 \\ \hline \end{array}$

13. $\begin{array}{r} 5 \\ \times 8 \\ \hline \end{array}$

14. $\begin{array}{r} 8 \\ \times 7 \\ \hline \end{array}$

15. $\begin{array}{r} 4 \\ \times 6 \\ \hline \end{array}$

16. $\begin{array}{r} 9 \\ \times 5 \\ \hline \end{array}$

17. $\begin{array}{r} 6 \\ \times 8 \\ \hline \end{array}$

18. $\begin{array}{r} 4 \\ \times 8 \\ \hline \end{array}$

19. $8 \times 8 =$ _____

20. $2 \times 6 =$ _____

21. $9 \times 6 =$ _____

22. $9 \times 8 =$ _____

23. $3 \times 3 =$ _____

24. $6 \times 7 =$ _____

25. $2 \times 3 =$ _____

26. $6 \times 9 =$ _____

27. $8 \times 6 =$ _____

28. $3 \times 6 =$ _____

29. $1 \times 9 =$ _____

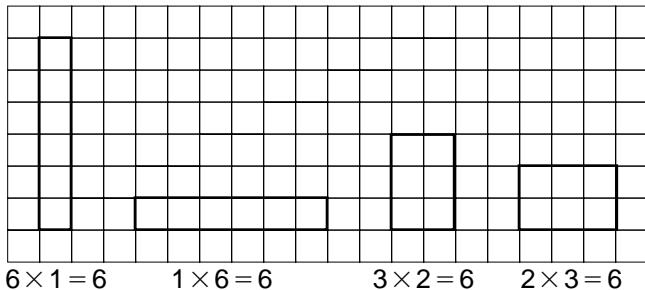
30. $9 \times 3 =$ _____

Name _____



Explore the Meaning of Multiplication • Algebra

To show all the facts with a product of 6, draw as many rectangles as you can that contain 6 squares. Count the number of squares in each column and row.



List the numbers you count.

Those are the factors.

The factors of 6 are 1, 2, 3, and 6.

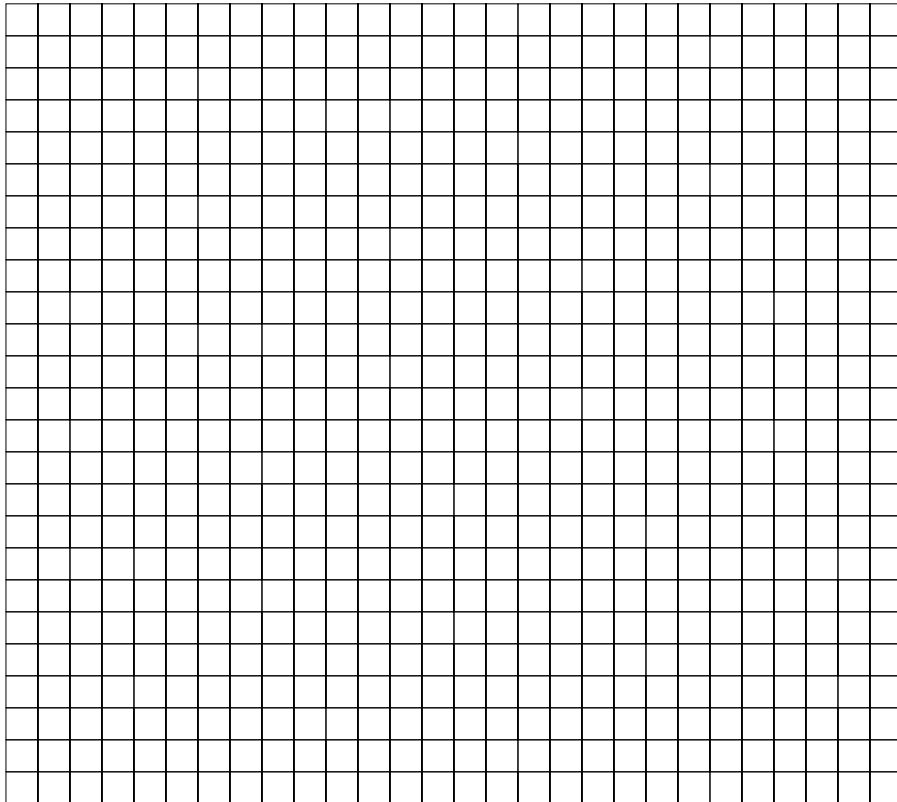
Draw as many rectangles as you can to show different facts for each product. Then list the factors.

1. 12 _____

2. 18 _____

3. 20 _____

4. 24 _____



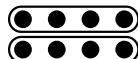
Properties of Multiplication • Algebra

Commutative Property

The order of the factors does not change the answer.



$$4 \times 2 = 8$$



$$2 \times 4 = 8$$

Identity Property

The product of 1 and any number is that number.



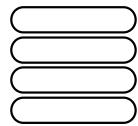
$$3 \times 1 = 3$$



$$1 \times 6 = 6$$

Zero Property

The product of any number and zero is zero.



Think: 4 rows of 0 counters.

$$4 \times 0 = 0$$

Think: 0 rows of 7 counters.

$$0 \times 7 = 0$$

Find each product. Then use the Commutative Property to write another equation.

1. $3 \times 9 = \square$

$9 \times \square = 27$

2. $5 \times 7 = \square$

$\square \times 5 = \square$

3. $4 \times 6 = \square$

$6 \times \square = \square$

4. $2 \times 8 = \square$

5. $1 \times 4 = \square$

6. $0 \times 5 = \square$

Multiply. Tell which property you used.

7. $1 \times 8 = \square$

8. $0 \times 7 = \square$

9. $5 \times 1 = \square$

10. $6 \times 0 = \square$

11. $0 \times 4 = \square$

12. $1 \times 9 = \square$

Name _____

Properties of Multiplication • Algebra



Multiply. Then use the Commutative Property to write a different multiplication equation.

1. $9 \times 8 =$ _____

2. $8 \times 7 =$ _____

3. $5 \times 2 =$ _____

4. $9 \times 4 =$ _____

5. $3 \times 4 =$ _____

6. $9 \times 2 =$ _____

7. $6 \times 9 =$ _____

8. $2 \times 3 =$ _____

9. $7 \times 4 =$ _____

10. $3 \times 9 =$ _____

11. $9 \times 7 =$ _____

12. $5 \times 8 =$ _____

13. $5 \times 0 =$ _____

14. $1 \times 8 =$ _____

15. $4 \times 5 =$ _____

Write + or \times to make each equation true.

16. $6 \bigcirc 6 = 36$

17. $8 \bigcirc 1 = 9$

18. $3 \bigcirc 9 = 27$

19. $7 \bigcirc 7 = 14$

20. $9 \bigcirc 0 = 9$

21. $9 \bigcirc 9 = 81$

22. $4 \bigcirc 3 = 9 \bigcirc 3$

23. $8 \bigcirc 7 = 5 \bigcirc 3$

24. $6 \bigcirc 4 = 12 \bigcirc 2$

25. $9 \bigcirc 2 = 6 \bigcirc 3$

26. $6 \bigcirc 7 = 9 \bigcirc 4$

27. $4 \bigcirc 4 = 8 \bigcirc 8$

Problem Solving

Solve.

28. Joe plants pine seedlings in 7 rows. He puts 6 seedlings in each row. How many seedlings does Joe plant?

29. Tanya has 9 pencils in each package. She has 6 packages. How many pencils does Tanya have in all?

Properties of Multiplication • Algebra

What number does each symbol in the table below stand for? Use the Commutative, Identity, and Zero Properties of multiplication to help you find out. Write the number next to the symbol in the code key.

1. $6 \times \bigcirc = 6$

2. $6 \times \square = 2 \times 6$

$7 + \bigcirc = 8$

$5 \times \square = 10$

3. $\times 9 = 0$

4. $6 \times \bigcirc = \leftarrow$

$5 \times \bigcirc = 0$

$6 + \bigcirc = \square$

5. $9 \times \bigcirc = \sqcup$

6. $\sqcup \times \bigcirc = 8$

$\sqcup \times \bigcirc = 9$

$\square \times \bigtriangledown = \sqcup$

7. + = $0 + 5$

8. + = 4

+ = 10

+ = 6

9. If you know that \times = ,

what other multiplication fact do you know? _____

Name _____

Multiply by 2, 3, 4, and 6



You can skip-count to multiply by 2 and 3.

Find 2×8 . Think: Skip-count by 2s eight times.

2 4 6 8 10 12 14 16
○○ ○○ ○○ ○○ ○○ ○○ ○○ ○○

$$2 \times 8 = 16$$

These are multiples of 2.

Find 7×3 . Think: Skip-count by 3s seven times.

3 6 9 12 15 18 21
○○○ ○○○ ○○○ ○○○ ○○○ ○○○ ○○○

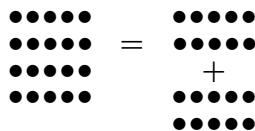
$$7 \times 3 = 21$$

These are multiples of 3.

You can double a fact you know to multiply by 4 and 6.

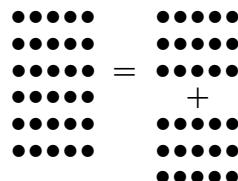
Double a fact to multiply by 4.

$$4 \times 5 = (2 \times 5) + (2 \times 5)$$
$$\downarrow \qquad \downarrow$$
$$10 + 10 = 20$$



Double a fact to multiply by 6.

$$6 \times 5 = (3 \times 5) + (3 \times 5)$$
$$\downarrow \qquad \downarrow$$
$$15 + 15 = 30$$



Skip-count to find the answer. Use the models above to help you.

1. $2 \times 7 =$ _____ 2. $6 \times 2 =$ _____ 3. $2 \times 8 =$ _____ 4. $9 \times 2 =$ _____
5. $6 \times 3 =$ _____ 6. $3 \times 8 =$ _____ 7. $9 \times 3 =$ _____ 8. $3 \times 7 =$ _____

Double a known fact to find the answer. You can use counters to help you.

9. $6 \times 8 = (3 \times 8) + (3 \times \square) =$ _____ 10. $4 \times 7 = (2 \times \square) + (2 \times \square) =$
 $\square + \square = \square$ $\square + \square = \square$

11. $7 \times 6 = (7 \times \square) + (7 \times \square) =$ _____ 12. $8 \times 4 = (8 \times \square) + (8 \times \square) =$
 $\square + \square = \square$ $\square + \square = \square$

Name _____

Multiply by 2, 3, 4, and 6



Write a multiplication equation to describe each picture.





Multiply.

3. $7 \times 4 =$ _____

4. $1 \times 6 =$ _____

5. $8 \times 2 =$ _____

6. $3 \times 3 =$ _____

7. $9 \times 6 =$ _____

8. $5 \times 4 =$ _____

9. $0 \times 6 =$ _____

10. $5 \times 3 =$ _____

11. $5 \times 2 =$ _____

12. $6 \times 4 =$ _____

13. $9 \times 4 =$ _____

14. $6 \times 3 =$ _____

15. $2 \times 4 =$ _____

16. $8 \times 3 =$ _____

17. $4 \times 2 =$ _____

18. $6 \times 7 =$ _____

19. $\begin{array}{r} 4 \\ \times 3 \\ \hline \end{array}$

20. $\begin{array}{r} 5 \\ \times 6 \\ \hline \end{array}$

21. $\begin{array}{r} 2 \\ \times 2 \\ \hline \end{array}$

22. $\begin{array}{r} 3 \\ \times 6 \\ \hline \end{array}$

23. $\begin{array}{r} 4 \\ \times 8 \\ \hline \end{array}$

24. $\begin{array}{r} 9 \\ \times 6 \\ \hline \end{array}$

25. $\begin{array}{r} 4 \\ \times 4 \\ \hline \end{array}$

26. $\begin{array}{r} 2 \\ \times 3 \\ \hline \end{array}$

27. $\begin{array}{r} 2 \\ \times 0 \\ \hline \end{array}$

28. $\begin{array}{r} 7 \\ \times 6 \\ \hline \end{array}$

29. $\begin{array}{r} 6 \\ \times 2 \\ \hline \end{array}$

30. $\begin{array}{r} 1 \\ \times 6 \\ \hline \end{array}$

31. $\begin{array}{r} 4 \\ \times 6 \\ \hline \end{array}$

32. $\begin{array}{r} 6 \\ \times 8 \\ \hline \end{array}$

33. $\begin{array}{r} 2 \\ \times 5 \\ \hline \end{array}$

34. $\begin{array}{r} 6 \\ \times 6 \\ \hline \end{array}$

35. $\begin{array}{r} 3 \\ \times 9 \\ \hline \end{array}$

36. $\begin{array}{r} 4 \\ \times 7 \\ \hline \end{array}$

Algebra Find the answer.

37. If $\odot = 3$, then how many is $\odot \odot \odot \odot \odot$? _____

38. If $\Delta = 6$, then how many is $\Delta \Delta \Delta \Delta \Delta$? _____

Problem Solving

Solve.

39. Cars are parked in 2 rows. There are 8 cars in each row. How many cars are parked?

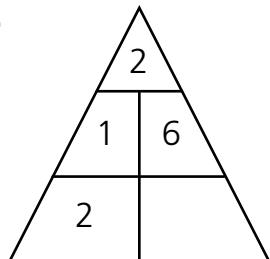
40. Four parents are needed on each of 9 committees. How many parents are needed?

Multiply by 2, 3, 4, and 6

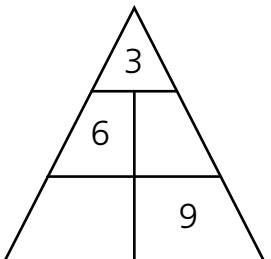
In each triangle, the number on the bottom left is the product of the middle left and the top number. The number on the bottom right is the product of the middle right and the top number.

Complete the triangles. The top number must be a 2, 3, 4, or 6.

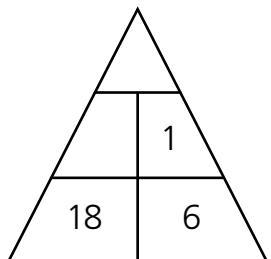
1.



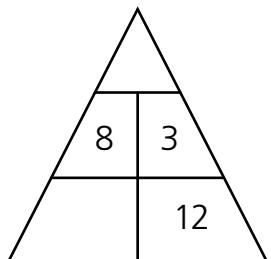
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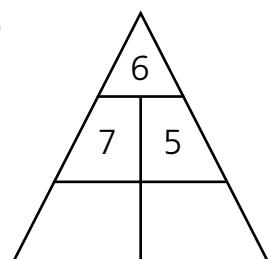
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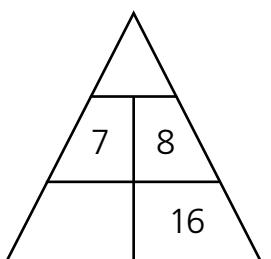
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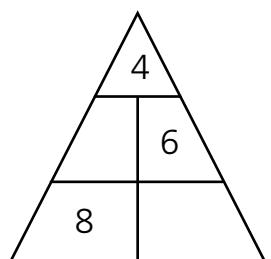
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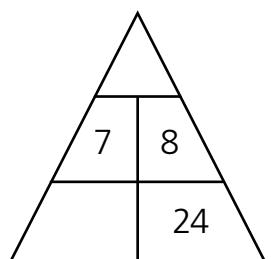
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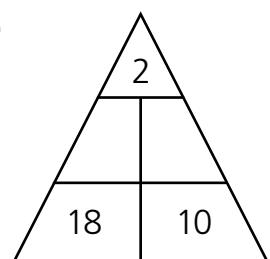
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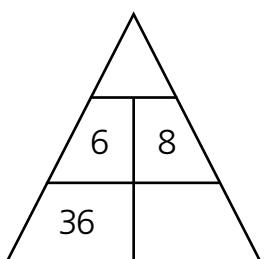
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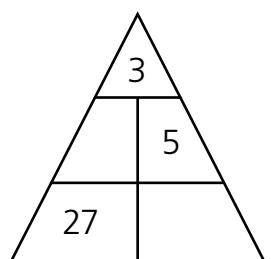
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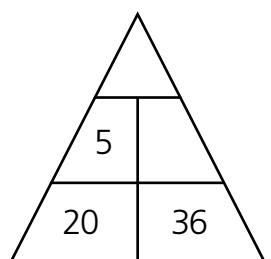
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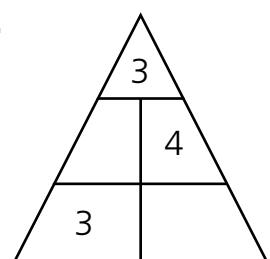
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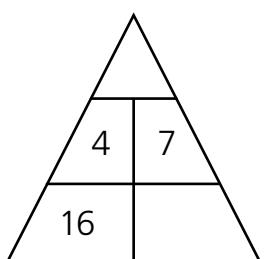
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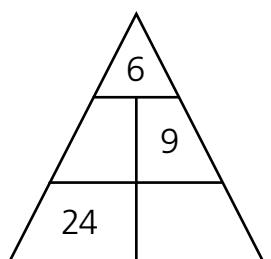
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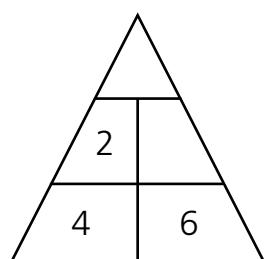
14.



15.



16.



- 17.** Explain how you found the answer to the triangle in problem 3.

Multiply by 5, 7, 8, 9, and 10

Skip-count with nickels to multiply by 5.

Find 4×5 . Think: Skip-count by 5s four times.



5



10



15



20

$$4 \times 5 = 20$$

Skip-count with dimes to multiply by 10.

Find 4×10 . Think: Skip-count by 10s four times.



10



20



30



40

$$4 \times 10 = 40$$

You can use known facts to multiply by 7, 8, and 9.

Add to a known fact to multiply by 7.

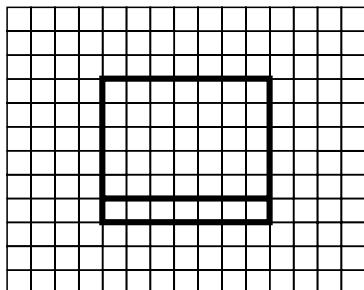
Find 7×6 .

You know $7 \times 5 = 35$.

Think:

$35 + 7$ is the same as 7×6 .

$$35 + 7 = 42$$



$$7 \times 6 = 42$$

Subtract from a known fact to multiply by 9.

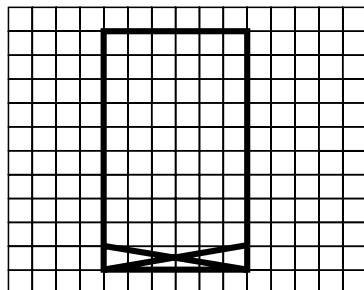
Find 6×9 .

You know $6 \times 10 = 60$.

Think:

$60 - 6$ is the same as 6×9 .

$$60 - 6 = 54$$



$$6 \times 9 = 54$$

Double a fact to multiply by 8.

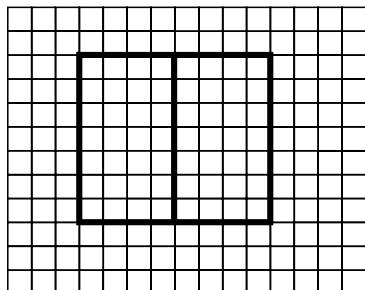
Find 8×7 .

Double 4×7 .

$$(4 \times 7) + (4 \times 7)$$

$$\downarrow \qquad \qquad \downarrow$$

$$28 \quad + \quad 28 = 56$$



$$8 \times 7 = 56$$

Multiply.

1. $7 \times 5 =$ _____

2. $8 \times 6 =$ _____

3. $9 \times 8 =$ _____

4. $8 \times 8 =$ _____

5. $9 \times 7 =$ _____

6. $7 \times 7 =$ _____

7. $\begin{array}{r} 10 \\ \times 9 \\ \hline \end{array}$

8. $\begin{array}{r} 6 \\ \times 6 \\ \hline \end{array}$

9. $\begin{array}{r} 5 \\ \times 8 \\ \hline \end{array}$

10. $\begin{array}{r} 4 \\ \times 9 \\ \hline \end{array}$

11. $\begin{array}{r} 10 \\ \times 7 \\ \hline \end{array}$

12. $\begin{array}{r} 9 \\ \times 8 \\ \hline \end{array}$

Name _____

Multiply by 5, 7, 8, 9, and 10



Multiply.

1. $5 \times 7 =$ _____

2. $9 \times 7 =$ _____

3. $1 \times 8 =$ _____

4. $9 \times 9 =$ _____

5. $3 \times 8 =$ _____

6. $8 \times 7 =$ _____

7. $4 \times 9 =$ _____

8. $2 \times 8 =$ _____

9. $3 \times 7 =$ _____

10. $6 \times 9 =$ _____

11. $7 \times 8 =$ _____

12. $7 \times 7 =$ _____

13. $5 \times 10 =$ _____

14. $2 \times 9 =$ _____

15. $0 \times 7 =$ _____

16. $1 \times 9 =$ _____

17. $6 \times 8 =$ _____

18. $4 \times 7 =$ _____

19. $8 \times 9 =$ _____

20. $4 \times 8 =$ _____

21.
$$\begin{array}{r} 5 \\ \times 9 \\ \hline \end{array}$$

22.
$$\begin{array}{r} 7 \\ \times 2 \\ \hline \end{array}$$

23.
$$\begin{array}{r} 9 \\ \times 8 \\ \hline \end{array}$$

24.
$$\begin{array}{r} 9 \\ \times 3 \\ \hline \end{array}$$

25.
$$\begin{array}{r} 8 \\ \times 0 \\ \hline \end{array}$$

26.
$$\begin{array}{r} 10 \\ \times 9 \\ \hline \end{array}$$

27.
$$\begin{array}{r} 8 \\ \times 8 \\ \hline \end{array}$$

28.
$$\begin{array}{r} 2 \\ \times 8 \\ \hline \end{array}$$

29.
$$\begin{array}{r} 7 \\ \times 1 \\ \hline \end{array}$$

30.
$$\begin{array}{r} 6 \\ \times 7 \\ \hline \end{array}$$

31.
$$\begin{array}{r} 9 \\ \times 1 \\ \hline \end{array}$$

32.
$$\begin{array}{r} 9 \\ \times 6 \\ \hline \end{array}$$

33.
$$\begin{array}{r} 8 \\ \times 4 \\ \hline \end{array}$$

34.
$$\begin{array}{r} 9 \\ \times 2 \\ \hline \end{array}$$

35.
$$\begin{array}{r} 7 \\ \times 3 \\ \hline \end{array}$$

36.
$$\begin{array}{r} 8 \\ \times 3 \\ \hline \end{array}$$

37.
$$\begin{array}{r} 7 \\ \times 5 \\ \hline \end{array}$$

38.
$$\begin{array}{r} 8 \\ \times 6 \\ \hline \end{array}$$

Algebra Find the rule. Then complete the table.

39.

Rule:

0	1	2	3	4	5	6
0	9	18	27			

40.

Rule:

0	1	2	3	4	5	6
0	8	16	24			

Problem Solving

Solve.

41. Nathan puts 10 cards on each of 8 pages in an album. How many cards does he put in the album?

42. A marching band has 5 rows with 9 students in each row. How many students are in the marching band?

Multiply by 5, 7, 8, 9, and 10

Play a multiplication game with a partner.

Cut out the game markers.

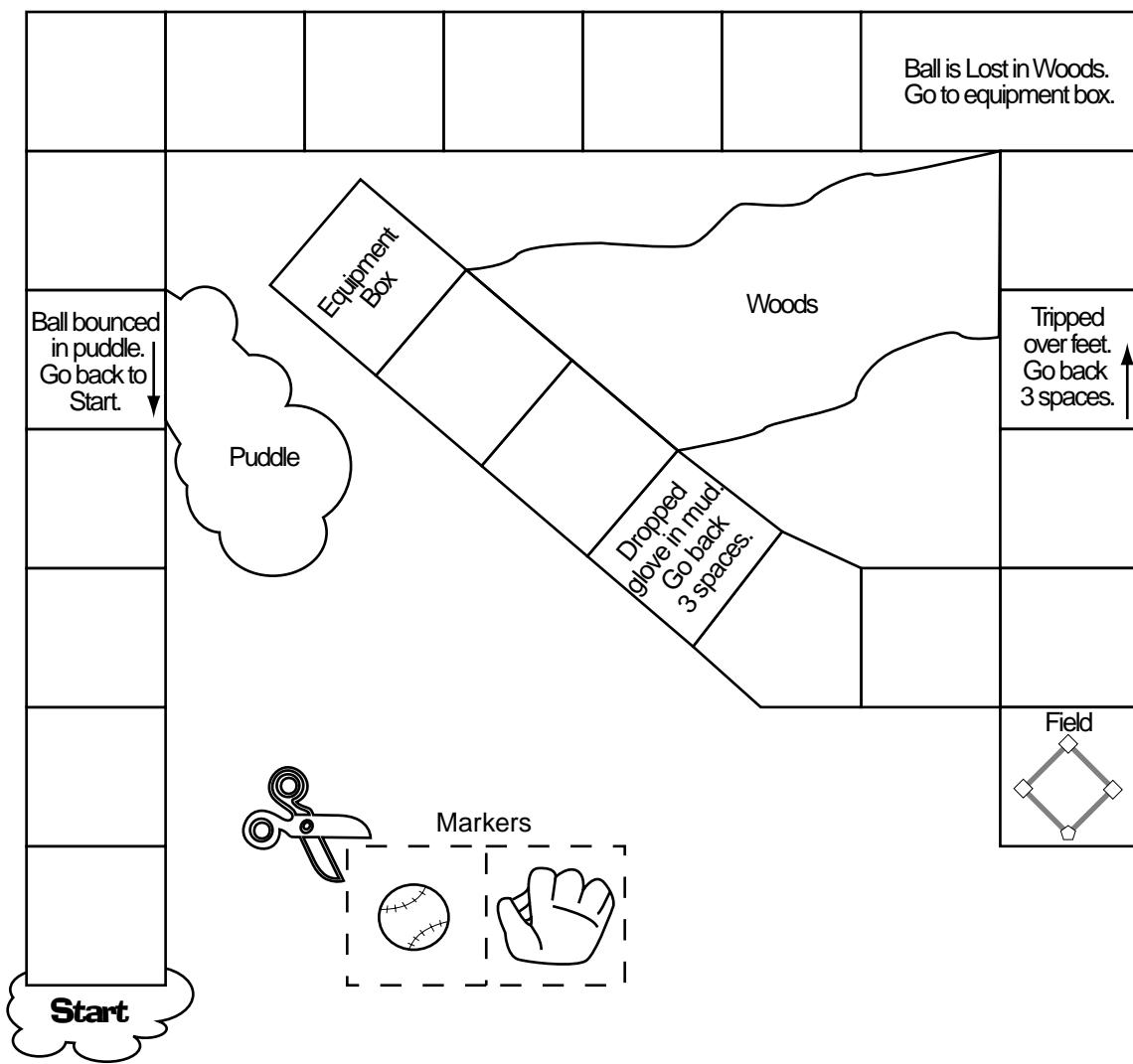
One player puts the glove on START.

The other puts the baseball on START.

Take turns.

- Pick a card from A and a card from B. Find the product of the two numbers.
- Have your partner check the product. If the product is correct, move forward two spaces. If the product is wrong, move back one space.

The first player to get to the field wins.



Problem Solving: Skill

Choose an Operation

Nadia collects souvenir flags. She puts the flags in her bookcase. The flags take up three rows. There are 7 flags in each row. How many flags does Nadia have?

Step 1**Read****Be sure you understand the problem.**

What do you know?

- How many rows of flags Nadia has.
- How many flags she put in each row.

What do you need to find?

- Total number of flags.

Step 2**Plan****Choose an operation.**

To find the total of 3 equal groups of flags, you can use repeated addition or multiplication. Use multiplication because it is faster.

Step 3**Solve****Follow your plan.**

Find how many flags Nadia has.

Nadia puts the flags in 3 rows. There are 7 flags in each row.

$$3 \times 7 = 21 \quad \text{Nadia has 21 flags.}$$

Step 4**Look Back****Check your answer.**

Use repeated addition.

$$7 + 7 + 7 = 21$$

Solve.

1. Janell has 472 baseball cards. Lou has 397 baseball cards. How many more baseball cards does Janell have than Lou? _____
2. Brian displays his trophies in his bedroom. He puts his trophies in 3 rows. There are 6 trophies in each row. How many trophies does Brian have? _____

3. Kevin buys 7 packs of football cards. There are 4 football cards in each pack. How many football cards does Kevin buy? _____
4. Barbara puts photos of France in a photo album. The photo album can hold 94 photos. Barbara has 78 photos. How many more photos can she put in the album? _____

Name _____

Problem Solving: Skill Choose an Operation



Solve. Tell how you chose the operation.

1. Georgia puts coins in an album. There are 8 pages in the album. Each page has slots for 8 coins. How many coins can Georgia put in the album?

2. Dina has 37 international dolls. Maxine has 26 international dolls. Who has more dolls? How many more does she have?

3. Ben buys 9 packs of dinosaur stickers. There are 6 stickers in each pack. How many stickers does Ben buy?

4. Melanie has a collection of 242 stamps. At a stamp convention, she buys 19 more stamps. How many stamps does Melanie have now?

Mixed Strategy Review

Solve.

5. James collects model cars. He has 48 model cars. On his birthday, James gets 7 more cars. How many model cars does James have in all?

6. Wendy has 10 flower stickers. She gives away 7 flower stickers. How many flower stickers does Wendy have left?

Name _____

Problem Solving: Skill Choose an Operation



1. Carlos has 4 dogs. Each dog eats 3 pounds of food a week. Carlos wants to buy the least expensive brand of dog food. Which brand should he buy?

PetCo Dog Food	Fido Dog Food	Foster's Dog Chow
\$5.00 for 3 pounds	\$4.00 for 2 pounds	\$6.00 for 4 pounds

What is the total amount of food the dogs eat per week? _____

Compare costs.

A weekly supply of PetCo Dog Food costs _____

A weekly supply of Fido Dog Food costs _____

A weekly supply of Foster's Dog Chow costs _____

Carlos should buy _____

2. Jennifer has 2 cats. Each cat eats 3 ounces of food a day. Jennifer wants to buy the least expensive brand of cat food. Which brand should she buy?

Foster's Food for Cats	Meow Cat Food	Cat Nibbles
\$1.00 for a 12-ounce can	\$0.50 for a 6-ounce can	\$3.00 for an 18-ounce can

What is the total amount of food the cats eat per day? _____

Compare costs.

A daily supply of Foster's Food for Cats costs _____

A daily supply of Meow Cat Food costs _____

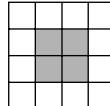
A daily supply of Cat Nibbles costs _____

Jennifer should buy _____

Explore Square Numbers

A square number is made by multiplying a number by itself. You can use a model to find a square number.

- Step 1** Draw a square with 2 rows of squares and 2 squares in each row. Shade in all the squares.



- Step 2** Record the number of shaded squares in a table.

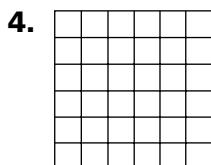
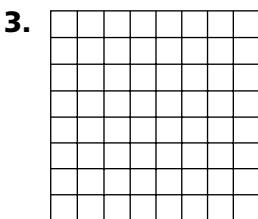
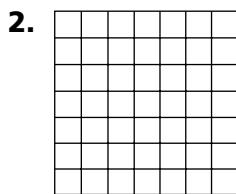
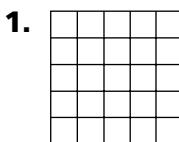
Number of Rows	\times	Number in Each Row	Square Number
2		2	4

- Step 3** Repeat Steps 1 and 2 using 3 for the number of rows of squares and the number of squares in each row. Then try using 4.

- Step 4** What multiplication equations can you use to show the square numbers in the table?
- _____

Practice

Write a multiplication equation for each model.



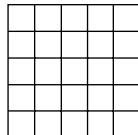
Name _____

Explore Square Numbers

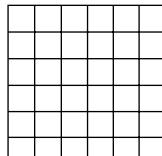


Use models to find the square number.

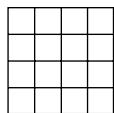
1. $3 \times 3 =$ _____



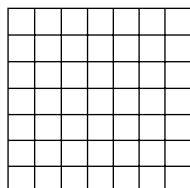
2. $4 \times 4 =$ _____



3. $2 \times 2 =$ _____



4. $5 \times 5 =$ _____



Find the product. Show your work.

5. $7 \times 7 =$ _____

6. $0 \times 0 =$ _____

7. $10 \times 10 =$ _____

8. $9 \times 9 =$ _____

9. $1 \times 1 =$ _____

10. $6 \times 6 =$ _____

11. $5 \times 5 =$ _____

12. $4 \times 4 =$ _____

13. $8 \times 8 =$ _____

Name _____

Explore Square Numbers



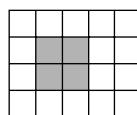
Find the square number for each multiplication equation.

Match the multiplication equation to the model.

Write the letter of the model.

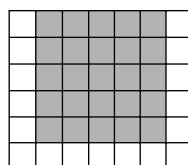
1. $4 \times 4 =$ _____

A



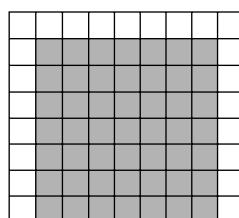
2. $6 \times 6 =$ _____

B



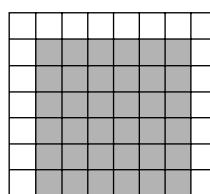
3. $2 \times 2 =$ _____

C



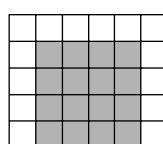
4. $3 \times 3 =$ _____

D



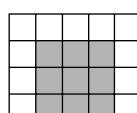
5. $7 \times 7 =$ _____

E



6. $5 \times 5 =$ _____

F



Multiplication Table and Patterns • Algebra



To find 8×9 , draw arrows to show where the 8 row and the 9 column meet in the table. The 8 row and the 9 column meet at 72. So, $8 \times 9 = 72$.

\times	0	1	2	3	4	5	6	7	8	9	10	11	12
0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10	11	12
2	0	2	4	6	8	10	12	14	16	18	20	22	24
3	0	3	6	9	12	15	18	21	24	27	30	33	36
4	0	4	8	12	16	20	24	28	32	36	40	44	48
5	0	5	10	15	20	25	30	35	40	45	50	55	60
6	0	6	12	18	24	30	36	42	48	54	60	66	72
7	0	7	14	21	28	35	42	49	56	63	70	77	84
8	0	8	16	24	32	40	48	56	64	72	80	88	96
9	0	9	18	27	36	45	54	63	72	81	90	99	108
10	0	10	20	30	40	50	60	70	80	90	100	110	120
11	0	11	22	33	44	55	66	77	88	99	110	121	132
12	0	12	24	36	48	60	72	84	96	108	120	132	144

Multiply. You can use the multiplication table to help you.

1. $6 \times 8 =$ _____

2. $8 \times 12 =$ _____

3. $8 \times 4 =$ _____

4. $7 \times 7 =$ _____

5. $10 \times 5 =$ _____

6. $9 \times 11 =$ _____

7. $7 \times 4 =$ _____

8. $3 \times 8 =$ _____

9. $4 \times 9 =$ _____

10. $7 \times 12 =$ _____

11. $9 \times 9 =$ _____

12. $6 \times 7 =$ _____

13. $\begin{array}{r} 9 \\ \times 12 \\ \hline \end{array}$

14. $\begin{array}{r} 8 \\ \times 7 \\ \hline \end{array}$

15. $\begin{array}{r} 8 \\ \times 11 \\ \hline \end{array}$

16. $\begin{array}{r} 9 \\ \times 8 \\ \hline \end{array}$

17. $\begin{array}{r} 12 \\ \times 10 \\ \hline \end{array}$

18. $\begin{array}{r} 11 \\ \times 7 \\ \hline \end{array}$

19. $\begin{array}{r} 11 \\ \times 12 \\ \hline \end{array}$

20. $\begin{array}{r} 8 \\ \times 8 \\ \hline \end{array}$

21. $\begin{array}{r} 9 \\ \times 7 \\ \hline \end{array}$

22. $\begin{array}{r} 12 \\ \times 12 \\ \hline \end{array}$

23. $\begin{array}{r} 11 \\ \times 3 \\ \hline \end{array}$

24. $\begin{array}{r} 11 \\ \times 11 \\ \hline \end{array}$

Name _____

Multiplication Table and Patterns • Algebra

Complete the table.

\times	0	1	2	3	4	5	6	7	8	9	10	11	12
0	0												
1	0	1	2		4				8				
2		2	4				12						
3		3		9				21		27			36
4			8			20							
5				15			30		40		50		60
6							36					66	72
7		7										77	
8			16		32								96
9							54						108
10													
11			22			55			88	99		121	132
12			24					84			120		144

Use the table to multiply.

1. $9 \times 8 =$ _____

2. $3 \times 12 =$ _____

3. $11 \times 11 =$ _____

4. $4 \times 12 =$ _____

5.
$$\begin{array}{r} 12 \\ \times 8 \\ \hline \end{array}$$

6.
$$\begin{array}{r} 12 \\ \times 12 \\ \hline \end{array}$$

7.
$$\begin{array}{r} 12 \\ \times 7 \\ \hline \end{array}$$

8.
$$\begin{array}{r} 10 \\ \times 10 \\ \hline \end{array}$$

9.
$$\begin{array}{r} 11 \\ \times 7 \\ \hline \end{array}$$

10.
$$\begin{array}{r} 12 \\ \times 9 \\ \hline \end{array}$$

11. What is the pattern of odd and even numbers in the 3 row or 3 column?
-

12. What is the pattern of odd and even numbers in the 4 row or 4 column?
-

Compare. Write $>$, $<$, or $=$.

13. $6 + 3 \bigcirc 3 \times 3$

14. $15 - 7 \bigcirc 2 \times 7$

15. $4 \times 8 \bigcirc 25 + 4$

16. $9 \times 7 \bigcirc 6 \times 11$

17. $9 + 7 \bigcirc 4 \times 4$

18. $12 - 4 \bigcirc 2 \times 3$

Multiplication Table and Patterns • Algebra

Complete each multiplication table. Fill in the missing factors.

1.

×			
	10	15	20
	12	18	24
	14	21	28

2.

×			
	42	14	28
	18	6	12
	30	10	20

3.

×				
	36	42	54	24
	6	7	9	4
	12	14	18	8
	30	35	45	20

4.

×				
	12	28	0	8
	24	56	0	16
	3	7	0	2
	9	21	0	6

5.

×				
		72		
	28		24	
		27		6
	7		6	2

6.

×				
	63	42	21	
	72			40
		18	9	
		0		

7.

×				
	56	28		
	16		18	
		16	36	
		24		6

8.

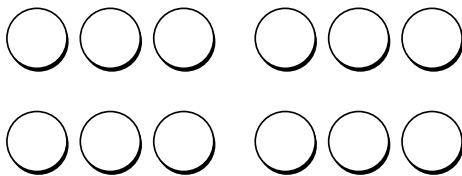
×				
	15	35		
			0	18
	21			
		42		

Explore the Meaning of Division • Algebra

You can use counters to model division in two different ways.

Use counters to make equal groups.

Use 12 counters. Make 4 equal groups.

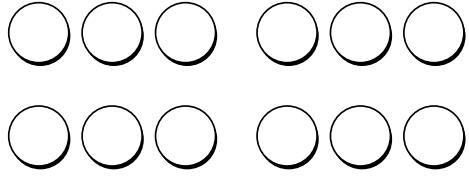


There are 3 counters in each group.

$$12 \div 4 = 3$$

Put the same number of counters in each group.

Use 12 counters. Put 3 counters in each group.



There are 4 equal groups.

$$12 \div 3 = 4$$

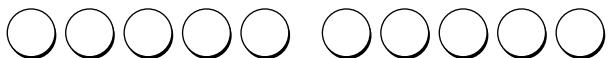
Use counters to find how many are in each group.

1. $9 \div 3 =$ _____

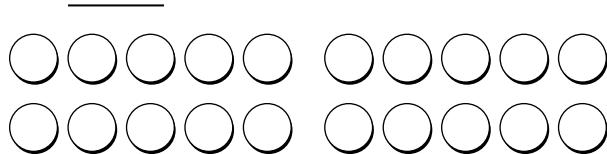


Use counters to help you solve.

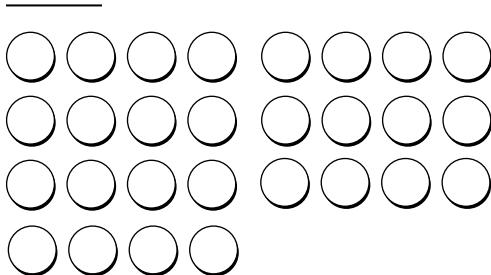
2. $10 \div 2 =$ _____



3. 20 has how many groups of 5?



4. 28 has how many groups of 4?



Name _____

Explore the Meaning of Division • Algebra



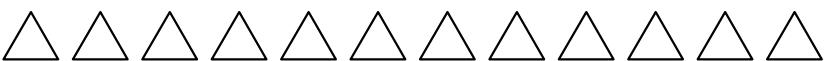
Use models to find how many are in each group. Circle the group.

1. $15 \div 3 =$ _____

<input type="checkbox"/>							
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

<input type="checkbox"/>							
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

2. $24 \div 4 =$ _____



3. $20 \div 4 =$ _____



4. $10 \div 2 =$ _____



Use models to help you solve.

5. 25 has how many groups of 5?

6. 10 has how many groups of 5?

7. 28 has how many groups of 7?

8. 12 has how many groups of 3?

9. 16 has how many groups of 4?

10. 27 has how many groups of 9?

Explore the Meaning of Division • Algebra

Sharpen your division skills.

Play a game with a partner. You'll need 60 pennies or counters to use as game pieces.

How to Play

- Player 1 points to an amount on the game table.
- Player 2 counts out that many pennies.
- Player 2 makes stacks of 5 pennies and writes a division sentence to tell about it.
- Keep playing. Take turns pointing to amounts, making stacks of pennies, and writing division sentences.

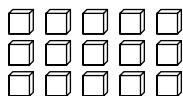
25¢	5¢	50¢	35¢
10¢	30¢	45¢	20¢
15¢	55¢	40¢	60¢

Name _____

Relate Multiplication and Division • Algebra



Find $15 \div 5$. Think: How many groups of 5 are in 15?

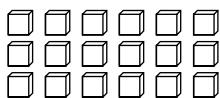


$$5 \times ? = 15 \rightarrow 5 \times 3 = 15$$

There are 3 groups of 5 in 15. So, $15 \div 5 = 3$.

Write a related multiplication fact and complete the division equation.

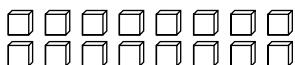
1. $18 \div 6$



$$6 \times \square = 18$$

$$18 \div 6 = \square$$

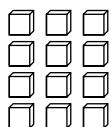
2. $16 \div 8$



$$8 \times \square = 16$$

$$16 \div 8 = \square$$

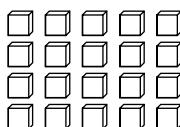
3. $12 \div 3$



$$3 \times \square = 12$$

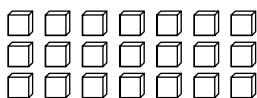
$$12 \div 3 = \square$$

4. $20 \div 5$



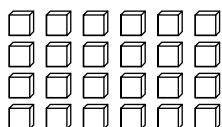
$$20 \div 5 = \square$$

5. $21 \div 7$



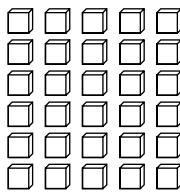
$$21 \div 7 = \square$$

6. $24 \div 6$



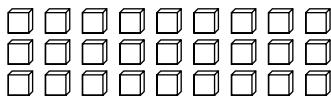
$$24 \div 6 = \square$$

7. $30 \div 5$



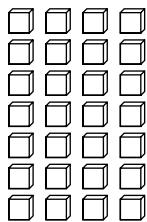
$$30 \div 5 = \square$$

8. $27 \div 9$



$$27 \div 9 = \square$$

9. $28 \div 4$



$$28 \div 4 = \square$$

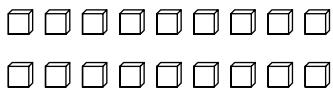
Name _____

Relate Multiplication and Division • Algebra

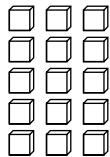


Write a related multiplication fact and complete the division equation.

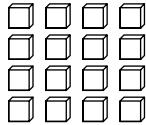
1. $18 \div 9$



2. $15 \div 3$



3. $16 \div 4$



$$9 \times \square = 18$$

$$3 \times \square = 15$$

$$4 \times \square = 16$$

$$18 \div 9 = \square$$

$$15 \div 3 = \square$$

$$16 \div 4 = \square$$

Divide. Use a related multiplication fact.

4. $6 \div 2 = \underline{\hspace{1cm}}$

5. $18 \div 2 = \underline{\hspace{1cm}}$

6. $15 \div 5 = \underline{\hspace{1cm}}$

7. $8 \div 4 = \underline{\hspace{1cm}}$

8. $27 \div 3 = \underline{\hspace{1cm}}$

9. $14 \div 2 = \underline{\hspace{1cm}}$

10. $28 \div 7 = \underline{\hspace{1cm}}$

11. $36 \div 6 = \underline{\hspace{1cm}}$

12. $63 \div 7 = \underline{\hspace{1cm}}$

13. $48 \div 6 = \underline{\hspace{1cm}}$

14. $35 \div 7 = \underline{\hspace{1cm}}$

15. $42 \div 7 = \underline{\hspace{1cm}}$

16. $3\overline{)21}$

17. $7\overline{)21}$

18. $2\overline{)16}$

19. $3\overline{)18}$

20. $5\overline{)25}$

21. $5\overline{)45}$

22. $7\overline{)56}$

23. $8\overline{)24}$

24. $9\overline{)54}$

25. $3\overline{)9}$

26. $8\overline{)56}$

27. $9\overline{)45}$

28. $9\overline{)81}$

29. $9\overline{)36}$

30. $8\overline{)64}$

31. $9\overline{)72}$

32. $6\overline{)54}$

33. $4\overline{)24}$

34. $4\overline{)36}$

35. $9\overline{)63}$

Problem Solving

Solve.

36. It takes 4 horses to pull a coach. How many coaches can 20 horses pull?

37. Groups of 6 visitors can take tours of an old western town. How many groups can 24 people make?

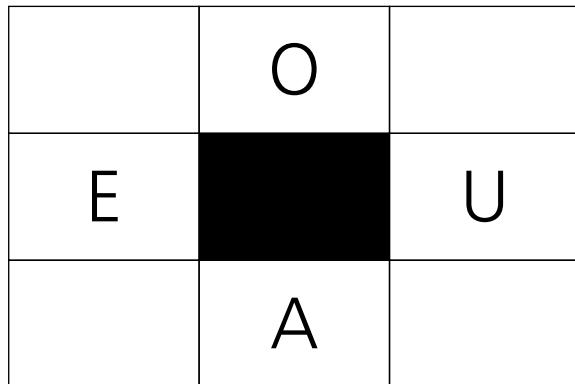
Relate Multiplication and Division • Algebra

Use the letters in the table below to complete the word puzzle.
Words have to connect as they do in a crossword puzzle.

Letter Values			
Letter	Value	Letter	Value
A	$10 \times 3 = ?$	L	$45 \div 5 = ?$
B	$25 \div 5 = ?$	N	$4 \times 9 = ?$
D	$12 \div 6 = ?$	O	$30 \div 3 = ?$
E	$3 \times 6 = ?$	S	$5 \times 5 = ?$
F	$4 \times 5 = ?$	T	$6 \times 7 = ?$
G	$36 \div 4 = ?$	U	$42 \div 7 = ?$
J	$10 \times 4 = ?$	Y	$54 \div 6 = ?$

Rules

- Use each letter in the table only once.
- You cannot move the vowels in the puzzle.
- Try to get the highest score you can. To find your score, complete the multiplication or division to find the value of each letter you used. For example, if you placed the letter B in the top left square, you would get 5 for that square ($25 \div 5 = 5$). Then add to find the value of each word. Finally, add the values of all four words.

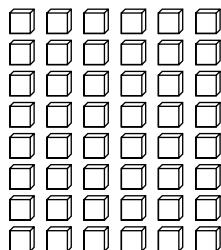


Name _____

Divide by 2 Through 12



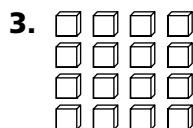
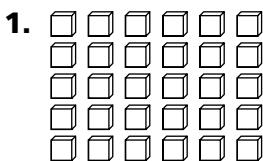
Find $48 \div 6$. Think: How many groups of 6 are in 48?



$$6 \times ? = 48 \rightarrow 6 \times 8 = 48$$

There are 8 groups of 6 in 48. So, $48 \div 6 = 8$.

Complete the division equation.



$$30 \div 5 = \underline{\quad}$$

$$24 \div 8 = \underline{\quad}$$

$$16 \div 4 = \underline{\quad}$$

Divide. Draw models if you wish.

4. $12 \div 2 = \underline{\quad}$

5. $21 \div 3 = \underline{\quad}$

6. $20 \div 5 = \underline{\quad}$

7. $14 \div 7 = \underline{\quad}$

8. $24 \div 6 = \underline{\quad}$

9. $16 \div 2 = \underline{\quad}$

10. $32 \div 8 = \underline{\quad}$

11. $18 \div 3 = \underline{\quad}$

12. $28 \div 4 = \underline{\quad}$

13. $2\overline{)18}$

14. $4\overline{)36}$

15. $3\overline{)36}$

16. $5\overline{)15}$

17. $7\overline{)42}$

18. $9\overline{)45}$

19. $10\overline{)30}$

20. $11\overline{)33}$

21. $12\overline{)36}$

22. $6\overline{)54}$

23. $5\overline{)40}$

24. $10\overline{)80}$

25. $9\overline{)81}$

26. $12\overline{)24}$

27. $11\overline{)99}$

Divide by 2 Through 12

Divide.

1. $12 \div 2 =$ _____

2. $24 \div 3 =$ _____

3. $32 \div 4 =$ _____

4. $35 \div 5 =$ _____

5. $54 \div 6 =$ _____

6. $56 \div 7 =$ _____

7. $64 \div 8 =$ _____

8. $81 \div 9 =$ _____

9. $40 \div 8 =$ _____

10. $48 \div 6 =$ _____

11. $49 \div 7 =$ _____

12. $27 \div 3 =$ _____

13. $30 \div 5 =$ _____

14. $36 \div 4 =$ _____

15. $72 \div 9 =$ _____

16. $90 \div 10 =$ _____

17. $66 \div 11 =$ _____

18. $96 \div 12 =$ _____

19. $2\overline{)18}$

20. $3\overline{)18}$

21. $4\overline{)24}$

22. $7\overline{)14}$

23. $8\overline{)16}$

24. $7\overline{)63}$

25. $6\overline{)42}$

26. $9\overline{)63}$

27. $5\overline{)45}$

28. $8\overline{)72}$

29. $12\overline{)72}$

30. $11\overline{)77}$

31. $10\overline{)80}$

32. $11\overline{)99}$

33. $12\overline{)108}$

Problem Solving

Solve.

34. There are 84 decorative eggs at a museum. The museum curator places them in display cases. She places 12 eggs in each case. How many cases does she use?
-

36. Marla has 63 foreign stamps in her album. She has 9 stamps on each page. How many pages in Marla's album have stamps?
-

38. There are 42 tomato plants in rows of 6 plants in each row. How many rows of tomato plants are there?
-

35. Mrs. Pavlik buys a box of 11 Ukrainian eggs to give to one of her grandchildren. She spends \$44.00 on the eggs. How much does each egg cost?
-

37. Alan has 25 foreign stamps on 5 pages of his album. Each page has the same number of stamps. How many stamps are on each page?
-

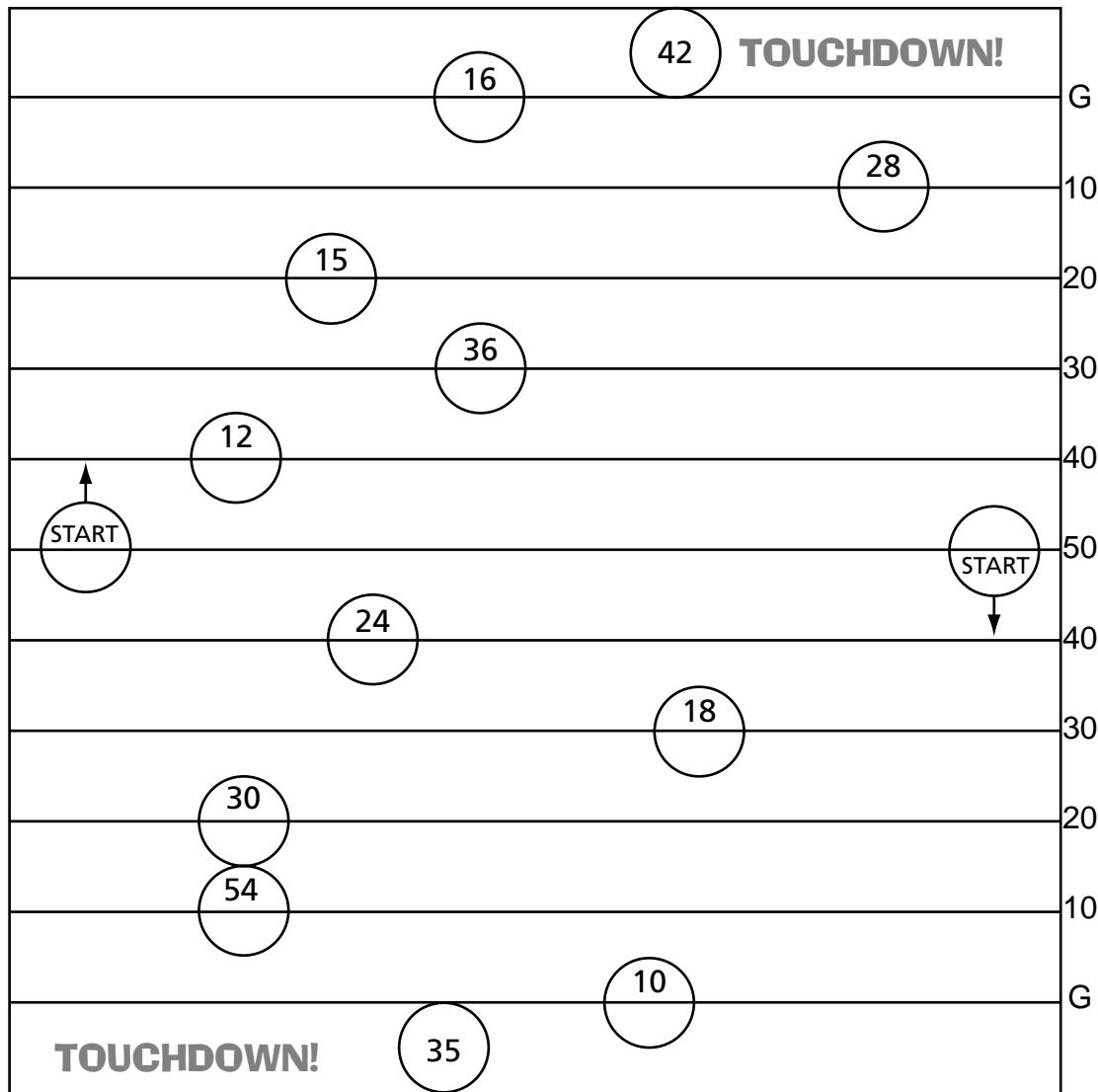
39. There are 45 tomatoes on 5 tomato plants. Each tomato plant has the same number of tomatoes. How many tomatoes are on each plant?
-

Divide by 2 Through 12

Play this division football game with a partner. You'll need a number cube and 2 two-color counters to use as game pieces.

Rules

- Place your game pieces at the START positions on the 50-yard line. Each player can only move in the direction of the arrow.
- Take turns rolling the number cubes. Add the number cubes to get a divisor.
- If the number in the circle on the next 10-yard line can be evenly divided by the divisor, move to that circle.
- Keep rolling the number cubes until one of you scores a touchdown.



Missing Factors • Algebra



Multiplication and division equations that are related make up a **fact family**. Every equation in a fact family uses the same numbers.

$$\begin{array}{c} \circ \circ \circ \circ \\ \circ \circ \circ \circ \\ \circ \circ \circ \circ \\ \circ \circ \circ \circ \end{array}$$

Fact Family
$3 \times 4 = 12$
$4 \times 3 = 12$
$12 \div 3 = 4$
$12 \div 4 = 3$

$$\begin{array}{c} \circ \circ \\ \circ \circ \\ \circ \circ \\ \circ \circ \end{array}$$

Fact Family
$5 \times 2 = 10$
$2 \times 5 = 10$
$10 \div 5 = 2$
$10 \div 2 = 5$

Complete each fact family.

1.

$$\begin{array}{c} \circ \circ \circ \circ \circ \\ \circ \circ \circ \circ \circ \\ \circ \circ \circ \circ \circ \end{array}$$

2.

$$\begin{array}{ccccccccccccc} \circ & \circ \\ \circ & \circ \\ \circ & \circ \\ \circ & \circ \end{array}$$

$$3 \times 5 = 15$$

$$5 \times \square = \square$$

$$15 \div 5 = \square$$

$$15 \div \square = \square$$

$$9 \times \square = \square$$

$$\square \times \square = \square$$

$$\square \div 4 = \square$$

$$\square \div 9 = \square$$

Write the fact family for each set of numbers.

3. 4, 6, 24

4. 3, 7, 21

5. 35, 7, 5

6. 54, 6, 9

Find each missing factor.

7. $5 \times n = 30$

$$30 \div 5 = n$$

$$n = \square$$

8. $n \times 7 = 56$

$$56 \div 7 = n$$

$$n = \square$$

9. $n \times 8 = 64$

$$64 \div 8 = n$$

$$n = \square$$

10. $3 \times n = 27$

$$27 \div 3 = n$$

$$n = \square$$

Name _____

Missing Factors • Algebra



Complete each fact family.

1. $4 \times 8 = q$ _____

$8 \times r = 32$ _____

$32 \div 8 = s$ _____

$32 \div t = 8$ _____

2. $9 \times 5 = a$ _____

$5 \times b = 45$ _____

$45 \div 5 = c$ _____

$45 \div d = 5$ _____

3. $9 \times 8 = m$ _____

$8 \times n = 72$ _____

$72 \div 8 = o$ _____

$72 \div p = 8$ _____

Find each missing factor.

4. $5 \times k = 30$ _____

$30 \div 5 = k$ _____

5. $h \times 7 = 56$ _____

$56 \div 7 = h$ _____

6. $9 \times g = 72$ _____

$72 \div 9 = g$ _____

7. $9 \times w = 54$ _____

$54 \div 9 = w$ _____

8. $9 \times y = 63$ _____

$63 \div 9 = y$ _____

9. $d \times 8 = 48$ _____

$48 \div 8 = d$ _____

Write a multiplication and division fact family.

10. 8, 5, 40

11. 3, 9, 27

12. 6, 7, 42

13. 9, 8, 72

14. 5, 7, 35

15. 4, 5, 20

16. 6, 9, 54

17. 5, 9, 45

Divide. What patterns do you see?

18. $4 \div 4 =$

$8 \div 8 =$

$9 \div 9 =$

$6 \div 6 =$

19. $0 \div 7 =$

$0 \div 8 =$

$0 \div 1 =$

$0 \div 5 =$

Name _____

Missing Factors • Algebra



Write the missing numbers to complete each chain.

1. $24 \div 6 =$
 $\times 6 =$
 $\div 3 =$
 $\times 5 =$

2. $9 \times 8 =$
 $\div 12 =$
 $\div 6 =$
 $\times 0 =$

3. $8 \times$
 $= 48 \div 4 =$
 $\times 4 =$
 $\div 6 =$

4. $66 \div 11 =$
 \times
 $= 30 \div 6 =$
 $\times 9 =$

5. $5 \times 12 =$
 \div
 $= 6 \times 9 =$
 $\div 6 =$

6. $81 \div$
 $= 9 \div 3 =$
 $\times 3 =$
 $\times 9 =$

7. $45 \div 9 =$
 \times
 $= 45 \div 5 =$
 $\times 3 =$

Problem Solving: Strategy

Work Backward

Page 183, Problem 4

Tim had \$5 more yesterday than he does today. Yesterday he had \$10. How much does Tim have today?

Step 1**Read** →**Be sure you understand the problem.**

Read carefully.

- What do you know?

Tim had _____ more yesterday than he does today.

Yesterday Tim had _____.

- What do you need to find?

You need to find how much _____.

Step 2**Plan** →

- Use Logical Reasoning
- Draw a Picture or Diagram
- Make a Graph
- Act It Out
- Make a Table or List
- Find a Pattern
- Guess and Check
- Write an Equation
- Work Backward
- Solve a Simpler Problem

Make a plan.

Choose a strategy.

You can work backward to solve the problem.

Start with how much Tim had yesterday.

Then work backward to find how much he has today.

Problem Solving: Strategy

Work Backward

Step 3**Solve****Carry out your plan.**

You know Tim had _____ yesterday.

You know Tim had _____ more yesterday than he does today.

Think: Tim had \$10 yesterday, which is \$5 more than he has today.

Subtract to find how much Tim has today.

$$\$10 - \$5 = \$5$$

Tim has _____ today.

Step 4**Look Back****Is the solution reasonable?**

Reread the problem.

Work forward to check your answer.

Start with your answer. Add \$5.

Did you end with \$10? _____

What other strategies could you use to solve the problem?

Practice

1. Patti had \$10 less yesterday than she does today. Yesterday she had \$1. How much does Patti have today?

2. Fred and Ed walk to the library. Fred walks twice as far as Ed. Ed walks 2 miles. How far does Fred walk?

Problem Solving: Strategy

Work Backward

Work backward to solve.

1. Carol had \$10 less yesterday than she does today. Yesterday she had \$15. How much does Carol have today?

2. J.R. had 5 baseball cards. Then he bought some more baseball cards at the store. Now J.R. has 9 baseball cards. How many cards did J.R. buy?

3. Mr. Robinson and Ms. Alvirez drive to the same movie theater. Mr. Robinson drives twice as far as Ms. Alvirez. Ms. Alvirez drives 15 miles. How far does Mr. Robinson drive?

4. Suki has 4 times as many New York quarters as Georgia quarters. She has 24 New York quarters. How many Georgia quarters does Suki have?

Mixed Strategy Review

Solve. Use any strategy.

5. Barry makes letters for a sign that reads "Free Field Trip Sign-Up Sheet." Which letter does Mark need to make the most of?

6. Mr. Carlson has \$424. He spends \$29 on gasoline. How much money does Mr. Carlson have left?

- Strategy: _____
7. **Health** Walking a mile burns about 110 calories. About how many calories would you burn if you walked 2 miles?

8. **Write a problem** that can be solved by working backward. Share it with others.

- Strategy: _____

Expressions and Equations • Algebra**Find the Value of an Expression**

Find the value of the part inside the parentheses first.

$$(2 + 3) \times 2$$

↑
5

Then multiply.

$$5 \times 2$$

↑
10

The value of $(2 + 3) \times 2$ is 10.

Solve an Equation

Find the value of the part inside the parentheses first.

$$(9 - 3) \div 3 = x$$

↑
6

Then divide.

$$6 \div 3 = x$$

$$2 = x$$

Find the value of each expression.

1. $(3 \times 3) + 2$

2. $2 + (2 \times 2)$

3. $(8 - 5) \times 4$

4. $5 \times (3 - 1)$

5. $(4 + 4) \div 2$

6. $7 - (6 \div 3)$

Solve each equation.

7. $2 \times (4 - 1) = x$

$x =$ _____

8. $(9 + 1) \div 2 = x$

$x =$ _____

9. $11 - (8 \div 2) = x$

$x =$ _____

10. $(2 \times 3) + 6 = x$

$x =$ _____

11. $9 + (5 \times 2) = x$

$x =$ _____

12. $(12 - 4) \times 3 = x$

$x =$ _____

Name _____

Expressions and Equations • Algebra



Find the value of each expression.

1. $3 \times (5 - 1)$

2. $(7 + 1) \div 2$

3. $12 - (6 \div 2)$

Circle the best expression.

4. Mark spent 10 minutes a day cleaning his room for 3 days and 15 minutes on the fourth day.

A. $(10 \times 3) + 15$

B. $10 \times (3 + 15)$

5. Jennifer had 20 stickers. She bought 10 more stickers. Then she gave half of her stickers to Melanie.

A. $20 + (10 \div 2)$

B. $(20 + 10) \div 2$

Solve each equation.

6. $(2 \times 6) + 10 = d$

$d =$ _____

7. $8 + (5 \times 5) = z$

$z =$ _____

8. $(14 - 7) \times 3 = n$

$n =$ _____

Find the value of the expression for the value given.

9. $(x + 2) \times 2$ for $x = 3$

10. $x + (4 \times 5)$ for $x = 10$

11. $8 - (15 \div x) \times 2$ for $x = 5$

Problem Solving

Solve. Use data from the chart for problems 12 and 13.

12. Last week, Karla bought 3 pens and a ruler. How much did she spend?

13. This week, all items are half price. How much will Karla pay for a ruler and a notebook?

Item	Cost
pen	\$3
ruler	\$2
notebook	\$4

Name _____

Expressions and Equations • Algebra



Write the missing numbers to complete each multiplication equation pattern.

1. $2 \times (5 + 3) = \underline{\hspace{2cm}}$ $2 \times (50 + 30) = \underline{\hspace{2cm}}$ $2 \times (500 + 300) = \underline{\hspace{2cm}}$
2. $6 \times (1 + 1) = \underline{\hspace{2cm}}$ $6 \times (2 + 2) = \underline{\hspace{2cm}}$ $6 \times (3 + 3) = \underline{\hspace{2cm}}$
3. $2 \times (3 + 3) = \underline{\hspace{2cm}}$ $3 \times (3 + 3) = \underline{\hspace{2cm}}$ $4 \times (3 + 3) = \underline{\hspace{2cm}}$
4. $5 \times (10 - 1) = \underline{\hspace{2cm}}$ $5 \times (10 - 2) = \underline{\hspace{2cm}}$ $5 \times (10 - 3) = \underline{\hspace{2cm}}$
5. $4 \times (6 - 2) = \underline{\hspace{2cm}}$ $4 \times (60 - 20) = \underline{\hspace{2cm}}$ $4 \times (600 - 200) = \underline{\hspace{2cm}}$

Write the missing numbers to complete each division equation pattern.

6. $(7 - 4) \div 3 = \underline{\hspace{2cm}}$ $(70 - 40) \div 3 = \underline{\hspace{2cm}}$ $(700 - 400) \div 3 = \underline{\hspace{2cm}}$
7. $(18 - 6) \div 2 = \underline{\hspace{2cm}}$ $(17 - 5) \div 2 = \underline{\hspace{2cm}}$ $(16 - 4) \div 2 = \underline{\hspace{2cm}}$
8. $(28 - 7) \div 7 = \underline{\hspace{2cm}}$ $(28 - 14) \div 7 = \underline{\hspace{2cm}}$ $(28 - 21) \div 7 = \underline{\hspace{2cm}}$
9. $(10 - 2) \div 2 = \underline{\hspace{2cm}}$ $(12 - 2) \div 2 = \underline{\hspace{2cm}}$ $(14 - 2) \div 2 = \underline{\hspace{2cm}}$
10. $(25 - 15) \div 5 = \underline{\hspace{2cm}}$ $(35 - 25) \div 5 = \underline{\hspace{2cm}}$ $(45 - 35) \div 5 = \underline{\hspace{2cm}}$

Solve.

11. Jason's class collected aluminum cans for a recycling project. The first week the students collected 427 pounds of cans. The second week they collected 455 pounds of cans. The third week they collected twice as many cans as in the first two weeks combined. How many cans did they collect the third week? Show your work.

12. At the class's pet show, three friends measured their animals to compare their heights. Alyssa's cat was 13 inches tall and Bruce's ferret was 4 inches shorter. Jim's dog was 3 times as tall as Bruce's ferret. How tall was Jim's dog? Show your work.

Name _____

Problem Solving: Decision Making

Decision
Making
WORKSHEET

Show how the Sequoia Nature Club can spend its time. Make a schedule.

Activity	Starting Time of Activity	Ending Time of Activity

Your Decision

Which activities did you choose for the Sequoia Nature Club?
Explain your choices.

**UNIT
5****Multiply by 1-Digit
Numbers****CHAPTER 9 • SUPPORT MATERIALS**

Lesson	Titles	Masters	Use with pages
9-1	Patterns and Properties	R9-1, P9-1, E9-1	202–203
9-2	Explore Multiplying by 1-Digit Numbers	R9-2, P9-2, E9-2	204–205
9-3	Multiply by 1-Digit Numbers	R9-3, P9-3, E9-3	206–208
9-4	Estimating Products	R9-4, P9-4, E9-4	210–211
9-5	Problem Solving: Skill Use an Overestimate or Underestimate	R9-5, P9-5, E9-5	212–213

CHAPTER 10 • SUPPORT MATERIALS

Lesson	Titles	Masters	Use with pages
10-1	Multiplying Greater Numbers	R10-1, P10-1, E10-1	218–220
10-2	Multiply Using Mental Math	R10-2, P10-2, E10-2	222–223
10-3	Choose a Computation Method	R10-3, P10-3, E10-3	224–225
10-4	Functions	R10-4, P10-4, E10-4	226–227
10-5	Graphing Functions	R10-5, P10-5, E10-5	228–230
10-6	Problem Solving: Strategy Find a Pattern	R10-6, P10-6, E10-6	232–233
	Problem Solving: Reading Math and Science	Worksheets	236–237

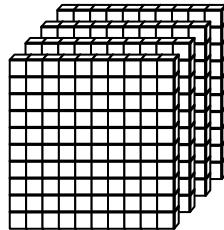
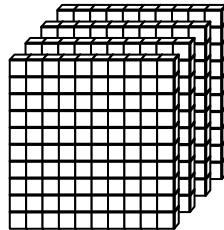
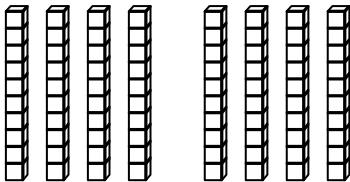
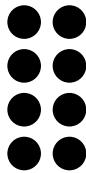
R—Reteach

P—Practice

E—Enrich

Patterns and Properties • Algebra

Using basic facts and patterns can help you multiply mentally.



$$\begin{aligned} 2 \times 4 \text{ ones} &= 8 \text{ ones} \\ 2 \times 4 &= 8 \end{aligned}$$

$$\begin{aligned} 2 \times 4 \text{ tens} &= 8 \text{ tens} \\ 2 \times 40 &= 80 \end{aligned}$$

$$\begin{aligned} 2 \times 4 \text{ hundreds} &= 8 \text{ hundreds} \\ 2 \times 400 &= 800 \end{aligned}$$

Complete the pattern.

1. $3 \times 3 =$ _____	2. $6 \times 3 =$ _____	3. $4 \times 5 =$ _____
$3 \times 30 =$ _____	$6 \times 30 =$ _____	$4 \times 50 =$ _____
$3 \times 300 =$ _____	$6 \times 300 =$ _____	$4 \times 500 =$ _____
$3 \times 3,000 =$ _____	$6 \times 3,000 =$ _____	$4 \times 5,000 =$ _____

Multiply. Use patterns.

4. $\begin{array}{r} 70 \\ \times 8 \\ \hline \end{array}$	5. $\begin{array}{r} 90 \\ \times 4 \\ \hline \end{array}$	6. $\begin{array}{r} 70 \\ \times 4 \\ \hline \end{array}$	7. $\begin{array}{r} 60 \\ \times 7 \\ \hline \end{array}$	8. $\begin{array}{r} 800 \\ \times 9 \\ \hline \end{array}$
---	---	---	---	--

9. $\begin{array}{r} 200 \\ \times 8 \\ \hline \end{array}$	10. $\begin{array}{r} 500 \\ \times 7 \\ \hline \end{array}$	11. $\begin{array}{r} 3,000 \\ \times 8 \\ \hline \end{array}$	12. $\begin{array}{r} 7,000 \\ \times 3 \\ \hline \end{array}$	13. $\begin{array}{r} 6,000 \\ \times 8 \\ \hline \end{array}$
--	---	---	---	---

14. $9 \times 60 =$ _____	15. $6 \times 50 =$ _____	16. $8 \times 200 =$ _____
17. $8 \times 800 =$ _____	18. $6 \times 800 =$ _____	19. $5 \times 900 =$ _____
20. $6 \times 600 =$ _____	21. $8 \times 400 =$ _____	22. $9 \times 700 =$ _____
23. $4 \times 600 =$ _____	24. $8 \times 5,000 =$ _____	25. $3 \times 4,000 =$ _____
26. $7 \times 2,000 =$ _____	27. $5 \times 6,000 =$ _____	28. $4 \times 4,000 =$ _____

Name _____

Patterns and Properties • Algebra



Complete.

- | | | | |
|----------------------|--------------------------------|------------------------|--------------------------------|
| 1. $3 \times 2 = a$ | $a = \underline{\hspace{2cm}}$ | 2. $5 \times 8 = e$ | $e = \underline{\hspace{2cm}}$ |
| $3 \times b = 60$ | $b = \underline{\hspace{2cm}}$ | $5 \times c = 400$ | $f = \underline{\hspace{2cm}}$ |
| $c \times 200 = 600$ | $c = \underline{\hspace{2cm}}$ | $g \times 800 = 4,000$ | $g = \underline{\hspace{2cm}}$ |
| $3 \times 2,000 = d$ | $d = \underline{\hspace{2cm}}$ | $5 \times 8,000 = h$ | $h = \underline{\hspace{2cm}}$ |

Multiply. Use patterns.

3. $\begin{array}{r} 80 \\ \times 6 \\ \hline \end{array}$	4. $\begin{array}{r} 70 \\ \times 8 \\ \hline \end{array}$	5. $\begin{array}{r} 40 \\ \times 5 \\ \hline \end{array}$	6. $\begin{array}{r} 60 \\ \times 7 \\ \hline \end{array}$	7. $\begin{array}{r} 90 \\ \times 6 \\ \hline \end{array}$
--	--	--	--	--

8. $\begin{array}{r} 400 \\ \times 5 \\ \hline \end{array}$	9. $\begin{array}{r} 800 \\ \times 6 \\ \hline \end{array}$	10. $\begin{array}{r} 700 \\ \times 9 \\ \hline \end{array}$	11. $\begin{array}{r} 2,000 \\ \times 4 \\ \hline \end{array}$	12. $\begin{array}{r} 3,000 \\ \times 6 \\ \hline \end{array}$
---	---	--	--	--

- | | | |
|---|---|---|
| 13. $90 \times 5 = \underline{\hspace{2cm}}$ | 14. $4 \times 90 = \underline{\hspace{2cm}}$ | 15. $5 \times 600 = \underline{\hspace{2cm}}$ |
| 16. $700 \times 8 = \underline{\hspace{2cm}}$ | 17. $9 \times 600 = \underline{\hspace{2cm}}$ | 18. $700 \times 4 = \underline{\hspace{2cm}}$ |
| 19. $2,000 \times 8 = \underline{\hspace{2cm}}$ | 20. $5,000 \times 7 = \underline{\hspace{2cm}}$ | 21. $8 \times 4,000 = \underline{\hspace{2cm}}$ |

Find each missing number.

22. $a \times 5 = 300$ $a = \underline{\hspace{2cm}}$	23. $b \times 4 = 320$ $a = \underline{\hspace{2cm}}$	24. $2 \times c = 180$ $c = \underline{\hspace{2cm}}$
25. $3 \times a = 900$ $a = \underline{\hspace{2cm}}$	26. $6 \times b = 3,600$ $b = \underline{\hspace{2cm}}$	27. $c \times 8 = 72,000$ $c = \underline{\hspace{2cm}}$

Problem Solving

Solve.

28. Stamps are sold in rolls of 100. How many stamps are in 9 rolls?
29. A ream of paper is 500 sheets of paper. How many sheets are in 7 reams?

Patterns and Properties • Algebra

Find each missing number. Solve the riddles.

1. _____ \times 5 = 100 2. $60 \times$ _____ = 24,000 3. $7 \times$ _____ = 350
4. $4 \times$ _____ = 2,000 5. _____ \times 9 = 1,800 6. _____ \times 8 = 400
7. $7 \times$ _____ = 21,000 8. _____ \times 5 = 1,000 9. _____ \times 6 = 3,000
10. $3 \times$ _____ = 1,200 11. $7 \times$ _____ = 1,400 12. _____ \times 6 = 1,200
13. _____ \times 6 = 240 14. $6 \times$ _____ = 480 15. $6 \times$ _____ = 3,000
16. _____ \times 3 = 600 17. $9 \times$ _____ = 18,000 18. _____ \times 5 = 100
19. $6 \times$ _____ = 2,400 20. _____ \times 8 = 4,000 21. $9 \times$ _____ = 180
22. _____ \times 7 = 2,100 23. $6 \times$ _____ = 4,800 24. $7 \times$ _____ = 210

Find a letter in the table that matches each missing number. Write the letter in the blank above the problem number.

20	30	40	50	80	200	300	400	500	800	2,000	3,000	4,000	5,000	8,000
E	N	B	A	M	T	S	H	O	I	F	W	U	K	Y

What did Paul Revere say at the end of his ride?

_____ 7. 2. 9. 3.

Where was the Declaration of Independence signed?

_____ 6. 11. 12. 10. 1. 13. 15. 5. 8. 4. 14.

When Columbus discovered America, where did he first stand?

_____ 20. 24. 19. 23. 22. 17. 18. 21. 16.

Name _____

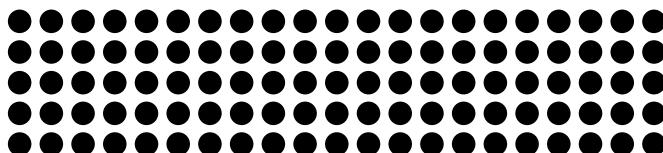
Explore Multiplying by 1-Digit Numbers



Find 5×21 .

You can draw an array to multiply.

Find the total number of dots.



21 dots

5 dots $5 \times 21 = 105$

Draw an array to multiply.

1. $4 \times 18 =$ _____

2. $5 \times 24 =$ _____

3. $3 \times 12 =$ _____

4. $5 \times 21 =$ _____

5.
$$\begin{array}{r} 25 \\ \times 4 \\ \hline \end{array}$$

6.
$$\begin{array}{r} 19 \\ \times 6 \\ \hline \end{array}$$

Name _____

Explore Multiplying by 1-Digit Numbers



Use place-value models to multiply.

1. 21×7

2. 38×5

3. 54×2

4. 49×6

5. 17×4

6. 25×9

7. 53×4

8. 28×7

9. 61×8

10. 39×2

11. 62×2

12. 38×4

13. 91×3

14. 46×5

15. 78×6

16. 98×5

17. 76×6

18. 24×9

19. 56×7

20. 48×8

21. 66×6

22. 77×7

23. 94×3

24. 59×4

25. 44×9

26. 24×7

27. 19×8

28. 67×5

29. 84×4

30. 76×7

31. $5 \times 26 =$ _____

32. $37 \times 8 =$ _____

33. $45 \times 6 =$ _____

34. $38 \times 4 =$ _____

35. $7 \times 22 =$ _____

36. $9 \times 49 =$ _____

37. $8 \times 67 =$ _____

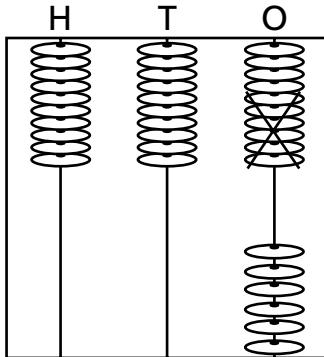
38. $35 \times 4 =$ _____

39. $99 \times 3 =$ _____

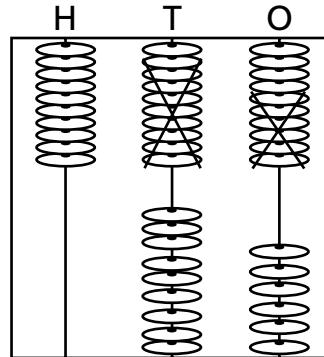
Explore Multiplying by 1-Digit Numbers

The abacus is a computing tool that is thousands of years old.

To multiply 3×32 using a Russian abacus, first multiply 2 ones by 3. Move 6 beads to the bottom of the ones column to show $3 \times 2 = 6$.



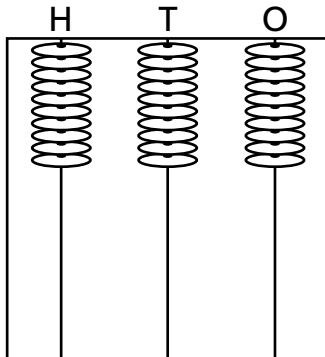
Next, multiply 3 tens by 3. Move 9 beads to the bottom of the tens column to show 3×3 tens = 9 tens. Count the beads in each column.



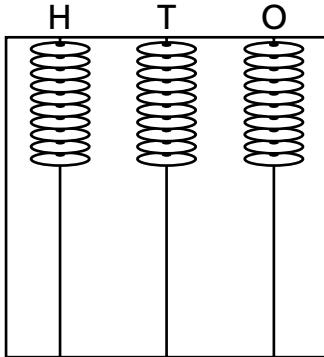
There are 9 tens 6 ones, so $3 \times 32 = 96$.

Use the abacus to find each product. Show the answer by drawing the beads you moved down. Cross out the beads you moved down from the top.

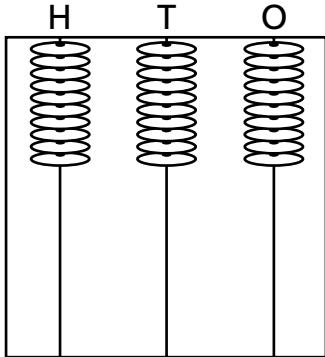
1. $4 \times 22 =$ _____



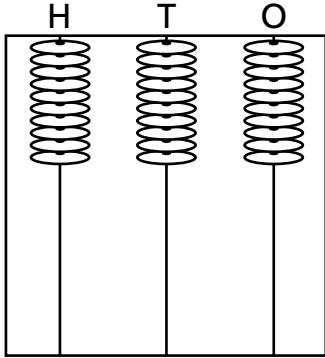
2. $2 \times 34 =$ _____



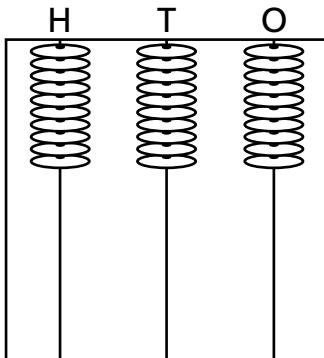
3. $3 \times 31 =$ _____



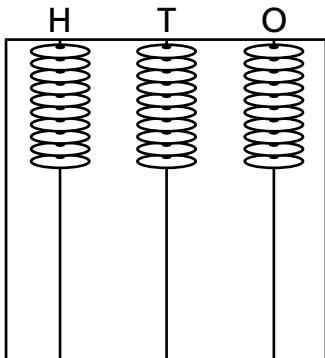
4. $5 \times 43 =$ _____



5. $4 \times 212 =$ _____



6. $3 \times 304 =$ _____



Name _____

Multiply by 1-Digit Numbers



You can multiply using models or pencil and paper.

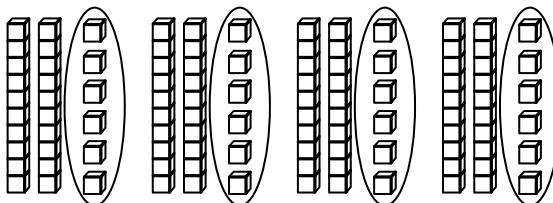
Find 4×26 .

Show 4 groups of 26.

Step 1

Multiply the ones.

$$4 \times 6 \text{ ones} = 24 \text{ ones}$$

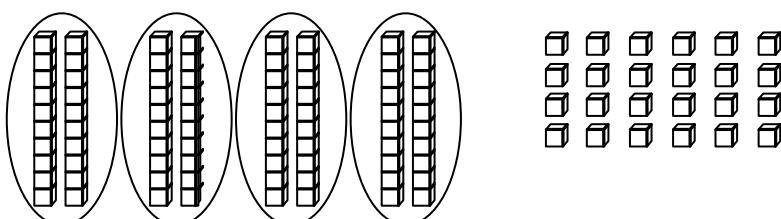


$$\begin{array}{r} 26 \\ \times 4 \\ \hline 24 \end{array}$$

Step 2

Multiply the tens.

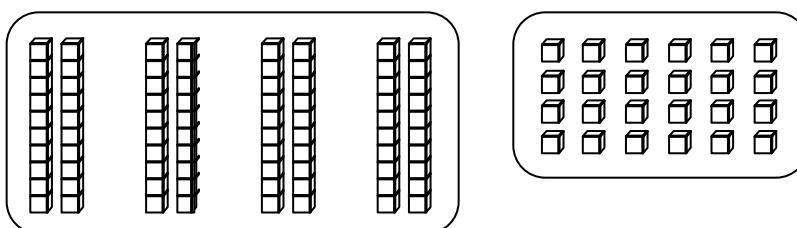
$$4 \times 2 \text{ tens} = 8 \text{ tens}$$



$$\begin{array}{r} 26 \\ \times 4 \\ \hline 24 \\ + 80 \\ \hline \end{array}$$

Step 3

Add.



$$\begin{array}{r} 26 \\ \times 4 \\ \hline 24 \\ + 80 \\ \hline 104 \end{array}$$

Complete to find the product. You may use models to help you.

1. 23
 $\underline{\times 5}$

2. 44
 $\underline{\times 3}$

3. 31
 $\underline{\times 8}$

4. 52
 $\underline{\times 7}$

5. 45
 $\underline{\times 9}$

_____ _____ _____ _____ _____

6. 45
 $\underline{\times 5}$

7. 64
 $\underline{\times 6}$

8. 78
 $\underline{\times 3}$

9. 86
 $\underline{\times 4}$

10. 92
 $\underline{\times 5}$

11. $9 \times 52 =$ _____ 12. $72 \times 7 =$ _____ 13. $68 \times 3 =$ _____

14. $5 \times 83 =$ _____ 15. $2 \times 88 =$ _____ 16. $48 \times 6 =$ _____

Name _____

Multiply by 1-Digit Numbers



Multiply.

$$\begin{array}{r} 73 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 44 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 31 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 68 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 32 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 65 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 33 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 96 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 88 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 74 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 85 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 77 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 97 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 66 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 94 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 44 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 77 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 18 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 38 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 99 \\ \times 6 \\ \hline \end{array}$$

21. $55 \times 5 =$ _____

22. $75 \times 6 =$ _____

23. $8 \times 47 =$ _____

24. $6 \times 39 =$ _____

25. $2 \times 98 =$ _____

26. $84 \times 6 =$ _____

27. $4 \times 52 =$ _____

28. $63 \times 7 =$ _____

29. $29 \times 9 =$ _____

30. Multiply 63 by 8. _____

31. Multiply 78 by 4. _____

32. Multiply 37 by 6. _____

33. Multiply 45 by 5. _____

34. Multiply 56 by 7. _____

35. Multiply 82 by 3. _____

Problem Solving

Solve.

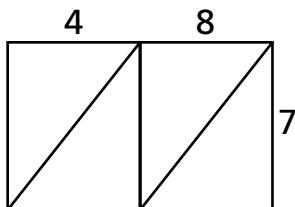
36. A rectangle is 5 tiles wide by 13 tiles high. How many tiles are in the rectangle?

37. Books are stacked in 3 stacks with 17 books in each stack. How many books are in the stacks?

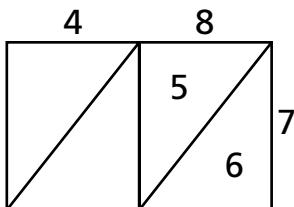
Multiply by 1-Digit Numbers

You can use lattice multiplication to multiply. Multiply 7×48 .

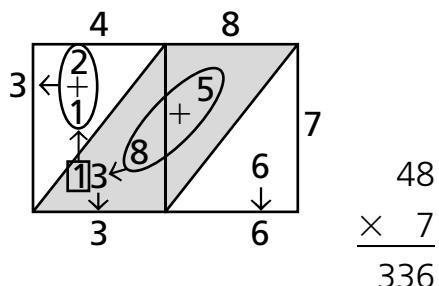
Write 48 over the top boxes. Write 7 on the right.



Multiply 7×8 . Write 56 in the first box.

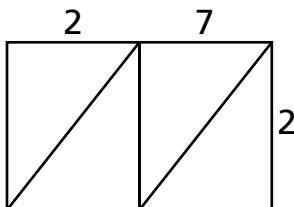


Multiply 7×4 . Write 28 in the second box. Add on the diagonals. Start at the right. Regroup as you would in any addition problem.

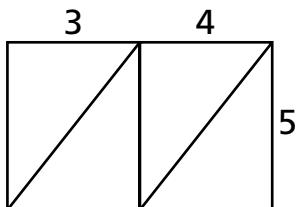


Use lattice multiplication to find the products.

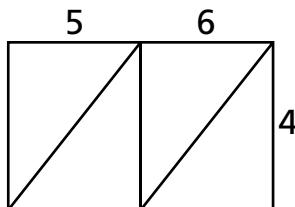
1. $2 \times 27 =$ _____



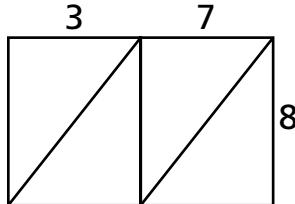
2. $5 \times 34 =$ _____



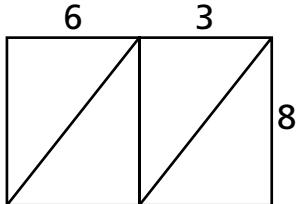
3. $4 \times 56 =$ _____



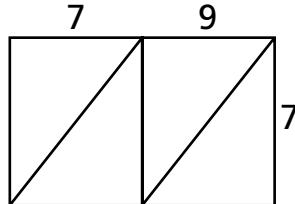
4. $8 \times 37 =$ _____



5. $8 \times 63 =$ _____



6. $7 \times 79 =$ _____



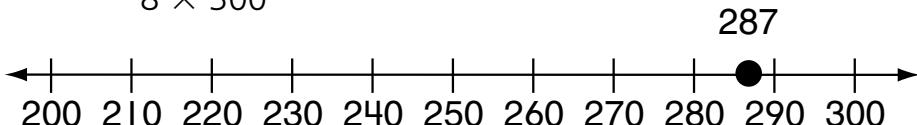
Estimating Products

You can round to estimate products. Round the greater factor to its greatest place and multiply using patterns.

Estimate 8×287 .

Round 287 to the nearest hundred.

$$\begin{array}{r} 8 \times 287 \\ \downarrow \quad \downarrow \\ 8 \times 300 \end{array}$$



Multiply using the rounded number

$$8 \times 300 = 2,400 \text{ So, } 8 \times 287 \text{ is about 2,400.}$$

Estimate each product.

1. 2×74 _____

2. 3×42 _____

3. 6×36 _____

4. $6 \times \$58$ _____

5. 9×18 _____

6. 3×71 _____

7. 3×198 _____

8. $2 \times \$405$ _____

9. 4×378 _____

10. $5 \times 2,987$ _____

11. $8 \times 2,126$ _____

12. $7 \times \$2,905$ _____

13. $\begin{array}{r} 31 \\ \times 2 \\ \hline \end{array}$

14. $\begin{array}{r} 58 \\ \times 3 \\ \hline \end{array}$

15. $\begin{array}{r} \$66 \\ \times 4 \\ \hline \end{array}$

16. $\begin{array}{r} 17 \\ \times 5 \\ \hline \end{array}$

17. $\begin{array}{r} 51 \\ \times 6 \\ \hline \end{array}$

18. $\begin{array}{r} \$454 \\ \times 7 \\ \hline \end{array}$

19. $\begin{array}{r} 512 \\ \times 8 \\ \hline \end{array}$

20. $\begin{array}{r} 498 \\ \times 9 \\ \hline \end{array}$

21. $\begin{array}{r} \$637 \\ \times 4 \\ \hline \end{array}$

22. $\begin{array}{r} 845 \\ \times 2 \\ \hline \end{array}$

23. $\begin{array}{r} 7,809 \\ \times 6 \\ \hline \end{array}$

24. $\begin{array}{r} \$6,047 \\ \times 3 \\ \hline \end{array}$

25. $\begin{array}{r} 4,524 \\ \times 8 \\ \hline \end{array}$

26. $\begin{array}{r} \$2,107 \\ \times 6 \\ \hline \end{array}$

27. $\begin{array}{r} 8,596 \\ \times 4 \\ \hline \end{array}$

28. $\begin{array}{r} 2,537 \\ \times 4 \\ \hline \end{array}$

29. $\begin{array}{r} 5,088 \\ \times 2 \\ \hline \end{array}$

30. $\begin{array}{r} \$6,409 \\ \times 7 \\ \hline \end{array}$

31. $\begin{array}{r} 3,623 \\ \times 8 \\ \hline \end{array}$

32. $\begin{array}{r} \$7,522 \\ \times 9 \\ \hline \end{array}$

Name _____

Estimating Products



Estimate each product.

1. $5 \times 21 =$ _____

2. $3 \times 39 =$ _____

3. $7 \times \$46 =$ _____

4. $85 \times 6 =$ _____

5. $17 \times 9 =$ _____

6. $81 \times 3 =$ _____

7. $2 \times \$298 =$ _____

8. $4 \times 305 =$ _____

9. $478 \times 6 =$ _____

10. $5 \times 784 =$ _____

11. $612 \times 9 =$ _____

12. $6 \times 556 =$ _____

13. $2 \times 1,987 =$ _____

14. $3 \times \$2,126 =$ _____

15. $7 \times 1,905 =$ _____

16. $8 \times 3,495 =$ _____

17. $4,723 \times 4 =$ _____

18. $5 \times \$7,118 =$ _____

19. $\begin{array}{r} 41 \\ \times 6 \\ \hline \end{array}$

20. $\begin{array}{r} 28 \\ \times 7 \\ \hline \end{array}$

21. $\begin{array}{r} 96 \\ \times 2 \\ \hline \end{array}$

22. $\begin{array}{r} 17 \\ \times 8 \\ \hline \end{array}$

23. $\begin{array}{r} 31 \\ \times 9 \\ \hline \end{array}$

24. $\begin{array}{r} 255 \\ \times 4 \\ \hline \end{array}$

25. $\begin{array}{r} 488 \\ \times 3 \\ \hline \end{array}$

26. $\begin{array}{r} 563 \\ \times 5 \\ \hline \end{array}$

27. $\begin{array}{r} 2,307 \\ \times 5 \\ \hline \end{array}$

28. $\begin{array}{r} 7,596 \\ \times 6 \\ \hline \end{array}$

Algebra Compare. Write $>$ or $<$.

29. $2 \times 36 \bigcirc 1 \times 49$ 30. $96 \times 3 \bigcirc 68 \times 4$ 31. $6 \times 28 \bigcirc 5 \times 41$

32. $97 \times 1 \bigcirc 89 \times 2$ 33. $6 \times 105 \bigcirc 4 \times 209$ 34. $396 \times 4 \bigcirc 106 \times 9$

35. $5 \times 423 \bigcirc 6 \times 523$ 36. $3 \times 666 \bigcirc 2 \times 366$ 37. $4 \times 712 \bigcirc 3 \times 412$

Problem Solving

Solve.

38. The volunteer ambulance group orders 6 first aid kits. Each kit costs \$39. About how much does it cost for 6 kits?

39. An ambulance travels about 386 miles a day. About how many miles does it travel in a week?

Estimating Products

Estimate to find the factors with products closer to the target number. Circle the letter of the answer.

- | | | |
|----------------------------------|----------------------------------|----------------------------------|
| 1. Target Number: 150 | 2. Target Number: 160 | 3. Target Number: 180 |
| S. 57×3 | H. 37×4 | D. 3×67 |
| T. 52×3 | I. 32×4 | E. 3×61 |
| 4. Target Number: 540 | 5. Target Number: 420 | 6. Target Number: 560 |
| S. 88×6 | T. 7×62 | O. 76×8 |
| T. 83×6 | U. 7×68 | A. 72×8 |
| 7. Target Number: 2,700 | 8. Target Number: 630 | 9. Target Number: 4,500 |
| T. 3×879 | T. 79×9 | E. 9×490 |
| U. 3×849 | U. 72×9 | F. 9×430 |
| 10. Target Number: 3,600 | 11. Target Number: 5,600 | 12. Target Number: 6,000 |
| N. 849×4 | E. 770×8 | L. $2,181 \times 3$ |
| O. 889×4 | F. 680×8 | M. $2,898 \times 3$ |
| 13. Target Number: 6,400 | 14. Target Number: 7,200 | 15. Target Number: 2,400 |
| I. 839×8 | A. 711×9 | E. 303×8 |
| J. 899×8 | B. 782×9 | F. 352×8 |
| 16. Target Number: 25,000 | 17. Target Number: 32,000 | 18. Target Number: 35,000 |
| Q. $4,175 \times 5$ | T. $7,825 \times 4$ | Y. $4,762 \times 7$ |
| R. $4,899 \times 5$ | U. $7,239 \times 4$ | Z. $4,097 \times 7$ |

Write the circled letters above each exercise number to answer the question.

"I lift my lamp beside the golden door!" Who am I?

Problem Solving: Skill

Use an Overestimate or Underestimate

Round up to find an **overestimate**. The estimate will be greater than the exact answer.

Round down to find an **underestimate**. The estimate will be less than the exact answer.

Here are some examples.

Use an overestimate.

Problem Four children want to buy their mother a plant for \$10.75. They each give \$2.75. Do they have enough money?

Estimate $4 \times \$2.75$.

Round \$2.75 up. $4 \times \$3.00 =$

\$12.00

Compare. $\$12.00 > \10.75

The children have enough money.

Use an underestimate.

Problem A total of 190 people are taking a trip to the zoo. They have 5 buses to use for the trip. Each bus holds 42 people. Do they need a fifth bus for the trip?

Estimate 5×42 .

Round 42 down. $5 \times 40 = 200$

Compare. 190

A fifth bus is not needed.

Solve. Use an overestimate or underestimate.

1. The river tour has 4 boats. Each boat has room for 24 people. Are there enough boats to take 76 people on a tour?
-

2. There are 5 groups of 25 students each. The rangers have 150 forest T-shirts. Do they have enough T-shirts to give a T-shirt to each student?
-

3. The forest rangers have 5 boxes of wildlife guides. Each box contains 36 pamphlets. The rangers need 200 pamphlets. Should they order another box?
-

4. Phyllis takes 118 photos of the desert. She buys a photo album with 24 pages. Each page can hold 6 photos. Can all the photos fit in the album?
-

5. The motel in the national park costs \$39 per night. Nick sets aside \$150 to pay for the motel. Is this enough money to pay for 5 nights?
-

6. It costs \$89 to rent a sport utility vehicle (SUV) for one day. Will \$650 be enough to rent an SUV for a 7-day trip through the desert?
-

Problem Solving: Skill

Use an Overestimate or Underestimate

Form a conclusion about whether you would use an overestimate or an underestimate. Then solve each problem.

- On Wednesday, a group of 98 students will visit the national forest. Each student will get a nature guide fact book. The books come in boxes of 32. The park rangers have 3 boxes of fact books. Are there enough fact books to go around?

Should you use an overestimate or an underestimate to solve this problem? Explain.

Are there enough fact books so each student can get a book? _____

- The park charges \$16 per day to use a campsite. The Nolans want to use a campsite for 4 nights. They have \$80 set aside for using a campsite. Have the Nolans set aside enough money?

Should you use an overestimate or an underestimate to solve this problem? Explain.

Have the Nolans set aside enough money? _____

- John, Marla, and Mia each like a different sport, either football, soccer, or basketball. John likes soccer. Mia does not like football. Who likes football?
 - Caroline had 30 tulip bulbs to plant. She has 12 left. How many bulbs has Caroline already planted?
-
-

Problem Solving: Skill

Use an Overestimate or Underestimate

1. The National Forest Wildlife Committee is selling books to raise \$400. The committee makes \$8.75 on each book it sells. If the committee sells 50 books, will that be enough to raise \$400?

How would you use estimation to solve this problem?

Write an estimate that you would use to solve the problem.

Will the committee raise \$400? _____

2. There are 7 river tours in the national forest per day. Each river tour has room for 48 people. Each person on the river tour receives a pamphlet. The tour leaders have 400 pamphlets. Are there enough pamphlets for a day of river tours?

How would you use estimation to solve this problem?

Write an estimate that you would use to solve the problem.

Are there enough pamphlets? _____

3. The cafeteria in the national forest visitors' center has 23 tables. Each table seats 6 people. A group of 120 is visiting the forest. Are there enough tables so that all 120 people can eat in the cafeteria at once?

How would you use estimation to solve this problem?

Write an estimate that you would use to solve the problem.

Are there enough tables? _____

Multiplying Greater Numbers

You can use models to help you multiply greater numbers.

Find 2×357 .

Show 2 groups of 357.

You can record this way:

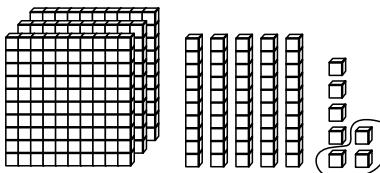
Step 1

Multiply the ones.

$$2 \times 7 \text{ ones} = 14 \text{ ones}$$

Regroup.

$$14 \text{ ones} = 1 \text{ ten } 4 \text{ ones}$$



$$\begin{array}{r}
 & 1 \\
 & 357 \\
 \times & 2 \\
 \hline
 & 4
 \end{array}$$

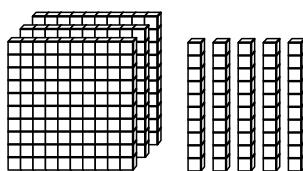
Step 2

Multiply the tens.

$$2 \times 5 \text{ tens} = 10 \text{ tens}$$

Add the tens.

$$10 \text{ tens} + 1 \text{ ten} = 11 \text{ tens}$$



$$\begin{array}{r}
 & 11 \\
 & 357 \\
 \times & 2 \\
 \hline
 & 14
 \end{array}$$

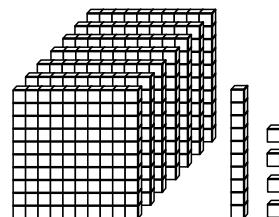
Step 3

Multiply the hundreds.

$$2 \times 3 \text{ hundreds} = 6 \text{ hundreds}$$

Add the hundreds.

$$6 \text{ hundreds} + 1 \text{ hundred} = 7 \text{ hundreds}$$



$$\begin{array}{r}
 & 11 \\
 & 357 \\
 \times & 2 \\
 \hline
 & 714
 \end{array}$$

Multiply. Check for reasonableness.

1. 234
 $\times 5$

2. 146
 $\times 3$

3. 357
 $\times 4$

4. $\$4.62$
 $\times 6$

5. $3,548$
 $\times 2$

6. $\$6,164$
 $\times 7$

7. $2,781$
 $\times 8$

8. $4,862$
 $\times 9$

9. $\$1,530$
 $\times 4$

10. $2,681$
 $\times 2$

11. $9,275$
 $\times 6$

12. $\$7,452$
 $\times 5$

Multiplying Greater Numbers



Multiply. Check for reasonableness.

1.
$$\begin{array}{r} 693 \\ \times 4 \\ \hline \end{array}$$

2.
$$\begin{array}{r} 907 \\ \times 5 \\ \hline \end{array}$$

3.
$$\begin{array}{r} 368 \\ \times 9 \\ \hline \end{array}$$

4.
$$\begin{array}{r} \$601 \\ \times 3 \\ \hline \end{array}$$

5.
$$\begin{array}{r} 2,901 \\ \times 2 \\ \hline \end{array}$$

6.
$$\begin{array}{r} 1,999 \\ \times 7 \\ \hline \end{array}$$

7.
$$\begin{array}{r} 8,072 \\ \times 8 \\ \hline \end{array}$$

8.
$$\begin{array}{r} \$38.88 \\ \times 4 \\ \hline \end{array}$$

9. $6 \times 2,369 =$ _____

10. $7 \times 5,786 =$ _____

11. $3 \times 4,964 =$ _____

12. $9 \times \$1,288 =$ _____

13. $5 \times 19,091 =$ _____

14. $8 \times 12,967 =$ _____

 15. Multiply 3,687 by 8.

 16. Multiply 1,096 by 9.

Algebra Complete the table.

 17.

Input	12	15	18	21	24
Output	48	60			

 18.

Input	1	2	3	4	5
Output	37	74			

Problem Solving

Solve.

19. Maria made 9 trips between New York City and Los Angeles. Each trip cost \$498. How much did the 9 trips cost?
-
- _____

20. A company buys 8 computers. Each computer costs \$2,245. How much does the company spend on the 8 computers?
-
- _____

Name _____

Multiplying Greater Numbers



Find the missing digits. Write them in the boxes.

$$\begin{array}{r} \boxed{}3 \\ \times 8 \\ \hline 184 \end{array}$$

$$\begin{array}{r} 1\boxed{} \\ \times 7 \\ \hline 98 \end{array}$$

$$\begin{array}{r} \boxed{}\boxed{} \\ \times 3 \\ \hline 174 \end{array}$$

$$\begin{array}{r} 3\boxed{} \\ \times \boxed{} \\ \hline 111 \end{array}$$

$$\begin{array}{r} \boxed{}4 \\ \times 5 \\ \hline 1\boxed{}0 \end{array}$$

$$\begin{array}{r} \boxed{}3 \\ \times \boxed{} \\ \hline 138 \end{array}$$

$$\begin{array}{r} \boxed{}2 \\ \times \boxed{} \\ \hline 416 \end{array}$$

$$\begin{array}{r} \boxed{}\boxed{} \\ \times 7 \\ \hline 434 \end{array}$$

$$\begin{array}{r} 1\boxed{}4 \\ \times 6 \\ \hline 744 \end{array}$$

$$\begin{array}{r} 1\boxed{}4 \\ \times \boxed{} \\ \hline 770 \end{array}$$

$$\begin{array}{r} \boxed{}3\boxed{} \\ \times 7 \\ \hline 1,666 \end{array}$$

$$\begin{array}{r} 3\boxed{}1 \\ \times \boxed{} \\ \hline 1,564 \end{array}$$

$$\begin{array}{r} 2\boxed{}\boxed{} \\ \times 3 \\ \hline 735 \end{array}$$

$$\begin{array}{r} 46\boxed{} \\ \times 4 \\ \hline \boxed{},\boxed{}64 \end{array}$$

$$\begin{array}{r} \boxed{}25 \\ \times 9 \\ \hline 7,\boxed{}\boxed{}5 \end{array}$$

$$\begin{array}{r} \boxed{}\boxed{}\boxed{} \\ \times 3 \\ \hline 2,400 \end{array}$$

$$\begin{array}{r} \$1,0\boxed{}8 \\ \times 5 \\ \hline \$5,\boxed{}9\boxed{} \end{array}$$

$$\begin{array}{r} \boxed{},6\boxed{}2 \\ \times \boxed{} \\ \hline \boxed{},\boxed{}56 \end{array}$$

$$\begin{array}{r} 6,\boxed{}\boxed{}7 \\ \times 9 \\ \hline 5\boxed{},06\boxed{} \end{array}$$

$$\begin{array}{r} 8,\boxed{}76 \\ \times \boxed{} \\ \hline 7\boxed{},184 \end{array}$$

$$\begin{array}{r} \boxed{}4,38\boxed{} \\ \times 7 \\ \hline 31\boxed{},6\boxed{}5 \end{array}$$

$$\begin{array}{r} 29,\boxed{}75 \\ \times \boxed{} \\ \hline \boxed{}74,450 \end{array}$$

$$\begin{array}{r} \$3\boxed{},3\boxed{}3 \\ \times 4 \\ \hline \$1\boxed{}3,\boxed{}32 \end{array}$$

$$\begin{array}{r} \boxed{}0,3\boxed{}9 \\ \times \boxed{} \\ \hline \boxed{}82,472 \end{array}$$

Multiply Using Mental Math



You can multiply mentally to help you multiply greater numbers.

Find 4×205 .

Step 1

Start with the hundreds place.

Multiply the hundreds.

$$4 \times 200 = 800$$

Step 2

Look at the tens place.
The digit is 0.

Look at the ones place.

Multiply the ones.

$$4 \times 5 = 20$$

Step 3

Add the two products.

$$800 + 20 = 820$$

$$4 \times 205 = 820$$

Multiply mentally.

1. $2 \times 204 =$ _____

2. $310 \times 3 =$ _____

3. $5 \times 105 =$ _____

4. $104 \times 4 =$ _____

5. $8 \times 201 =$ _____

6. $230 \times 3 =$ _____

7. $5 \times 306 =$ _____

8. $408 \times 2 =$ _____

9. $4 \times 220 =$ _____

10. $309 \times 2 =$ _____

11. $9 \times 104 =$ _____

12. $5 \times 510 =$ _____

13. $2,003 \times 3 =$ _____

14. $7 \times 1,002 =$ _____

15. $6 \times 2,001 =$ _____

16. $4 \times 1,002 =$ _____

17. $2 \times 3,004 =$ _____

18. $2,002 \times 3 =$ _____

Multiply Using Mental Math



Multiply mentally.

1. $3 \times 203 =$ _____

2. $210 \times 4 =$ _____

3. $5 \times 103 =$ _____

4. $104 \times 6 =$ _____

5. $7 \times 203 =$ _____

6. $430 \times 3 =$ _____

7. $5 \times 204 =$ _____

8. $501 \times 9 =$ _____

9. $8 \times 306 =$ _____

10. $2,003 \times 2 =$ _____

11. $5 \times 1,004 =$ _____

12. $2,003 \times 3 =$ _____

Find only the products between 2,000 and 35,000.

13. $3 \times 903 =$ _____

14. $9 \times 4,006 =$ _____

15. $8 \times 410 =$ _____

16. $7 \times 6,003 =$ _____

17. $3 \times 4,003 =$ _____

18. $5 \times 5,002 =$ _____

Problem Solving

Solve. Use data from the table for problems 19–20.

19. Mrs. Chan bought 2 T-shirts and 3 pairs of jeans for her children. What was the cost of her purchases?

20. Mr. Rubens bought 4 sweatshirts and 2 jackets for his children. What was the cost of his purchases?

Sportswear for Kids	
T-Shirt	\$ 9.05
Sweatshirt	\$12.10
Jeans	\$15.20
Jacket	\$21.40

Multiply Using Mental Math

Choose factors from the box to make true multiplication equations.

3

810

5

608

402

6

2,003

9

7

4,005

4

906

306

2

5,002

8

1. $\boxed{\quad} \times \boxed{\quad} = 1,206$

2. $\boxed{\quad} \times \boxed{\quad} = 1,530$

3. $\boxed{\quad} \times \boxed{\quad} = 14,021$

4. $\boxed{\quad} \times \boxed{\quad} = 3,240$

5. $\boxed{\quad} \times \boxed{\quad} = 24,030$

6. $\boxed{\quad} \times \boxed{\quad} = 1,812$

7. $\boxed{\quad} \times \boxed{\quad} = 40,016$

8. $\boxed{\quad} \times \boxed{\quad} = 5,472$

9. $\boxed{\quad} \times \boxed{\quad} \times \boxed{\quad} = 24,030$

10. $\boxed{\quad} \times \boxed{\quad} \times \boxed{\quad} = 4,824$

11. $\boxed{\quad} \times \boxed{\quad} \times \boxed{\quad} = 75,030$

12. $\boxed{\quad} \times \boxed{\quad} \times \boxed{\quad} = 6,426$

Choose a Computation Method

Find 3×526 .

Calculator

Press the keys.



Read the display.

$$3 \times 526 = 1578$$

Mental Math

Split 526 into parts.

$$500 + 20 + 6$$

Multiply each part by 3.

$$3 \times 500 = 1,500$$

$$3 \times 20 = 60$$

$$3 \times 6 = 18$$

Add.

$$1,500 + 60 + 18 = 1,578$$

Paper and Pencil

1

526

$\times \quad 3$

1,578

Multiply. Tell which method you used. Write *calculator*, *mental math*, or *paper and pencil*.

1. 382

$$\underline{\times \quad 4}$$

2. 422

$$\underline{\times \quad 5}$$

3. 119

$$\underline{\times \quad 3}$$

4. 294

$$\underline{\times \quad 6}$$

5. $2,331$

$$\underline{\times \quad 2}$$

6. $4,009$

$$\underline{\times \quad 7}$$

7. $5 \times 531 =$ _____

8. $9 \times 201 =$ _____

9. $8 \times 1,966 =$ _____

10. $3 \times 4,111 =$ _____

11. $6 \times 12,012 =$ _____

12. $7 \times 12,345 =$ _____

13. $4 \times 5,025 =$ _____

14. $8 \times 5,293 =$ _____

Name _____

Choose a Computation Method



Multiply. Tell which method you used.

1. 577

$\times \underline{5}$

2. 903

$\times \underline{4}$

3. 241

$\times \underline{3}$

4. 459

$\times \underline{8}$

5. $3,006$

$\times \underline{7}$

6. $6,149$

$\times \underline{6}$

7. $5 \times 110 =$ _____

8. $8 \times 475 =$ _____

9. $3 \times 1,627 =$ _____

10. $9 \times 1,111 =$ _____

11. $6 \times 4,020 =$ _____

12. $7 \times 5,844 =$ _____

Problem Solving

Solve.

13. One full shelf in the library holds 250 books. How many books are on 4 full shelves?
-

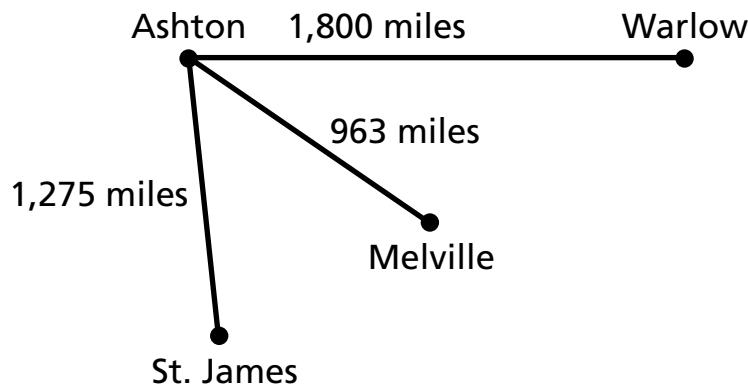
14. The library loans 1,855 books per month. How many books does the library loan in 6 months?
-

15. Twenty-three students in Mr. Sand's class go to the library each week. Each student checks out 4 books. How many books do they check out in 5 weeks?
-

16. Oxford Elementary School held a book drive. Each of the 784 students brought in 4 books. How many books were collected?
-

Choose a Computation Method

Mr. Adams lives in Ashton. He often has to fly to other cities on business. He earns one frequent flier point for each mile he travels.



Solve. Use any method.

1. How many round trips between Ashton and Warlow would Mr. Adams need to take to earn 7,200 frequent flier miles?

Explain how you found your answer and the method you used.

2. How many frequent flier miles would Mr. Adams earn for 3 round trips between Ashton and Melville?

Explain how you found your answer and the method you used.

3. Mr. Adams flew round trip from Ashton to another city and earned 2,550 frequent flier miles. Which city did Mr. Charles fly to?

Explain how you found your answer and the method you used.

Functions • Algebra

The numbers in a function table relate to one another to form a pattern.

One number is 1 greater than 2 times a number.

x	1	2	3	4	5
y	3	5	7	9	11

Think: How can I find the value of y ?

$$\begin{array}{ccccccc} x = & \begin{matrix} 1 \\ \downarrow \end{matrix} & \begin{matrix} 2 \\ \downarrow \end{matrix} & \begin{matrix} 3 \\ \downarrow \end{matrix} & \begin{matrix} 4 \\ \downarrow \end{matrix} & \begin{matrix} 5 \\ \downarrow \end{matrix} \\ \text{Equation} = & 2x + 1 \\ y = & \begin{matrix} 3 \\ \downarrow \end{matrix} & \begin{matrix} 5 \\ \downarrow \end{matrix} & \begin{matrix} 7 \\ \downarrow \end{matrix} & \begin{matrix} 9 \\ \downarrow \end{matrix} & \begin{matrix} 11 \\ \downarrow \end{matrix} \end{array}$$

In each case, multiply by 2 and add 1.

Complete each table. Then write an equation.

1. One number is 2 greater than another number.

Think: Add 2 to x to get y .

x	1	2	3	4	5
y	3	4			

2. One number is 4 times another number.

Think: Multiply x by 4 to get y .

x	1	2	3	4	5
y	4	8			

3. One number is 5 less than another number.

Think: Subtract 5 from x to get y .

x	10	9	8	7	6
y	5				

4. One number is 1 less than 2 times a number.

Think: Multiply x by 2 and subtract 1 to get y .

x	1	2	3	4	5
y	1				

5. One number is double another number.

Think: Double x to get y .

x	1	2	3	4	5
y	2				

6. One number is 3 greater than another number.

Think: Add 3 to x to get y .

x	0	2	4	6	8
y	3				

Name _____

Functions • Algebra



Complete each function table. Then write an equation.

1. Roger runs 7 miles more each week than another boy.

x	1	2	3	4	5
y	8	9			

2. One plant produces 8 times more peppers than another plant.

r	1	2	3	4	5
s	8	16			

3. One number is 4 less than 3 times another number.

c	4	5	6	7	8
d	8	11			

4. One number is 8 greater than 2 times another number.

m	1	2	3	4	5
n	10	12			

5. Stella works 4 times as many hours as Jana does.

x	0	1	2	3	4
y	0	4			

6. Liz swims 2 more than 2 times as many laps as Sunny does.

b	0	1	2	3	4
a	2	4			

Problem Solving

Solve.

7. Each of 4 people orders a \$8.95 lunch. How much do the 4 lunches cost? Write and solve an equation.

8. Ben buys 3 toys that cost \$3 each. How much do the toys cost? Write and solve an equation.

Functions • Algebra

Draw a line from the pattern to the equation that was used to make it. Then write the next three numbers in the pattern.

1.

<i>x</i>	5	6	7	8	9	10
<i>y</i>	15	16	17			

$$y = 2x + 1$$

2.

<i>x</i>	1	3	7	15	31	63
<i>y</i>	3	7	15			

$$y = x + 10$$

3.

<i>x</i>	2	3	4	5	6	7
<i>y</i>	4	6	8			

$$y = 2x$$

4.

<i>x</i>	10	11	12	13	14	15
<i>y</i>	10	12	14			

$$y = 4x$$

5.

<i>x</i>	2	4	6	8	10	12
<i>y</i>	8	16	24			

$$y = x - 5$$

6.

<i>x</i>	3	6	9	12	15	18
<i>y</i>	6	9	12			

$$y = 3x + 3$$

7.

<i>x</i>	10	9	8	7	6	5
<i>y</i>	5	4	3			

8.

<i>x</i>	30	40	50	60	70	80
<i>y</i>	93	123	153			

Graphing Functions • Algebra

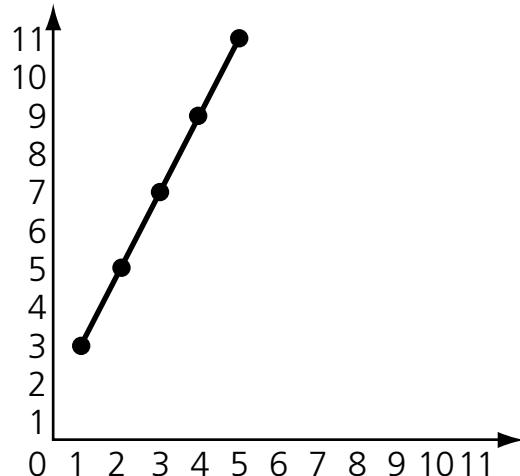
You can use the numbers in a function table to graph an equation.
Graph the function $y = 2x + 1$.

The values in the table form ordered pairs.

x	1	2	3	4	5
y	3	5	7	9	11

(x, y) (1, 3) (2, 5) (3, 7) (4, 9) (5, 11)

You can graph these ordered pairs.



Complete each table. Write the ordered pairs. Then graph the functions.

1. $y = 2x$

x	0	1	2	3	4
y	0	2			

2. $y = 2x + 2$

x	0	1	2	3	4
y	2	4			

3. $y = x + 5$

x	0	1	2	3	4
y	5				

4. $y = 3x$

x	0	1	2	3	4
y	0				

5. $y = 3x + 3$

x	0	1	2	3	4
y	3				

6. $y = 4x$

x	0	1	2	3	4
y	0				

Name _____

Graphing Functions • Algebra



Complete each table. Then graph the function.

1. $b = 2a$

a	0	1	2	3	4
b	0	2			

2. $y = x + 7$

x	0	1	2	3	4
y	7	8			

3. $g = 3f$

f	1	2	3	4	5
g	3				

4. $s = 4r$

r	1	2	3	4	5
s	4				

5. $n = 3m + 3$

m	0	1	2	3	4
n	3				

6. $y = 2x + 2$

x	1	2	3	4	5
y	4				

7. $q = 2p + 1$

p	0	1	2	3	4
q	1				

8. $l = k + 4$

k	0	1	2	3	4
l	4				

Name _____

Graphing Functions • Algebra

E 10-5
ENRICH

Riddle: When are houses like books?

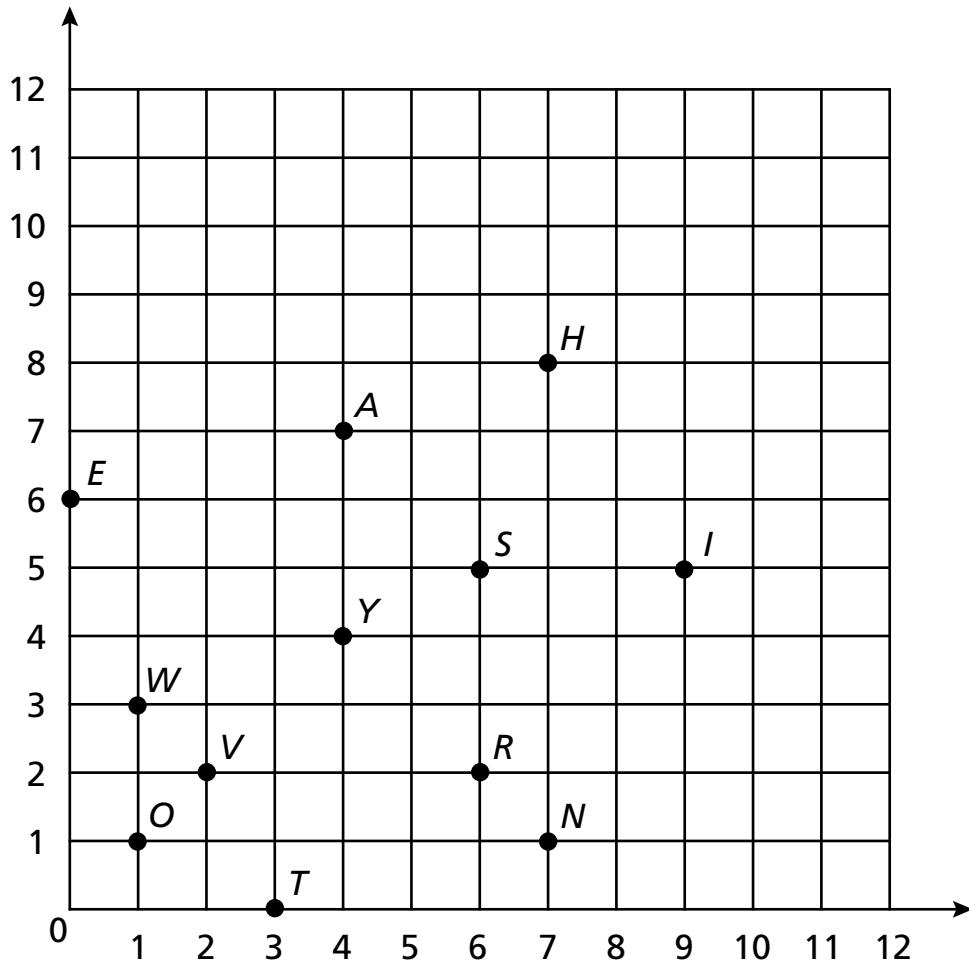
To answer this riddle, find the points on the grid. Then write the letter for each point on the lines.

(1, 3) (7, 8) (0, 6) (7, 1)

(3, 0) (7, 8) (0, 6) (4, 4)

(7, 8) (4, 7) (2, 2) (0, 6)

(6, 5) (3, 0) (1, 1) (6, 2) (9, 5) (0, 6) (6, 5)



If you are given the points (2, 2) and (6, 2), name two other points that would make a square. _____

Problem Solving: Strategy

Find a Pattern

Page 233, Problem 2

As a plant cell grows, one cell divides into two cells. Two cells divide into four cells, four into eight, and so on. How many cells will there be after seven divisions?

Step 1**Read** →**Be sure you understand the problem.**

Read carefully.

What do you know?

- One cell divides into _____ cells, two cells divide into _____ cells, and four cells divide into _____ cells.

What do you need to find?

- You need to find how many _____.

Step 2**Plan** →**Make a plan.**

Choose a strategy.

Finding a pattern will help you solve the problem.

	Start	1st cell division	2nd cell division	3rd cell division	4th cell division	5th cell division	6th cell division	7th cell division
Number of Cells	1	2	4	8				

Find the pattern in the number of cells after the 1st, 2nd, and 3rd cell divisions.

Continue the pattern to find the number of cells after the 7th cell division.

Problem Solving: Strategy

Find a Pattern

Step 3**Solve****Carry out your plan.**

You know the number of cells after the 1st, 2nd, and 3rd cell divisions.

	Start	1st cell division	2nd cell division	3rd cell division	4th cell division	5th cell division	6th cell division	7th cell division
Number of Cells	1	2	4	8				

Find the pattern in the number of cells after the 1st, 2nd, and 3rd cell divisions.

What pattern do you see? _____

Continue the pattern to complete the chart. If the pattern continues, there will be _____ cells after the 7th cell division.

Step 4**Look Back****Is the solution reasonable?**

Reread the problem.

Did you find a pattern and continue it? Yes No

What other strategies could you use to solve the problem?

Practice

- 1.** Kate hikes 2 miles the first day, 5 miles the second day, and 8 miles the third day. If the pattern continues, how many miles will she hike the fourth day?
- _____

- 2.** The Support-Our-Forests Fund has goals of \$3,000, \$6,000, \$12,000, and \$24,000 for its first four fund drives. If the pattern continues, what will the goal be for the fifth fund drive?
- _____

Problem Solving: Strategy

Find a Pattern

Solve.

- 1.** Annie makes an arrangement of chestnuts. She puts 3 chestnuts in the first row, 6 chestnuts in the second row, and 9 chestnuts in the third row. Describe the pattern. How many chestnuts will be in the fourth row?

- 3.** Rangers examine trees that fell during a storm. The first tree has 3 annual rings. The second tree has 9 rings. The third tree has 27 rings. The fourth tree has 81 rings. If the pattern continues, how many annual rings does the fifth tree have?

- 2.** In one desert area, the rabbit population is estimated at 25 in one year, 50 the next year, 100 the third year, and 200 the next year. Describe the pattern. Then estimate the rabbit population for the fifth year.

- 4.** Stan counts robins' nests on his block. One year he counts 4 nests. The next year he counts 9 nests. The third year Stan counts 14 nests. The fourth year he counts 19 nests. If the pattern continues, how many nests will he count in the fifth year?

Mixed Strategy Review

Solve. Use any strategy.

- 5.** Nick took 40 photos of the desert. He has one photo album with 8 pages and another with 12 pages. Nick wants to put the same number of photos on each page. Which album should he use?

Strategy: _____

- 6. Social Studies** Colorado's state parks cover 347,000 acres. Connecticut's state parks cover 176,000 acres. How many more acres do state parks cover in Colorado than in Connecticut?

Strategy: _____

- 7. Write a problem** that you would find a pattern to solve. Share it with others.

Name _____

Problem Solving: Reading Math and Science

Surviving on the Savannas

**Math &
Science**
WORKSHEET

Record the amount of water you drank in one day. Record the data of 10 classmates in the remaining rows.

Name	Ounces of Water Your Glass Holds	Number of Glasses You Drank	Total Amount of Water

Problem Solving: Reading Math and Science

Surviving on the Savannas

1. How much water did you drink in one day?

2. How much water did your group of 10 classmates drink in all?

3. If an 8-ounce bottle of water costs \$0.50, how much money would you spend on water each day? How much money would your group spend in all?
Show your work.

4. Using your data for one day, estimate how much water you would drink in a week. How much would your group drink? Is it more or less than an elephant drinks in a day?

5. An adult elephant drinks about 40 gallons of water daily. How much money would you have to spend each day to keep an elephant supplied with bottled water? One gallon is equal to 128 ounces.

**UNIT
6****Multiply by 2-Digit
Numbers****CHAPTER 11 • SUPPORT MATERIALS**

Lesson	Title	Masters	Use with pages
11-1	Patterns of Multiplication	R11-1, P11-1, E11-1	248–249
11-2	Multiply by Multiples of 10	R11-2, P11-2, E11-2	250–251
11-3	Explore Multiplying by 2-Digit Numbers	R11-3, P11-3, E11-3	252–253
11-4	Multiply by 2-Digit Numbers	R11-4, P11-4, E11-4	254–256
11-5	Problem Solving: Skill Solve Multistep Problems	R11-5, P11-5, E11-5	258–259

CHAPTER 12 • SUPPORT MATERIALS

Lesson	Title	Masters	Use with pages
12-1	Estimate Products	R12-1, P12-1, E12-1	264–265
12-2	Multiplying Greater Numbers	R12-2, P12-2, E12-2	266–268
12-3	Problem Solving: Strategy Make a Graph	R12-3, R12-3, P12-3	270–271
12-4	Multiply Using Mental Math	R12-4, P12-4, E12-4	272–274
12-5	Choose a Computation Method	R12-5, P12-5, E12-5	276–277
	Problem Solving: Decision Making	Worksheet	280–281

R—Reteach

P—Practice

E—Enrich

Patterns of Multiplication • Algebra



You can use basic facts and patterns to help you multiply.

$$2 \times 3 = 6 \text{ basic fact}$$

$$20 \times 30 = 600$$

↑ ↑ ↗
1 zero 1 zero 2 zeros

$$20 \times 300 = 6,000$$

↑ ↗ ↗
1 zero 2 zeros 3 zeros

$$20 \times 3,000 = 60,000$$

↑ ↑ ↑
1 zero 3 zeros 4 zeros

$$4 \times 5 = 20 \text{ basic fact}$$

$$40 \times 50 = 2,000$$

↑ ↑ ↗
1 zero 1 zero 2 zeros

$$40 \times 500 = 20,000$$

↑ ↗ ↗
1 zero 2 zeros 3 zeros

$$40 \times 5,000 = 200,000$$

↑ ↗ ↗
1 zero 3 zeros 4 zeros

Complete the pattern.

1. $4 \times 3 = \underline{\hspace{2cm}}$

$$40 \times 30 = \underline{\hspace{2cm}}$$

$$40 \times 300 = \underline{\hspace{2cm}}$$

$$40 \times 3,000 = \underline{\hspace{2cm}}$$

2. $7 \times 2 = \underline{\hspace{2cm}}$

$$70 \times 20 = \underline{\hspace{2cm}}$$

$$70 \times 200 = \underline{\hspace{2cm}}$$

$$70 \times 2,000 = \underline{\hspace{2cm}}$$

3. $5 \times 6 = \underline{\hspace{2cm}}$

$$50 \times 60 = \underline{\hspace{2cm}}$$

$$50 \times 600 = \underline{\hspace{2cm}}$$

$$50 \times 6,000 = \underline{\hspace{2cm}}$$

4. $8 \times 5 = \underline{\hspace{2cm}}$

$$80 \times 50 = \underline{\hspace{2cm}}$$

$$80 \times 500 = \underline{\hspace{2cm}}$$

$$80 \times 5,000 = \underline{\hspace{2cm}}$$

Multiply. Use mental math.

5. $3 \times 6 = \underline{\hspace{2cm}}$ **6.** $30 \times 60 = \underline{\hspace{2cm}}$ **7.** $30 \times 600 = \underline{\hspace{2cm}}$

8. $4 \times 9 = \underline{\hspace{2cm}}$ **9.** $40 \times 90 = \underline{\hspace{2cm}}$ **10.** $40 \times 900 = \underline{\hspace{2cm}}$

11. $80 \times 30 = \underline{\hspace{2cm}}$ **12.** $700 \times 30 = \underline{\hspace{2cm}}$ **13.** $20 \times 50 = \underline{\hspace{2cm}}$

14. $300 \times 9 = \underline{\hspace{2cm}}$ **15.** $80 \times 600 = \underline{\hspace{2cm}}$ **16.** $70 \times 800 = \underline{\hspace{2cm}}$

17. $30 \times 8,000 = \underline{\hspace{2cm}}$ **18.** $2,000 \times 90 = \underline{\hspace{2cm}}$ **19.** $4,000 \times 50 = \underline{\hspace{2cm}}$

20. $70 \times 7,000 = \underline{\hspace{2cm}}$ **21.** $7,000 \times 60 = \underline{\hspace{2cm}}$ **22.** $90 \times 8,000 = \underline{\hspace{2cm}}$

Patterns of Multiplication • Algebra

Find each missing number.

1. $6 \times 8 = s$ $s = \underline{\hspace{2cm}}$

$60 \times t = 480$ $t = \underline{\hspace{2cm}}$

$60 \times 80 = u$ $u = \underline{\hspace{2cm}}$

$60 \times 800 = v$ $v = \underline{\hspace{2cm}}$

2. $w \times 3 = 21$ $w = \underline{\hspace{2cm}}$

$70 \times 3 = x$ $x = \underline{\hspace{2cm}}$

$y \times 30 = 2,100$ $y = \underline{\hspace{2cm}}$

$70 \times 300 = z$ $z = \underline{\hspace{2cm}}$

Multiply. Use mental math.

3. $60 \times 70 = \underline{\hspace{2cm}}$

4. $20 \times 60 = \underline{\hspace{2cm}}$

5. $80 \times 800 = \underline{\hspace{2cm}}$

6. $30 \times 200 = \underline{\hspace{2cm}}$

7. $50 \times 40 = \underline{\hspace{2cm}}$

8. $400 \times 30 = \underline{\hspace{2cm}}$

9. $600 \times 50 = \underline{\hspace{2cm}}$

10. $90 \times 70 = \underline{\hspace{2cm}}$

11. $20 \times 4,000 = \underline{\hspace{2cm}}$

12. $9,000 \times 30 = \underline{\hspace{2cm}}$

13. $3,000 \times 70 = \underline{\hspace{2cm}}$

14. $900 \times 60 = \underline{\hspace{2cm}}$

15. $80 \times 5,000 = \underline{\hspace{2cm}}$

16. $7,000 \times 80 = \underline{\hspace{2cm}}$

17. $40 \times 800 = \underline{\hspace{2cm}}$

18. $30 \times 6,000 = \underline{\hspace{2cm}}$

19. $20 \times 500 = \underline{\hspace{2cm}}$

20. $6,000 \times 90 = \underline{\hspace{2cm}}$

21. $700 \times 40 = \underline{\hspace{2cm}}$

22. $80 \times 2,000 = \underline{\hspace{2cm}}$

23. $50 \times 5,000 = \underline{\hspace{2cm}}$

Algebra Write the number that makes each sentence true.

24. $30 \times j = 9,000$ $j = \underline{\hspace{2cm}}$

25. $s \times 70 = 2,800$ $s = \underline{\hspace{2cm}}$

26. $60 \times b = 24,000$ $b = \underline{\hspace{2cm}}$

27. $400 \times t = 12,000$ $t = \underline{\hspace{2cm}}$

28. $90 \times q = 8,100$ $q = \underline{\hspace{2cm}}$

29. $p \times 600 = 30,000$ $p = \underline{\hspace{2cm}}$

30. $n \times 300 = 6,000$ $n = \underline{\hspace{2cm}}$

31. $r \times 800 = 40,000$ $r = \underline{\hspace{2cm}}$

Problem Solving

Solve.

32. ABC Hardware has 50 cartons of nails. Each carton has 4,000 nails. How many nails does the store have?
-

33. Handy Hardware has 500 boxes of hinges. Each box has 90 hinges. How many hinges does the store have?
-

Name _____

Patterns of Multiplication • Algebra



This puzzle has all the answers, but no clues. Each answer is a product of two factors.

Make up clues for each answer.

							¹ 6	4	0	0	0	0
							3					
			² 4	0	0	0						
			5			0						
	³ 1	0		0	0	0						
	8			0				45	4	0	0	0
	0			0				6				
⁶ 2	4	0	0	0								
1					0							
0							⁵ 3	0	0	0	0	0
							5					
							0					
							0					
							0					

Across

1. $80 \times 8,000$

2. _____

3. _____

4. _____

5. _____

6. _____

Down

1. $70 \times 90,000$

2. _____

3. _____

4. _____

5. _____

6. _____

Name _____

Multiply by Multiples of 10



An expanded form can help you multiply.

Find 20×37 . Think: $37 = 30 + 7$

$$\begin{array}{r} 20 \times (30 + 7) \\ \downarrow \quad \downarrow \\ (20 \times 30) + (20 \times 7) \\ \downarrow \quad \downarrow \\ 600 + 140 = 740 \end{array} \quad \begin{array}{r} 37 \\ \times 20 \\ \hline 740 \end{array}$$

Complete to find each product.

1. 10×28

$$10 \times (\underline{\hspace{1cm}} + 8)$$

$$(\underline{\hspace{1cm}} \times 20) + (\underline{\hspace{1cm}} \times 8)$$

\downarrow \downarrow

$$\underline{\hspace{1cm}} + \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

2. 30×33

$$\underline{\hspace{1cm}} \times (\underline{\hspace{1cm}} + 3)$$

$$(\underline{\hspace{1cm}} \times \underline{\hspace{1cm}}) + (\underline{\hspace{1cm}} \times \underline{\hspace{1cm}})$$

\downarrow \downarrow

$$\underline{\hspace{1cm}} + \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

3. 80×27

$$\underline{\hspace{1cm}} \times (20 + \underline{\hspace{1cm}})$$

$$(\underline{\hspace{1cm}} \times \underline{\hspace{1cm}}) + (\underline{\hspace{1cm}} \times \underline{\hspace{1cm}})$$

\downarrow \downarrow

$$\underline{\hspace{1cm}} + \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

4. 50×64

$$\underline{\hspace{1cm}} \times (60 + \underline{\hspace{1cm}})$$

$$(\underline{\hspace{1cm}} \times \underline{\hspace{1cm}}) + (\underline{\hspace{1cm}} \times \underline{\hspace{1cm}})$$

\downarrow \downarrow

$$\underline{\hspace{1cm}} + \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

Multiply.

5. 34

$$\times 40$$

6. 27

$$\times 30$$

7. 38

$$\times 40$$

8. 43

$$\times 10$$

9. 18

$$\times 50$$

10. 24

$$\times 80$$

11. 35

$$\times 20$$

12. 19

$$\times 30$$

13. 22

$$\times 10$$

14. 57

$$\times 60$$

15. $40 \times 18 = \underline{\hspace{1cm}}$

16. $28 \times 30 = \underline{\hspace{1cm}}$

17. $30 \times 32 = \underline{\hspace{1cm}}$

18. $10 \times 39 = \underline{\hspace{1cm}}$

19. $16 \times 30 = \underline{\hspace{1cm}}$

20. $20 \times 39 = \underline{\hspace{1cm}}$

Name _____

Multiply by Multiples of 10



Multiply.

$$\begin{array}{r} 1. \quad 26 \\ \times 40 \\ \hline \end{array}$$

$$\begin{array}{r} 2. \quad 47 \\ \times 30 \\ \hline \end{array}$$

$$\begin{array}{r} 3. \quad 91 \\ \times 20 \\ \hline \end{array}$$

$$\begin{array}{r} 4. \quad 87 \\ \times 10 \\ \hline \end{array}$$

$$\begin{array}{r} 5. \quad 23 \\ \times 90 \\ \hline \end{array}$$

$$\begin{array}{r} 6. \quad 17 \\ \times 80 \\ \hline \end{array}$$

$$\begin{array}{r} 7. \quad 135 \\ \times 50 \\ \hline \end{array}$$

$$\begin{array}{r} 8. \quad 207 \\ \times 60 \\ \hline \end{array}$$

$$\begin{array}{r} 9. \quad 399 \\ \times 50 \\ \hline \end{array}$$

$$\begin{array}{r} 10. \quad 756 \\ \times 30 \\ \hline \end{array}$$

$$\begin{array}{r} 11. \quad 498 \\ \times 70 \\ \hline \end{array}$$

$$\begin{array}{r} 12. \quad 1,038 \\ \times 40 \\ \hline \end{array}$$

$$\begin{array}{r} 13. \quad 2,226 \\ \times 20 \\ \hline \end{array}$$

$$\begin{array}{r} 14. \quad 3,510 \\ \times 60 \\ \hline \end{array}$$

$$\begin{array}{r} 15. \quad 5,503 \\ \times 50 \\ \hline \end{array}$$

$$\begin{array}{r} 16. \quad 2,375 \\ \times 20 \\ \hline \end{array}$$

$$\begin{array}{r} 17. \quad 4,009 \\ \times 40 \\ \hline \end{array}$$

$$\begin{array}{r} 18. \quad 2,490 \\ \times 70 \\ \hline \end{array}$$

$$\begin{array}{r} 19. \quad 6,967 \\ \times 10 \\ \hline \end{array}$$

$$\begin{array}{r} 20. \quad 9,075 \\ \times 80 \\ \hline \end{array}$$

$$21. 51 \times 30 = \underline{\hspace{2cm}}$$

$$22. 39 \times 80 = \underline{\hspace{2cm}}$$

$$23. 67 \times 20 = \underline{\hspace{2cm}}$$

$$24. 325 \times 60 = \underline{\hspace{2cm}}$$

$$25. 40 \times 608 = \underline{\hspace{2cm}}$$

$$26. 999 \times 10 = \underline{\hspace{2cm}}$$

$$27. 712 \times 30 = \underline{\hspace{2cm}}$$

$$28. 10 \times 3,116 = \underline{\hspace{2cm}}$$

$$29. 80 \times 1,185 = \underline{\hspace{2cm}}$$

$$30. 90 \times 4,090 = \underline{\hspace{2cm}}$$

$$31. 2,111 \times 70 = \underline{\hspace{2cm}}$$

$$32. 50 \times 5,549 = \underline{\hspace{2cm}}$$

Algebra Find each missing number.

$$33. 34 \times j = 680 \qquad j = \underline{\hspace{2cm}}$$

$$34. q \times 72 = 2,160 \qquad q = \underline{\hspace{2cm}}$$

$$35. 99 \times a = 7,920 \qquad a = \underline{\hspace{2cm}}$$

$$36. 56 \times m = 1,680 \qquad m = \underline{\hspace{2cm}}$$

$$37. 861 \times b = 77,490 \qquad b = \underline{\hspace{2cm}}$$

$$38. 1,002 \times n = 70,140 \qquad n = \underline{\hspace{2cm}}$$

$$39. s \times 2,108 = 63,240 \qquad s = \underline{\hspace{2cm}}$$

$$40. 898 \times c = 53,880 \qquad c = \underline{\hspace{2cm}}$$

Problem Solving

Solve.

41. Classroom chairs cost \$39.
How much will 30 chairs cost?

42. A computer costs \$2,345.
How much will 20 computers cost?

Multiply by Multiples of 10

Find each missing digit.

1.
$$\begin{array}{r} 7 \ 4 \\ \times 1 \ \square \\ \hline 7 \ 4 \ 0 \end{array}$$

2.
$$\begin{array}{r} 8 \ \square \\ \times 3 \ 0 \\ \hline 2, \ 4 \ 9 \ 0 \end{array}$$

3.
$$\begin{array}{r} 6 \ 2 \\ \times \ \square \ 0 \\ \hline 3, \ 7 \ 2 \ 0 \end{array}$$

4.
$$\begin{array}{r} 3 \ \square \\ \times 5 \ 0 \\ \hline 1, \ 6 \ 5 \ 0 \end{array}$$

5.
$$\begin{array}{r} \square \ 9 \\ \times 9 \ 0 \\ \hline 6, \ 2 \ 1 \ 0 \end{array}$$

6.
$$\begin{array}{r} 4 \ 6 \\ \times \ \square \ 0 \\ \hline 1, \ 8 \ 4 \ 0 \end{array}$$

7.
$$\begin{array}{r} 8 \ 1 \\ \times \ \square \ 0 \\ \hline 1, \ 6 \ 2 \ 0 \end{array}$$

8.
$$\begin{array}{r} \square \ 4 \\ \times 7 \ 0 \\ \hline 6, \ 5 \ 8 \ 0 \end{array}$$

9.
$$\begin{array}{r} 4 \ 8 \ \square \\ \times 8 \ 0 \\ \hline 3 \ 8, \ 6 \ 4 \ 0 \end{array}$$

10.
$$\begin{array}{r} 5 \ 8 \ 4 \\ \times \ \square \ 0 \\ \hline 3 \ 5, \ 0 \ 4 \ 0 \end{array}$$

11.
$$\begin{array}{r} 9 \ 1 \ \square \\ \times 9 \ 0 \\ \hline 8 \ 2, \ 0 \ 8 \ 0 \end{array}$$

12.
$$\begin{array}{r} 7 \ 2 \ 1 \\ \times \ \square \ 0 \\ \hline 2 \ 1, \ 6 \ 3 \ 0 \end{array}$$

13.
$$\begin{array}{r} 2 \ 1 \ 1 \\ \times \ \square \ 0 \\ \hline 1 \ 0, \ 5 \ 5 \ 0 \end{array}$$

14.
$$\begin{array}{r} 5 \ \square \ 3 \\ \times 6 \ 0 \\ \hline 3 \ 3, \ 7 \ 8 \ 0 \end{array}$$

15.
$$\begin{array}{r} 6 \ 7 \ \square \\ \times 3 \ 0 \\ \hline 2 \ 0, \ 1 \ 9 \ 0 \end{array}$$

16.
$$\begin{array}{r} 8 \ \square \ 6 \\ \times 8 \ 0 \\ \hline 6 \ 6, \ 8 \ 8 \ 0 \end{array}$$

17.
$$\begin{array}{r} \square \ 4 \ 6 \\ \times 7 \ 0 \\ \hline 5 \ 2, \ 2 \ 2 \ 0 \end{array}$$

18.
$$\begin{array}{r} 8 \ 3 \ \square \\ \times 4 \ 0 \\ \hline 3 \ 3, \ 5 \ 6 \ 0 \end{array}$$

19.
$$\begin{array}{r} \square \ 7 \ 8 \\ \times 8 \ 0 \\ \hline 3 \ 8, \ 2 \ 4 \ 0 \end{array}$$

20.
$$\begin{array}{r} 5 \ 6 \ \square \\ \times 9 \ 0 \\ \hline 5 \ 0, \ 4 \ 9 \ 0 \end{array}$$

21.
$$\begin{array}{r} \square \ 1 \ 4 \\ \times 8 \ 0 \\ \hline 2 \ 5, \ 1 \ 2 \ 0 \end{array}$$

22.
$$\begin{array}{r} 9 \ \square \ 5 \\ \times 2 \ 0 \\ \hline 1 \ 8, \ 5 \ 0 \ 0 \end{array}$$

23.
$$\begin{array}{r} 7 \ 1 \ 6 \\ \times \ \square \ 0 \\ \hline 6 \ 4, \ 4 \ 4 \ 0 \end{array}$$

24.
$$\begin{array}{r} 6 \ \square \ 5 \\ \times 7 \ 0 \\ \hline 4 \ 7, \ 2 \ 5 \ 0 \end{array}$$

25.
$$\begin{array}{r} \square \ 2 \ 5 \\ \times 8 \ 0 \\ \hline 7 \ 4, \ 0 \ 0 \ 0 \end{array}$$

26.
$$\begin{array}{r} 5 \ 4 \ \square \\ \times 4 \ 0 \\ \hline 2 \ 1, \ 7 \ 6 \ 0 \end{array}$$

27.
$$\begin{array}{r} 6 \ 3 \ 6 \\ \times \ \square \ 0 \\ \hline 5 \ 7, \ 2 \ 4 \ 0 \end{array}$$

28.
$$\begin{array}{r} 7 \ \square \ 4 \\ \times 5 \ 0 \\ \hline 3 \ 9, \ 2 \ 0 \ 0 \end{array}$$

Name _____

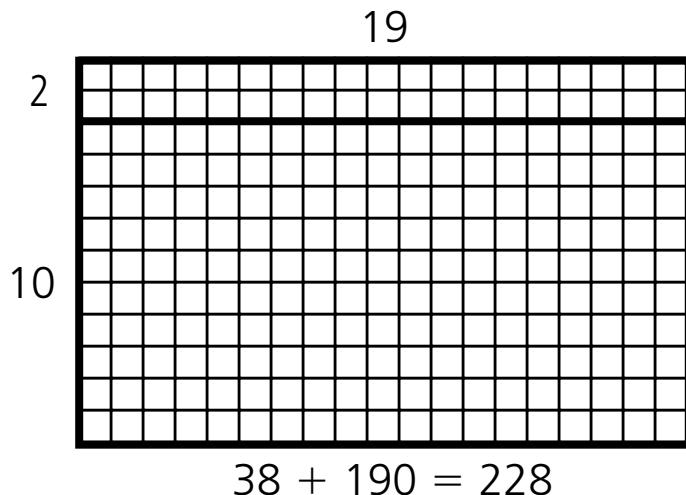
Explore Multiplying by 2-Digit Numbers

R 11-3
RETEACH

An array can help you multiply.

Find 12×19 . Think: $12 = 10 + 2$

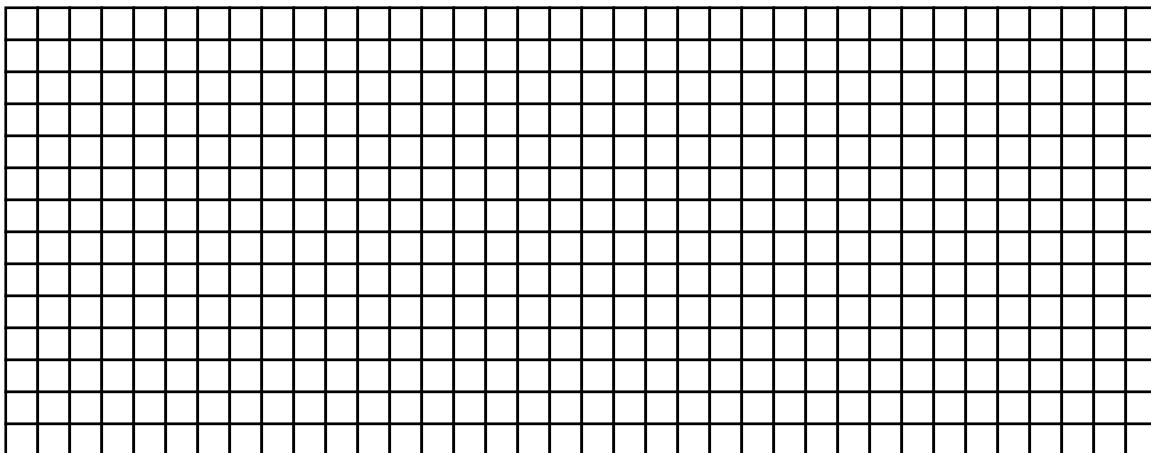
$$\begin{array}{r} 19 \\ \times 12 \\ \hline 38 \quad \leftarrow 2 \times 19 \\ + 190 \quad \leftarrow 10 \times 19 \\ \hline 228 \end{array}$$



Find each product. Draw an array diagram to help you.

1. $14 \times 15 =$ _____

2. $11 \times 19 =$ _____



Multiply.

3. $\begin{array}{r} 28 \\ \times 14 \\ \hline \end{array}$

4. $\begin{array}{r} 35 \\ \times 26 \\ \hline \end{array}$

5. $\begin{array}{r} 42 \\ \times 33 \\ \hline \end{array}$

6. $\begin{array}{r} 49 \\ \times 27 \\ \hline \end{array}$

7. $\begin{array}{r} 32 \\ \times 18 \\ \hline \end{array}$

8. $\begin{array}{r} 18 \\ \times 41 \\ \hline \end{array}$

9. $\begin{array}{r} 23 \\ \times 17 \\ \hline \end{array}$

10. $\begin{array}{r} 24 \\ \times 52 \\ \hline \end{array}$

11. $\begin{array}{r} 45 \\ \times 28 \\ \hline \end{array}$

12. $\begin{array}{r} 27 \\ \times 27 \\ \hline \end{array}$

13. $32 \times 21 =$ _____ 14. $41 \times 32 =$ _____ 15. $26 \times 17 =$ _____

Name _____

Explore Multiplying by 2-Digit Numbers



Use models on graph paper to help you multiply.
You may need to tape grids together.

1. $13 \times 22 =$ _____

2. $43 \times 15 =$ _____

3. $17 \times 21 =$ _____

4. $31 \times 18 =$ _____

5. $25 \times 24 =$ _____

6. $20 \times 19 =$ _____

Multiply. Check your answer.

7. $\begin{array}{r} 36 \\ \times 12 \\ \hline \end{array}$

8. $\begin{array}{r} 27 \\ \times 41 \\ \hline \end{array}$

9. $\begin{array}{r} 38 \\ \times 14 \\ \hline \end{array}$

10. $\begin{array}{r} 23 \\ \times 22 \\ \hline \end{array}$

11. $\begin{array}{r} 49 \\ \times 13 \\ \hline \end{array}$

12. $\begin{array}{r} 47 \\ \times 34 \\ \hline \end{array}$

13. $\begin{array}{r} 46 \\ \times 14 \\ \hline \end{array}$

14. $\begin{array}{r} 17 \\ \times 25 \\ \hline \end{array}$

15. $\begin{array}{r} 45 \\ \times 35 \\ \hline \end{array}$

16. $\begin{array}{r} 48 \\ \times 20 \\ \hline \end{array}$

17. $\begin{array}{r} 38 \\ \times 27 \\ \hline \end{array}$

18. $\begin{array}{r} 32 \\ \times 15 \\ \hline \end{array}$

19. $\begin{array}{r} 45 \\ \times 25 \\ \hline \end{array}$

20. $\begin{array}{r} 14 \\ \times 15 \\ \hline \end{array}$

21. $\begin{array}{r} 26 \\ \times 34 \\ \hline \end{array}$

22. $\begin{array}{r} 32 \\ \times 18 \\ \hline \end{array}$

23. $\begin{array}{r} 31 \\ \times 25 \\ \hline \end{array}$

24. $\begin{array}{r} 12 \\ \times 46 \\ \hline \end{array}$

25. $\begin{array}{r} 36 \\ \times 36 \\ \hline \end{array}$

26. $\begin{array}{r} 28 \\ \times 44 \\ \hline \end{array}$

27. $\begin{array}{r} 16 \\ \times 40 \\ \hline \end{array}$

28. $\begin{array}{r} 17 \\ \times 17 \\ \hline \end{array}$

29. $\begin{array}{r} 37 \\ \times 26 \\ \hline \end{array}$

30. $\begin{array}{r} 19 \\ \times 27 \\ \hline \end{array}$

31. $\begin{array}{r} 49 \\ \times 30 \\ \hline \end{array}$

32. $15 \times 23 =$ _____

33. $30 \times 13 =$ _____

34. $14 \times 22 =$ _____

35. $26 \times 21 =$ _____

36. $30 \times 24 =$ _____

37. $42 \times 17 =$ _____

38. $63 \times 15 =$ _____

39. $50 \times 23 =$ _____

40. $13 \times 13 =$ _____

41. $70 \times 14 =$ _____

42. $32 \times 20 =$ _____

43. $25 \times 25 =$ _____

Explore Multiplying by 2-Digit Numbers

In the 17th century, John Napier invented a simple calculator that multiplied by adding. Use Napier's system to multiply 49×37 .

- 1.** Cut out the ten strips below. Place the 4, 9, and index strips next to each other as shown.

INDEX		
4	9	1
8	1	8
1	2	7
2	3	6
1	6	5
6	4	5
2	0	5
2	4	4
2	8	3
3	2	2
6	8	1
9		

- 2.** Fold the strips so that rows 3 and 7 of the index are next to each other.

INDEX		
4	9	1
1	2	7
2	3	6
8	6	3
2	8	1
3	2	2
6	8	1
9		

- 3.** To find the product, add diagonally from the bottom right. The first diagonal (3) is the ones digit. Write 3 under the ones column. The diagonal above ($7 + 6 + 8 = 21$) is the tens. Write 1 under the tens column and regroup 2 to the next diagonal. Add $2 + 2 + 2 + 2 = 8$ for the hundreds. Write 8 to the left of the bottom row. The last diagonal (1) is the thousands. Write it to the left of the top row. The product of 37×49 is 1,813.

INDEX		
1	2	7
8	6	3

$$\begin{array}{r} 37 \\ \times 49 \\ \hline \end{array}$$

Use the strips to find each product.

- 1.** $57 \times 34 =$ _____ **2.** $61 \times 76 =$ _____ **3.** $85 \times 29 =$ _____
- 4.** $32 \times 33 =$ _____ **5.** $94 \times 65 =$ _____ **6.** $56 \times 48 =$ _____

INDEX									
9	8	7	6	5	4	3	2	1	1
1	1	1	1	1	1	1	1	1	2
8	6	4	2	0	8	6	4	2	3
2	4	1	8	5	0	2	1	5	4
7	3	2	8	4	2	0	3	0	5
3	2	1	4	3	0	2	1	8	6
6	4	5	0	3	5	0	2	4	7
4	5	4	8	2	4	8	1	2	8
5	4	3	2	6	0	6	5	1	9
2	6	5	4	8	2	0	4	7	
6	3	2	9	5	8	4	7		
7	2	1	6	4	0	2	1		
8	1	1	3	2	5	8	7		

Name _____

Multiply by 2-Digit Numbers



You can use a place-value chart to help you multiply 2-digit numbers.

Multiply 47×25 .

Step 1

Multiply by the ones.

Regroup if necessary.

TH	H	T	O
		3	
		2	5
\times		4	7
	1	7	5
$+$			

Step 2

Multiply by the tens.

TH	H	T	O
		2	
		3	
		2	5
\times		4	7
	1	7	5
$+$	1	0	0

Step 3

Add the products.

TH	H	T	O
		2	
		3	
		2	5
\times		4	7
	1	7	5
$+$	1	0	0
	1	1	7
			5

Complete. Find each product.

	H	T	O
	1	5	
\times	4	5	
		5	
$+$	6	0	0

	TH	H	T	O
			3	2
\times			8	7
			2	4
$+$	2	5	6	0

	TH	H	T	O
			5	9
\times			9	3
			7	7
$+$	5	3	1	0

4.
$$\begin{array}{r} 16 \\ \times 23 \\ \hline \end{array}$$

5.
$$\begin{array}{r} \$15 \\ \times 42 \\ \hline \end{array}$$

6.
$$\begin{array}{r} 23 \\ \times 39 \\ \hline \end{array}$$

7.
$$\begin{array}{r} \$0.27 \\ \times 51 \\ \hline \end{array}$$

8.
$$\begin{array}{r} 38 \\ \times 26 \\ \hline \end{array}$$

9.
$$\begin{array}{r} 46 \\ \times 44 \\ \hline \end{array}$$

10.
$$\begin{array}{r} 67 \\ \times 29 \\ \hline \end{array}$$

11.
$$\begin{array}{r} 59 \\ \times 31 \\ \hline \end{array}$$

12.
$$\begin{array}{r} \$31 \\ \times 28 \\ \hline \end{array}$$

13.
$$\begin{array}{r} 72 \\ \times 53 \\ \hline \end{array}$$

14. $85 \times 43 =$ _____ 15. $96 \times 35 =$ _____ 16. $\$0.39 \times 66 =$ _____

Name _____

Multiply by 2-Digit Numbers



Find each product.

1.
$$\begin{array}{r} 26 \\ \times 35 \\ \hline \end{array}$$

2.
$$\begin{array}{r} 73 \\ \times 51 \\ \hline \end{array}$$

3.
$$\begin{array}{r} 44 \\ \times 87 \\ \hline \end{array}$$

4.
$$\begin{array}{r} \$0.56 \\ \times 83 \\ \hline \end{array}$$

5.
$$\begin{array}{r} 29 \\ \times 19 \\ \hline \end{array}$$

6.
$$\begin{array}{r} \$46 \\ \times 35 \\ \hline \end{array}$$

7.
$$\begin{array}{r} 59 \\ \times 47 \\ \hline \end{array}$$

8.
$$\begin{array}{r} 77 \\ \times 22 \\ \hline \end{array}$$

9.
$$\begin{array}{r} 55 \\ \times 15 \\ \hline \end{array}$$

10.
$$\begin{array}{r} 44 \\ \times 46 \\ \hline \end{array}$$

11.
$$\begin{array}{r} 79 \\ \times 73 \\ \hline \end{array}$$

12.
$$\begin{array}{r} 94 \\ \times 61 \\ \hline \end{array}$$

13.
$$\begin{array}{r} \$0.63 \\ \times 58 \\ \hline \end{array}$$

14.
$$\begin{array}{r} 68 \\ \times 24 \\ \hline \end{array}$$

15.
$$\begin{array}{r} 51 \\ \times 34 \\ \hline \end{array}$$

16. $18 \times 92 =$ _____

17. $28 \times 19 =$ _____

18. $86 \times 43 =$ _____

19. $74 \times 33 =$ _____

20. $48 \times 26 =$ _____

21. $31 \times \$0.18 =$ _____

22. $77 \times 94 =$ _____

23. $88 \times 62 =$ _____

24. $27 \times 34 =$ _____

Algebra Find each product.

25. $(30 + 7) \times (10 + 8) = n$

26. $(60 + 4) \times (20 + 9) = v$

27. $(80 + 1) \times (40 + 2) = p$

28. $(50 + 6) \times (70 + 3) = r$

29. $(90 + 5) \times (10 + 1) = q$

30. $(60 + 6) \times (50 + 5) = c$

31. $(20 + 8) \times (70 + 7) = s$

32. $(40 + 3) \times (80 + 4) = b$

Problem Solving

Solve.

33. A fence has 28 sections with 18 boards in each section. How many boards are in the fence?

34. Horses on a ranch eat 28 bales of hay each day. How many bales do they eat in 31 days?

Name _____

Multiply by 2-Digit Numbers



Multiply 11 by a 1-digit number. Look for the pattern.

1. $2 \times 11 = \underline{\hspace{2cm}}$ 2. $3 \times 11 = \underline{\hspace{2cm}}$ 3. $4 \times 11 = \underline{\hspace{2cm}}$ 4. $5 \times 11 = \underline{\hspace{2cm}}$

5. $6 \times 11 = \underline{\hspace{2cm}}$ 6. $7 \times 11 = \underline{\hspace{2cm}}$ 7. $8 \times 11 = \underline{\hspace{2cm}}$ 8. $9 \times 11 = \underline{\hspace{2cm}}$

What pattern do you see?

Multiply 11 by a 2-digit number. Look for the pattern.

9. 11
 $\times 31$

10. 11
 $\times 32$

11. 11
 $\times 33$

12. 11
 $\times 34$

13. 11
 $\times 53$

14. 11
 $\times 62$

15. 11
 $\times 27$

16. 11
 $\times 18$

What pattern do you see?

Use the pattern to find these products.

17. 11
 $\times 41$

18. 11
 $\times 22$

19. 11
 $\times 38$

20. 11
 $\times 16$

21. $44 \times 11 = \underline{\hspace{2cm}}$

22. $55 \times 11 = \underline{\hspace{2cm}}$

23. $64 \times 11 = \underline{\hspace{2cm}}$

24. $72 \times 11 = \underline{\hspace{2cm}}$

Problem Solving: Skill

Solve Multistep Problems

A multistep problem takes more than one step to solve.

Miguel charges \$30 per hour to take people on his boat. Miguel rents his boat for 3 hours per day for 12 days. How much money does Miguel receive?

Step 1	Step 2
<p>Find the total number of hours that Miguel rents his boat.</p> <p>_____ × _____ = _____</p> <p>Miguel rents his boat for _____ hours.</p>	<p>Find how much money Miguel receives.</p> <p>_____ × _____ = _____</p> <p>So, Miguel receives \$1,080.</p>

Circle the hidden question that can help you solve the problem.
Then solve the problem.

- 1.** A group of travelers rents 5 boats for 8 hours each. Boats cost \$12 an hour to rent. What is the total fee for this rental?
 What is the total number of hours that the 5 boats are rented for?
 What is the total number of boats that are rented in a day?
 Solution: _____

- 2.** A swimming instructor has 4 classes with 8 students in each class. Each student pays a total of \$50 for the classes for the season. How much money does the swimming instructor receive?
 What amount does the instructor charge per hour?
 How many students in all does the swimming instructor have?
 Solution: _____

- 3.** Burke's Bluff Beach sells 25 guest passes in one day. Condor Cove Beach sells 2 times as many guest passes that same day. Estimate the total number of guest passes that beaches will sell in 3 days.
 How many guest passes does Condor Cove Beach sell in 1 day?
 How many guest passes will Burke's Bluff Beach sell in 2 days?
 Solution: _____

Problem Solving: Skill

Solve Multistep Problems

Solve.

- 1.** The Diving Club offers 4 beginning diving classes each day. Each class has room for 6 people. How many people can take classes in 30 days?
-

- 3.** During one week, 5 sailboats are rented for a total of 16 hours each. The rental cost is \$25 per hour. Altogether, how much is paid for these rentals?
-

- 5.** Amanda rents a canoe and a life preserver from 2:00 P.M. to 5:00 P.M. A canoe costs \$12 per hour. A life preserver costs \$2 per hour. How much does Amanda spend?
-

Mixed Strategy Review

Solve. Use any strategy.

- 7.** George had 3 fewer basketball cards yesterday than he does today. Yesterday he had 9 basketball cards. How many basketball cards does George have today?
-

Strategy: _____

- 9.** Judy, Lakesha, and Tina each like a different color, either red, green, or blue. Judy likes green. Tina does not like blue. What color does Lakesha like?
-

Strategy: _____

- 2.** A fishing guide charges \$25 per hour. He works 6 hours per day for 5 days. How much money does the guide earn?
-
- 4.** The aquarium charges \$12 admission and \$6 for a tour. A group of 20 people goes to the aquarium and takes the tour. How much money does the group spend?
-
- 6.** Jenny rented a rowboat from 10:45 A.M. to 1:00 P.M. After lunch, she rented another rowboat from 1:45 P.M. to 4:45 P.M. For how many minutes did she rent the boat?
-

- 8.** John collects shells. On the first day he collected 3 shells. On the second day he collected 8 shells, the third day 13 shells, and on the fourth day 18 shells. How many shells will he gather on the eighth day?
-

Strategy: _____

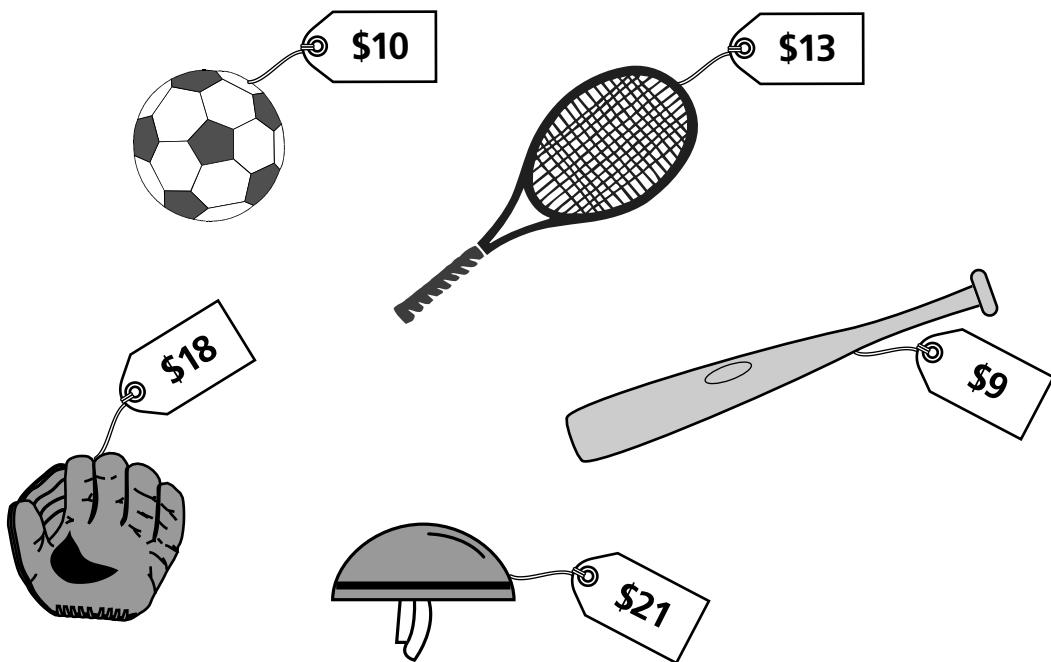
- 10.** Mia has saved \$7. How much more money does she need to buy a CD for \$13?
-

Strategy: _____

Problem Solving: Skill

Solve Multistep Problems

Use the prices of the items below to solve the problems.



- How much would it cost to buy 2 baseball bats and 3 baseball mitts?

- Raoul has \$100. Does he have enough money to buy 4 bicycle helmets and 2 baseball bats?

- Penny bought 3 tennis rackets and 4 soccer balls. How much change did she get from \$80?

- How much money do you need to buy 2 bicycle helmets and 1 baseball mitt?

- How much change would you get if you paid for 3 soccer balls and 2 tennis rackets with three \$20 bills?

- Ari has \$50. He wants to buy 3 tennis rackets. What else can he buy?

Name _____

Estimate Products



You can round to estimate products. Round each factor to its greatest place. Then multiply using patterns with zeros.

Estimate 42×59 .

$$\begin{array}{r} 42 \longrightarrow & 40 & 1 \text{ zero} \\ \times 59 \longrightarrow & \times 60 & \times 1 \text{ zero} \\ \hline 2,400 & & 2 \text{ zeros} \end{array}$$

Estimate 74×229 .

$$\begin{array}{r} 227 \longrightarrow & 200 & 2 \text{ zeros} \\ \times 74 \longrightarrow & \times 70 & \times 1 \text{ zero} \\ \hline 14,000 & & 3 \text{ zeros} \end{array}$$

Estimate each product by rounding.

1.

$$\begin{array}{r} 54 \longrightarrow \\ \times 19 \longrightarrow \quad \underline{\hspace{2cm}} \end{array}$$

2.

$$\begin{array}{r} \$29 \longrightarrow \\ \times 32 \longrightarrow \quad \underline{\hspace{2cm}} \end{array}$$

3.

$$\begin{array}{r} 788 \longrightarrow \\ \times 51 \longrightarrow \quad \underline{\hspace{2cm}} \end{array}$$

Estimate each product.

4. 37×49

5. 23×51

6. 69×19

7. $26 \times \$72$

8. 19×315

9. 85×263

10. 72×803

11. $48 \times 1,056$

12. $92 \times 2,228$

13. $57 \times \$5,698$

14. $76 \times 6,419$

15. $12 \times 9,058$

16. $55 \times 4,830$

17. $92 \times 1,568$

Name _____



Estimate Products

Estimate each product.

1. 49×59

3. 41×52

5. 98×402

7. $61 \times \$216$

9. 81×350

11. $85 \times 1,211$

13. $19 \times 6,302$

2. 55×65

4. 18×29

6. 71×874

8. 42×605

10. 23×999

12. $71 \times 2,118$

14. $29 \times 7,907$

Algebra Compare. Write $>$ or $<$.

15. 98×27 ○ 3,000

16. 37×196 ○ 8,000

17. 42×84 ○ 3,200

18. 498×16 ○ 100,000

19. 21×423 ○ 8,000

20. 589×36 ○ 24,000

21. 59×689 ○ 42,000

22. 49×188 ○ 10,000

23. 224×41 ○ 8,000

24. 26×42 ○ 34×21

25. 15×47 ○ 59×68

26. 34×82 ○ 37×58

Problem Solving

Solve.

27. The price of a bus ticket is \$58.
About how much will tickets cost for
a group of 62 passengers?

28. An airline ticket costs \$375.
About how much will tickets cost
for a group of 25 people?

Estimate Products

Estimate your way through the maze. First estimate to find the box in which the answer could be 858. Start in that box. Work through the maze, estimating the product in each box. In order, circle the letter in the box with the following answers.

3,060 7,308 3,822 2,278 15,092 6,123 16,910 33,888 52,416 36,344

$\begin{array}{r} 78 \\ \times 11 \\ \hline \end{array}$	$\begin{array}{r} 34 \\ \times 90 \\ \hline \end{array}$	$\begin{array}{r} 42 \\ \times 19 \\ \hline \end{array}$	$\begin{array}{r} 57 \\ \times 14 \\ \hline \end{array}$
I	M	P	C
$\begin{array}{r} 26 \\ \times 34 \\ \hline \end{array}$	$\begin{array}{r} 87 \\ \times 84 \\ \hline \end{array}$	$\begin{array}{r} 39 \\ \times 98 \\ \hline \end{array}$	$\begin{array}{r} 67 \\ \times 34 \\ \hline \end{array}$
B	O	U	T
$\begin{array}{r} 172 \\ \times 24 \\ \hline \end{array}$	$\begin{array}{r} 196 \\ \times 77 \\ \hline \end{array}$	$\begin{array}{r} 157 \\ \times 39 \\ \hline \end{array}$	$\begin{array}{r} 178 \\ \times 95 \\ \hline \end{array}$
R	H	F	O
$\begin{array}{r} 953 \\ \times 48 \\ \hline \end{array}$	$\begin{array}{r} 706 \\ \times 48 \\ \hline \end{array}$	$\begin{array}{r} 819 \\ \times 64 \\ \hline \end{array}$	$\begin{array}{r} 616 \\ \times 59 \\ \hline \end{array}$
W	E	R	E

Write the letters from the boxes in order. Read the message.

_____ !

Multiplying Greater Numbers



You can use a place-value chart to multiply greater numbers.

Multiply $25 \times 3,188$.

Estimate: $30 \times 3,000 = 90,000$

Step 1

Multiply by the ones.

Regroup if necessary.

Thousands				Ones		
H	T	O	H	T	O	
				3	4	
			3	1	7	8
×					2	5
	1	5	8	9	0	
+						

Step 2

Multiply by the tens.

Regroup if necessary.

Thousands				Ones		
H	T	O	H	T	O	
			1	1		
			3	4		
		3	1	7	8	
×				2	5	
	1	5	8	9	0	
+	6	3	5	6	0	

Step 3

Add the products.

Thousands				Ones		
H	T	O	H	T	O	
			1	1		
			3	4		
		3	1	7	8	
×				2	5	
	1	5	8	9	0	
+	6	3	5	6	0	
	7	9	4	5	0	

Since 79,450 is close to the estimate of 90,000, the answer is reasonable.

Multiply.

Thousands				Ones		
H	T	O	H	T	O	
				2		
			1	4	5	7
×					2	5
+						

$$\begin{array}{r} 4. \quad \$3.69 \\ \times \quad 18 \\ \hline \end{array}$$

$$\begin{array}{r} 5. \quad 518 \\ \times \quad 49 \\ \hline \end{array}$$

$$\begin{array}{r} 6.735 \\ \times 37 \\ \hline \end{array}$$

$$\begin{array}{r} 7. \quad 8,098 \\ \times \quad 66 \\ \hline \end{array}$$

8. $4,484 \times 72 =$ **9.** $85 \times \$116.95 =$ **10.** $52 \times 19,071 =$

Name _____

Multiplying Greater Numbers



Multiply. Check that each answer is reasonable

1.
$$\begin{array}{r} 653 \\ \times 27 \\ \hline \end{array}$$

2.
$$\begin{array}{r} 908 \\ \times 43 \\ \hline \end{array}$$

3.
$$\begin{array}{r} 412 \\ \times 65 \\ \hline \end{array}$$

4.
$$\begin{array}{r} 714 \\ \times 36 \\ \hline \end{array}$$

5.
$$\begin{array}{r} 279 \\ \times 64 \\ \hline \end{array}$$

6.
$$\begin{array}{r} 309 \\ \times 32 \\ \hline \end{array}$$

7.
$$\begin{array}{r} \$1.26 \\ \times 98 \\ \hline \end{array}$$

8.
$$\begin{array}{r} 305 \\ \times 77 \\ \hline \end{array}$$

9.
$$\begin{array}{r} 4,084 \\ \times 43 \\ \hline \end{array}$$

10.
$$\begin{array}{r} 7,016 \\ \times 25 \\ \hline \end{array}$$

11.
$$\begin{array}{r} 9,148 \\ \times 16 \\ \hline \end{array}$$

12.
$$\begin{array}{r} \$50.09 \\ \times 31 \\ \hline \end{array}$$

13.
$$\begin{array}{r} 2,007 \\ \times 75 \\ \hline \end{array}$$

14.
$$\begin{array}{r} \$39.85 \\ \times 74 \\ \hline \end{array}$$

15.
$$\begin{array}{r} 6,618 \\ \times 91 \\ \hline \end{array}$$

16.
$$\begin{array}{r} \$82.35 \\ \times 72 \\ \hline \end{array}$$

17.
$$\begin{array}{r} 21,107 \\ \times 42 \\ \hline \end{array}$$

18.
$$\begin{array}{r} 46,118 \\ \times 27 \\ \hline \end{array}$$

19.
$$\begin{array}{r} 92,306 \\ \times 31 \\ \hline \end{array}$$

20.
$$\begin{array}{r} \$123.95 \\ \times 18 \\ \hline \end{array}$$

21. $53 \times 36,219 =$ _____

22. $26 \times \$591.05 =$ _____

23. $36 \times 19,962 =$ _____

24. $71 \times 23,401 =$ _____

25. $42 \times \$75.53 =$ _____

26. $83 \times 50,276 =$ _____

Problem Solving

Solve.

27. A box holds 250 table tennis balls.
How many table tennis balls can be
packaged in 85 boxes?

28. Pencils are packaged with 144 pencils
in a box. How many pencils are there
in 50 boxes?

Multiplying Greater Numbers

Here is a quick way to check the product of $14 \times 1,456$.

Step 1

Add the digits in each number.

Add again if the sum has two digits.

$$\begin{array}{r}
 1,456 \leftarrow 1 + 4 + 5 + 6 = 16, \quad 1 + 6 = 7 \\
 \times \quad 14 \leftarrow 1 + 4 = 5 \\
 \hline
 20,384 \leftarrow 2 + 0 + 3 + 8 + 4 = 17, \quad 1 + 7 = 8
 \end{array}$$

Step 2

Multiply the two numbers you got from adding the **factors**.

Then add the digits in the product.

$$\begin{array}{r}
 7 \\
 \times 5 \\
 \hline
 35 \quad 3 + 5 = 8
 \end{array}$$

Step 3

Compare the sum you got from adding the digits in the product above ($14 \times 1,456$) to the sum you got in Step 2.

8 = 8, so the product 20,384 is correct.

Use the method shown above to check each problem. Draw an X next to any incorrect product. Then find the correct product.

1. 314
 $\times \quad 57$
 \hline
 17,896

2. 815
 $\times \quad 32$
 \hline
 26,090

3. 742
 $\times \quad 68$
 \hline
 50,456

4. 689
 $\times \quad 24$
 \hline
 16,536

5. 537
 $\times \quad 49$
 \hline
 26,213

6. 496
 $\times \quad 71$
 \hline
 35,216

7. 2,214
 $\times \quad 88$
 \hline
 193,832

8. 3,418
 $\times \quad 92$
 \hline
 314,456

9. 4,372
 $\times \quad 15$
 \hline
 65,480

10. 8,432
 $\times \quad 37$
 \hline
 311,984

11. 7,498
 $\times \quad 45$
 \hline
 337,410

12. 9,455
 $\times \quad 76$
 \hline
 707,580

Problem Solving: Strategy

Make a Graph

Page 271, Problem 3

Which contest did most people enter?
Fewest people?

Sandcastle-Building Contests

Location	Number of People
Port Aransas, TX	1,250
Wenatchee, WA	1,675
Seal Beach, CA	1,775
Atlantic City, NJ	1,525
Malibu, CA	1,375

Step 1**Read****Be sure you understand the problem.**

Read carefully.

What do you know?

- You know how many _____.

What do you need to find?

- You need to find _____.

Step 2**Plan****Make a plan.**

Choose a strategy.

A graph can help you compare data quickly.

Make a bar graph to solve the problem.

- Use Logical Reasoning
- Draw a Picture or Diagram
- Make a Graph
- Act It Out
- Make a Table or List
- Find a Pattern
- Guess and Check
- Write an Equation
- Work Backward
- Solve a Simpler Problem

Name _____

Problem Solving: Strategy

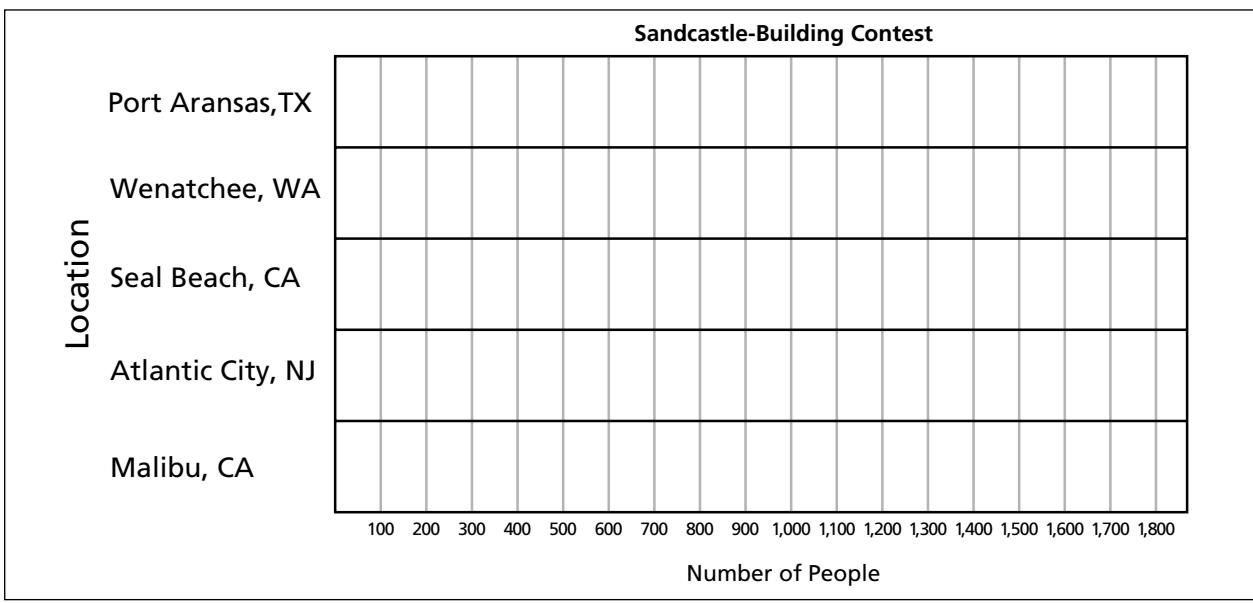
Make a Graph



Step 3

Solve

Carry out your plan. Make a bar graph.



The contest at

_____ had the most people.

_____ had the fewest people.

Step 4

Look Back

Is the solution reasonable?

Reread the problem.

Does your answer match the data given in
the problem? Yes No

What other kind of graph could you use to compare the data?

Practice

1. The Lakefront Swim Club had 400 members in 1970, 250 members in 1980, 600 members in 1990, and 550 members in 2000. Make a graph that displays this data.
2. In which year did the Lakefront Swim Club have the most members? The fewest members?

Problem Solving: Strategy

Make a Graph

Make a graph for the data in the table. Use data from the graph to solve problems 1 and 2.

Boat Rentals at Lake Willow in July and August	
Type of Boat	Income from Boat Rentals
Sailboats	\$1,300
Rowboats	\$1,100
Paddle boats	\$800
Canoes	\$1,000

- Which type of boat generated the most income?

- Which type of boat generated the least income?

- A beach sells 1,000 passes in 1998, 1,200 passes in 1999, and 1,100 passes in 2000. Suppose you make a pictograph in which each symbol stands for 200 passes. How many symbols would you make for each year?

- Suppose you make a graph for the data in problem 3 in which each symbol stands for 100 passes. How many symbols would you make for each year?

Mixed Strategy Review

Solve. Use any strategy.

- Time** Elliot returns from the beach at 4:30 P.M. He spent 2 hours at the beach. It takes 15 minutes for Elliot to travel from his home to the beach. What time did Elliot leave home to go to the beach?

Strategy: _____

- Create a problem** for which you would make a graph to solve. Share it with others.

Multiply Using Mental Math



You can multiply using mental math.

Compensation

Multiply one factor by a number.
Divide another factor by the same number.

$$25 \times 16 = (25 \times 2) \times (16 \div 2)$$

$$\downarrow \qquad \qquad \downarrow$$

$$50 \quad \times \quad 8 \quad = 400$$

Compatible Numbers

Break apart one number and multiply.
Then add.

$$25 \times 16 = (25 \times 10) + (25 \times 6)$$

$$\downarrow \qquad \qquad \downarrow$$

$$250 \quad + \quad 150 \quad = 400$$

Multiply mentally. Use compensation.

1. $35 \times 40 = (35 \times \underline{\hspace{1cm}}) \times (40 \div \underline{\hspace{1cm}})$

$$= \underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

2. $60 \times 25 = (60 \div \underline{\hspace{1cm}}) \times (25 \times \underline{\hspace{1cm}})$

$$= \underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

Multiply mentally. Use compatible numbers.

3. $15 \times 16 = (\underline{\hspace{1cm}} \times 16) + (5 \times \underline{\hspace{1cm}})$

$$= \underline{\hspace{1cm}} + \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

4. $22 \times 30 = (\underline{\hspace{1cm}} \times 30) + (\underline{\hspace{1cm}} \times 30)$

$$= \underline{\hspace{1cm}} + \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

Multiply. Use mental math.

- | | | |
|--|--|--|
| 5. $20 \times 45 = \underline{\hspace{1cm}}$ | 6. $15 \times 28 = \underline{\hspace{1cm}}$ | 7. $11 \times 72 = \underline{\hspace{1cm}}$ |
| 8. $75 \times 20 = \underline{\hspace{1cm}}$ | 9. $36 \times 40 = \underline{\hspace{1cm}}$ | 10. $50 \times 23 = \underline{\hspace{1cm}}$ |
| 11. $44 \times 25 = \underline{\hspace{1cm}}$ | 12. $70 \times 18 = \underline{\hspace{1cm}}$ | 13. $59 \times 71 = \underline{\hspace{1cm}}$ |
| 14. $99 \times 10 = \underline{\hspace{1cm}}$ | 15. $60 \times 73 = \underline{\hspace{1cm}}$ | 16. $45 \times 36 = \underline{\hspace{1cm}}$ |
| 17. $53 \times 11 = \underline{\hspace{1cm}}$ | 18. $32 \times 26 = \underline{\hspace{1cm}}$ | 19. $80 \times 61 = \underline{\hspace{1cm}}$ |
| 20. $70 \times 19 = \underline{\hspace{1cm}}$ | 21. $65 \times 16 = \underline{\hspace{1cm}}$ | 22. $35 \times 90 = \underline{\hspace{1cm}}$ |
| 23. $25 \times 25 = \underline{\hspace{1cm}}$ | 24. $80 \times 18 = \underline{\hspace{1cm}}$ | 25. $26 \times 23 = \underline{\hspace{1cm}}$ |
| 26. $11 \times 37 = \underline{\hspace{1cm}}$ | 27. $55 \times 27 = \underline{\hspace{1cm}}$ | 28. $75 \times 30 = \underline{\hspace{1cm}}$ |
| 29. $62 \times 10 = \underline{\hspace{1cm}}$ | 30. $25 \times 45 = \underline{\hspace{1cm}}$ | 31. $50 \times 88 = \underline{\hspace{1cm}}$ |

Multiply Using Mental Math

Multiply. Use mental math.

1. $12 \times 30 =$ _____

2. $40 \times 21 =$ _____

3. $34 \times 11 =$ _____

4. $55 \times 18 =$ _____

5. $60 \times 14 =$ _____

6. $70 \times 31 =$ _____

7. $44 \times 22 =$ _____

8. $80 \times 51 =$ _____

9. $90 \times 9 =$ _____

10. $25 \times 50 =$ _____

11. $30 \times 26 =$ _____

12. $24 \times 40 =$ _____

13. $44 \times 15 =$ _____

14. $52 \times 11 =$ _____

15. $15 \times 16 =$ _____

16. $35 \times 22 =$ _____

17. $61 \times 30 =$ _____

18. $20 \times 48 =$ _____

19. $30 \times 19 =$ _____

20. $65 \times 40 =$ _____

21. $48 \times 40 =$ _____

22. $16 \times 21 =$ _____

23. $25 \times 28 =$ _____

24. $59 \times 61 =$ _____

25. $50 \times 14 =$ _____

26. $35 \times 21 =$ _____

27. $70 \times 49 =$ _____

28. $11 \times 62 =$ _____

29. $90 \times 42 =$ _____

30. $22 \times 55 =$ _____

31. $\begin{array}{r} 80 \\ \times 7 \\ \hline \end{array}$

32. $\begin{array}{r} 41 \\ \times 41 \\ \hline \end{array}$

33. $\begin{array}{r} 97 \\ \times 11 \\ \hline \end{array}$

34. $\begin{array}{r} 198 \\ \times 25 \\ \hline \end{array}$

35. $\begin{array}{r} 38 \\ \times 21 \\ \hline \end{array}$

36. $\begin{array}{r} 201 \\ \times 11 \\ \hline \end{array}$

37. $\begin{array}{r} 110 \\ \times 30 \\ \hline \end{array}$

38. $\begin{array}{r} 55 \\ \times 12 \\ \hline \end{array}$

Problem Solving

Solve.

39. Teams of 16 students each are helping clean the park. There are 21 teams in all. How many students in all are helping clean the park?

40. Students are going on a field trip in 20 buses. Each bus carries 35 students. How many students are going on the field trip?

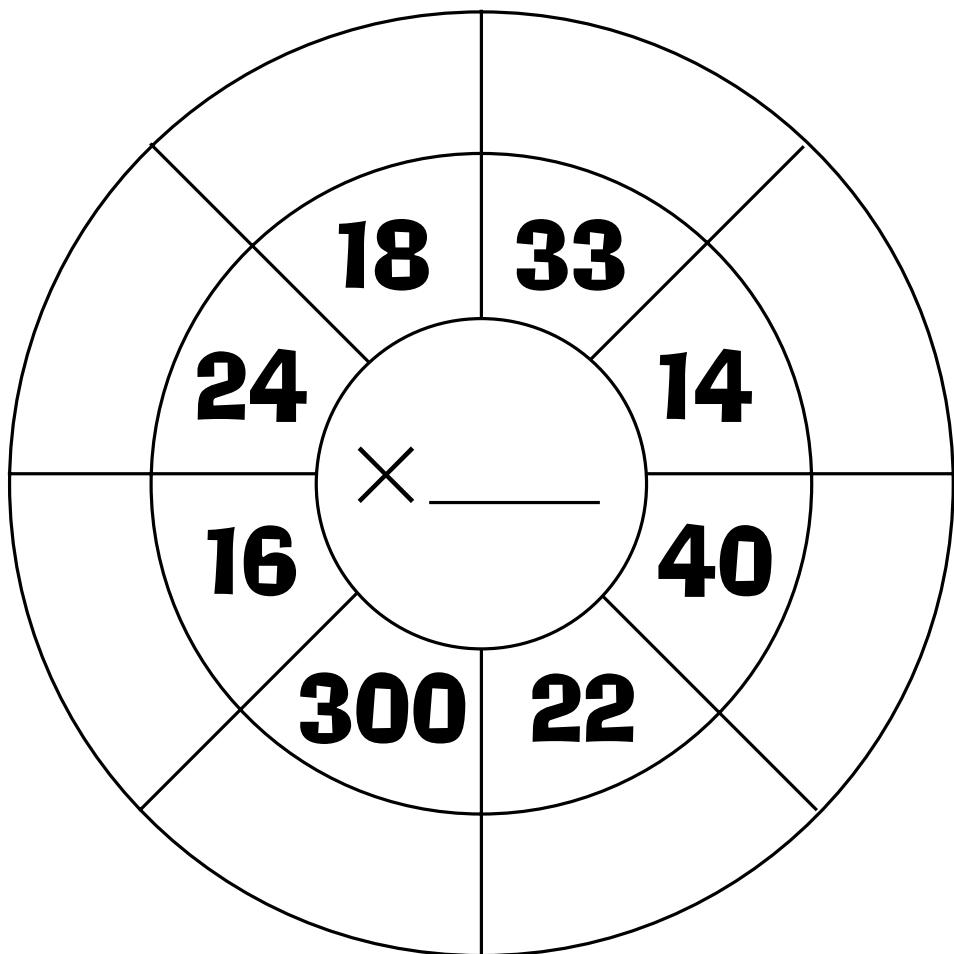
Multiply Using Mental Math

Play Circle Race with a partner. You will need 10 index cards

- Write each of these numbers on an index card:

12	15	18	25	30	35	50	60	200	400
----	----	----	----	----	----	----	----	-----	-----
- Mix up the cards and then place them face down between you and your partner. Pick up a card. Write the number in the center of your circle. Use mental math to multiply each number on the circle by the number in the center. The first person to complete the circle with correct answers scores 1 point.
- Erase the number in the center. Repeat the activity until all the cards have been taken.

The person with the greater number of points wins.



Name _____

Choose a Computation Method



Find 15×36 .

Calculator

Press the keys.

1 5 × 3 6 ENTER

Read the display.

$15 \times 36 = 540$

Mental Math

Split 15 into two parts.

$$10 + 5$$

Multiply each part by 36.

$$36 \times 10 = 360$$

$$36 \times 5 = 180$$

Add.

$$360 + 180 = 540$$

Paper and Pencil

$$\begin{array}{r} 3 \\ 36 \\ \times 15 \\ \hline 180 \\ + 360 \\ \hline 540 \end{array}$$

Multiply. Tell which method you used. Write *calculator*, *mental math*, or *paper and pencil*.

1. 29

$$\underline{\times 17}$$

2. 56

$$\underline{\times 34}$$

3. 40

$$\underline{\times 21}$$

4. 64

$$\underline{\times 71}$$

5. 82

$$\underline{\times 39}$$

6. 31

$$\underline{\times 13}$$

7. $25 \times 53 =$ _____

8. $96 \times 40 =$ _____

9. $68 \times 31 =$ _____

10. $50 \times 20 =$ _____

Name _____

Choose a Computation Method



Multiply. Tell which method you used.

1.
$$\begin{array}{r} 57 \\ \times 15 \\ \hline \end{array}$$

2.
$$\begin{array}{r} 90 \\ \times 40 \\ \hline \end{array}$$

3.
$$\begin{array}{r} 41 \\ \times 33 \\ \hline \end{array}$$

4.
$$\begin{array}{r} 27 \\ \times 81 \\ \hline \end{array}$$

5.
$$\begin{array}{r} 30 \\ \times 11 \\ \hline \end{array}$$

6.
$$\begin{array}{r} 64 \\ \times 26 \\ \hline \end{array}$$

7. $25 \times 40 = \underline{\hspace{2cm}}$

9. $98 \times 47 = \underline{\hspace{2cm}}$

8. $83 \times 152 = \underline{\hspace{2cm}}$

10. $19 \times 111 = \underline{\hspace{2cm}}$

Algebra Find each missing number.

11. $r \times 32 = 832$ _____

12. $28 \times n = 1,540$ _____

Problem Solving

Solve.

13. The football stadium has 92 rows of seats. There are 25 seats in each row. How many seats are in the football stadium?

14. The baseball stadium has 90 rows of seats. There are 30 seats in each row. How many seats are in the baseball stadium?

Name _____

Choose a Computation Method



Write 3 word problems, one that can be solved by using mental math, one that can be solved by using a calculator, and one that can be solved by using paper and pencil.

Find each solution and tell which method you used. Then explain why you chose the method you did.

1. Word Problem _____

Solution _____

Method Used _____

Explanation _____

2. Word Problem _____

Solution _____

Method Used _____

Explanation _____

3. Word Problem _____

Solution _____

Method Used _____

Explanation _____

Name _____

Problem Solving: Decision Making

**Decision
Making**
WORKSHEET

Record your data.

Sailboat	Rowboat	Paddle Boat	Canoe

Your Decision

Which boat or boats will the family rent? How long will they keep the boat? Explain.

**UNIT
7****Divide by 1-Digit Numbers****CHAPTER 13 • SUPPORT MATERIALS**

Lesson	Titles	Masters	Use with pages
13-1	Division Patterns	R13-1, P13-1, E13-1	292–293
13-2	Estimate Quotients	R13-2, P13-2, E13-2	294–295
13-3	Explore Dividing by 1-Digit Numbers	R13-3, P13-3, E13-3	296–297
13-4	Divide by 1-Digit Numbers	R13-4, P13-4, E13-4	298–300
13-5	Problem Solving: Skill Interpret the Remainder	R13-5, P13-5, E13-5	302–303
13-6	Quotients with Zeros	R13-6, P13-6, E13-6	304–305

CHAPTER 14 • SUPPORT MATERIALS

Lesson	Titles	Masters	Use with pages
14-1	Divide Greater Numbers	R14-1, P14-1, E14-1	310–312
14-2	Choose a Computation Method	R14-2, P14-2, E14-2	314–315
14-3	Problem Solving: Strategy Guess and Check	R14-3, R14-3, P14-3	316–317
14-4	Find the Better Buy	R14-4, P14-4, E14-4	318–319
14-5	Explore Finding the Mean	R14-5, P14-5, E14-5	320–321
14-6	Find the Mean	R14-6, P14-6, E14-6	322–324
	Problem Solving: Applying Math and Science	Worksheets	328–329

R—Reteach

P—Practice

E—Enrich

Division Patterns • Algebra

You can divide mentally by using basic division facts and looking for a pattern.

Divide. Count the zeros.

Think:

The basic fact is $12 \div 3 = 4$.

$$12 \div 3 = 4 \quad \leftarrow \text{no zeros}$$

$$120 \div 3 = 40 \quad \leftarrow \text{1 zero}$$

$$1,200 \div 3 = 400 \quad \leftarrow \text{2 zeros}$$

Think:

The basic fact is $40 \div 8 = 5$.

$$40 \div 8 = 5 \quad \leftarrow \text{no extra zeros}$$

$$400 \div 8 = 50 \quad \leftarrow \text{1 extra zero}$$

$$4,000 \div 8 = 500 \quad \leftarrow \text{2 extra zeros}$$

Complete.

1. $15 \div 3 =$ _____

$$150 \div 3 =$$

$$1,500 \div 3 =$$

2. $20 \div 5 =$ _____

$$200 \div 5 =$$

$$2,000 \div 5 =$$

3. $32 \div 4 =$ _____

$$320 \div 4 =$$

$$3,200 \div 4 =$$

4. $30 \div 6 =$ _____

$$300 \div 6 =$$

$$3,000 \div 6 =$$

5. $35 \div 5 =$ _____

$$350 \div 5 =$$

$$3,500 \div 5 =$$

6. $45 \div 9 =$ _____

$$450 \div 9 =$$

$$4,500 \div 9 =$$

7. $48 \div 8 =$ _____

$$480 \div 8 =$$

$$4,800 \div 8 =$$

8. $64 \div 8 =$ _____

$$640 \div 8 =$$

$$6,400 \div 8 =$$

9. $180 \div 2 =$ _____

10. $360 \div 4 =$ _____

11. $700 \div 7 =$ _____

12. $360 \div 6 =$ _____

13. $540 \div 9 =$ _____

14. $1,400 \div 2 =$ _____

15. $4,200 \div 7 =$ _____

16. $2,700 \div 9 =$ _____

17. $4,900 \div 7 =$ _____

Name _____

Division Patterns • Algebra



Complete.

1. $48 \div 6 =$ _____

2. $35 \div 5 =$ _____

3. $16 \div 4 =$ _____

$480 \div 6 =$ _____

$350 \div 5 =$ _____

$160 \div 4 =$ _____

$4,800 \div 6 =$ _____

$3,500 \div 5 =$ _____

$1,600 \div 4 =$ _____

Divide.

4. $3\overline{)620}$

5. $5\overline{)250}$

6. $6\overline{)\$420}$

7. $7\overline{)560}$

8. $2\overline{)160}$

9. $3\overline{\)$270}$

10. $4\overline{)240}$

11. $8\overline{)560}$

12. $9\overline{)7,200}$

13. $5\overline{)3,500}$

14. $4\overline{)2,800}$

15. $6\overline{\)$4,200}$

16. $7\overline{\)$4,200}$

17. $9\overline{)3,600}$

18. $3\overline{)1,800}$

19. $2\overline{)8,000}$

20. $120 \div 2 =$ _____

21. $\$240 \div 3 =$ _____

22. $810 \div 9 =$ _____

23. $\$450 \div 5 =$ _____

24. $630 \div 7 =$ _____

25. $540 \div 9 =$ _____

26. $3,000 \div 6 =$ _____

27. $\$7,200 \div 8 =$ _____

28. $4,800 \div 8 =$ _____

29. $3,200 \div 8 =$ _____

30. $5,600 \div 7 =$ _____

31. $\$3,600 \div 4 =$ _____

Algebra Write the missing number.

32. $200 \div$ _____ $= 50$

33. $450 \div 5 =$ _____

34. $630 \div$ _____ $= 90$

35. _____ $\div 6 = 40$

36. $200 \div$ _____ $= 40$

37. _____ $\div 8 = 80$

38. _____ $\div 4 = 600$

39. $1,500 \div$ _____ $= 500$

40. $3,000 \div 5 =$ _____

Problem Solving

Solve.

41. There are 150 students in 3 buses. Each bus carries the same number of students. How many students are on each bus?

42. A pet shop has 160 fish in aquariums. Each aquarium has 40 fish. How many aquariums of fish are there?

Division Patterns • Algebra

Complete.

Solve. Find each missing number.

- | | | | |
|---|---|---|---|
| 1. $140 \div 7 = \underline{\hspace{2cm}}$ | M | 2. $\underline{\hspace{2cm}} \div 9 = 40$ | U |
| 3. $4,200 \div \underline{\hspace{2cm}} = 700$ | O | 4. $\underline{\hspace{2cm}} \div 2 = 800$ | A |
| 5. $3,500 \div \underline{\hspace{2cm}} = 700$ | H | 6. $\underline{\hspace{2cm}} \div 4 = 30$ | N |
| 7. $\underline{\hspace{2cm}} \div 3 = 700$ | E | 8. $320 \div \underline{\hspace{2cm}} = 80$ | A |
| 9. $2,800 \div \underline{\hspace{2cm}} = 400$ | S | 10. $\underline{\hspace{2cm}} \div 9 = 90$ | R |
| 11. $5,600 \div \underline{\hspace{2cm}} = 700$ | S | 12. $240 \div \underline{\hspace{2cm}} = 80$ | I |
| 13. $5,400 \div \underline{\hspace{2cm}} = 600$ | L | 14. $2,700 \div 3 = \underline{\hspace{2cm}}$ | E |
| 15. $720 \div 9 = \underline{\hspace{2cm}}$ | I | 16. $800 \div \underline{\hspace{2cm}} = 400$ | R |
| 17. $150 \div 3 = \underline{\hspace{2cm}}$ | M | 18. $\underline{\hspace{2cm}} \div 7 = 60$ | E |
| 19. $120 \div 2 = \underline{\hspace{2cm}}$ | S | 20. $\underline{\hspace{2cm}} \div 8 = 400$ | I |
| 21. $\underline{\hspace{2cm}} \div 5 = 800$ | C | 22. $810 \div 9 = \underline{\hspace{2cm}}$ | N |

Solve the riddles. Place the letter at right of each problem in the blank above the matching answer number.

What state reminds you of part of a lion?	_____	20	4	3	120	420
What city likes to wander?	_____	2	6	50	900	
Which people are always in a hurry?	_____	810	360	60	7	3,200 1,600 90 8
What country is always cold?	_____	4,000	5	80	9	2,100

Estimate Quotients



Compatible numbers are numbers you can divide easily.

You can use compatible numbers to estimate quotients.

Estimate $351 \div 4$.

Think: What basic division fact is close to $35 \div 4$?

$$36 \div 4 = 9$$

$$360 \div 4 = 90$$

So, $351 \div 4$ is about 90.

Estimate $435 \div 7$.

Think: What basic division fact is close to $43 \div 7$?

$$42 \div 7 = 6$$

$$420 \div 7 = 60$$

So, $435 \div 7$ is about 60.

Complete.

1. Estimate $430 \div 9$.

Division fact: $45 \div 9 =$ _____

Estimate: $450 \div 9 =$ _____

2. Estimate $279 \div 3$.

Division fact: $27 \div 3 =$ _____

Estimate: $270 \div 3 =$ _____

3. Estimate $299 \div 5$

Division fact: _____

Estimate: _____

4. Estimate $319 \div 4$.

Division fact: _____

Estimate: _____

5. Estimate $562 \div 6$.

Division fact: _____

Estimate: _____

6. Estimate $631 \div 8$.

Division fact: _____

Estimate: _____

Estimate. Circle the letter of the division sentence with the compatible number. Then complete the division.

7. $122 \div 4$

a. $120 \div 4 =$ _____

b. $100 \div 4 =$ _____

8. $349 \div 7$

a. $360 \div 7 =$ _____

b. $350 \div 7 =$ _____

9. $272 \div 9$

a. $270 \div 9 =$ _____

b. $280 \div 9 =$ _____

10. $292 \div 5$

a. $300 \div 5 =$ _____

b. $290 \div 5 =$ _____

11. $453 \div 9$

a. $480 \div 9 =$ _____

b. $450 \div 9 =$ _____

Name _____

Estimate Quotients



Estimate. Use compatible numbers.

1. $2\overline{)43}$

2. $4\overline{)71}$

3. $6\overline{)521}$

4. $7\overline{)501}$

5. $3\overline{)159}$

6. $4\overline{)171}$

7. $2\overline{)131}$

8. $9\overline{)286}$

9. $8\overline{)650}$

10. $5\overline{)209}$

11. $9\overline{)831}$

12. $7\overline{)2,011}$

13. $6\overline{)3,124}$

14. $4\overline{)3,105}$

15. $3\overline{)5,896}$

16. $9\overline{)46,999}$

17. $65 \div 3$

18. $98 \div 5$

19. $22 \div 3$

20. $381 \div 8$

21. $555 \div 6$

22. $640 \div 7$

23. $468 \div 9$

24. $309 \div 5$

25. $481 \div 7$

26. $281 \div 3$

27. $349 \div 4$

28. $412 \div 5$

29. $4,124 \div 6$

30. $1,912 \div 9$

31. $1,714 \div 2$

32. $2,186 \div 4$

33. $2,904 \div 7$

34. $4,711 \div 8$

Problem Solving

Solve.

35. Marta travels a total of 850 miles every month to San Francisco on business. If she goes 3 times a month, about how many miles is each round trip?

36. Jeff goes on a 173-mile bike trip. It takes him 9 days from start to finish. About how many miles does he travel each day?

Estimate Quotients

Complete.

Rewrite each problem using compatible numbers.

Write the estimated quotient.

1. $7\overline{)428}$

2. $3\overline{)605}$

3. $4\overline{)316}$

4. $9\overline{)8,140}$

5. $5\overline{)5,165}$

6. $8\overline{)3,999}$

7. $6\overline{)3,546}$

8. $2\overline{)196}$

9. $4\overline{)85}$

10. $9\overline{)98}$

11. $8\overline{)725}$

12. $5\overline{)5,620}$

13. Use the problems above to spell the name of the “treasure” state. Write the estimated quotient from above beside the matching problem number below. The first one, problem 11, is done for you. Cross out the letters above the quotients with two digits. Circle the letters above the quotients with three or more digits.

H

I

A

D

N

N

11. 90

9. _____

5. _____

10. _____

2. _____

4. _____

T

M

O

B

P

A

6. _____

8. _____

7. _____

1. _____

3. _____

12. _____

Rearrange the circled letters to spell the name of the “treasure” state. _____
Solve.

14. Show how to estimate $605 \div 3$.
-

Name _____

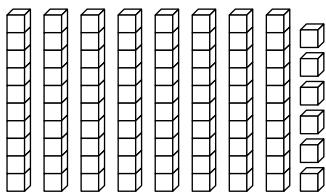
Explore Dividing by 1-Digit Numbers



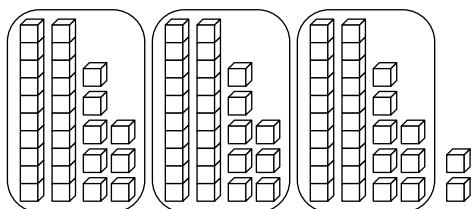
You can use models to help you divide.

Divide $86 \div 3$.

Show 86.

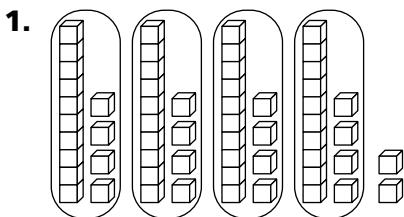


Place 2 tens in each of 3 groups. Regroup the 2 tens that are left as 20 ones. You can divide the 26 ones into 3 groups of 8 with 2 left over.

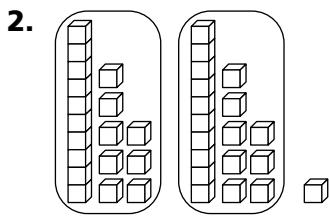


You can divide 86 cubes into 3 groups of 28 with 2 left over.
 $So, 86 \div 3 = 28 \text{ R}2$.

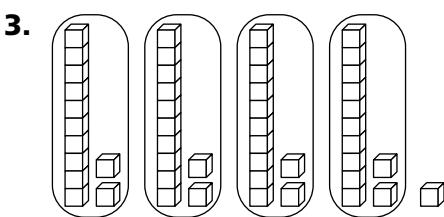
Divide. You may use models to help you.



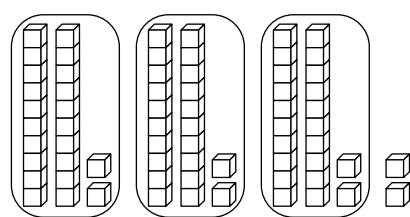
$$58 \div 4 = \underline{\quad}$$



$$37 \div 2 = \underline{\quad}$$



$$49 \div 4 = \underline{\quad}$$



$$68 \div 3 = \underline{\quad}$$

Divide.

$$5. 43 \div 2 = \underline{\quad}$$

$$6. 25 \div 2 = \underline{\quad}$$

$$7. 42 \div 4 = \underline{\quad}$$

$$8. 82 \div 5 = \underline{\quad}$$

$$9. 48 \div 4 = \underline{\quad}$$

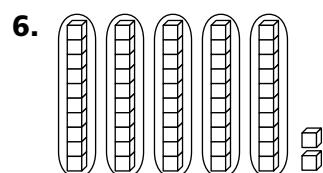
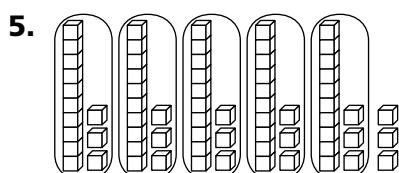
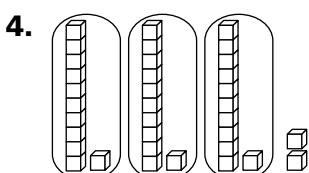
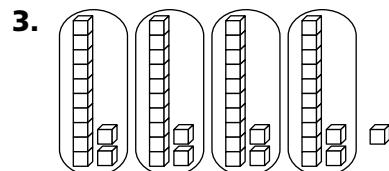
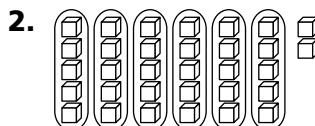
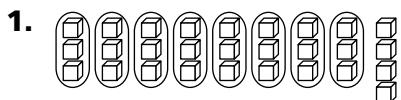
$$10. 78 \div 9 = \underline{\quad}$$

Name _____

Explore Dividing by 1-Digit Numbers



Write a division sentence for each model.



Find each quotient. You may draw place-value models.

7. $6 \overline{)20}$

8. $8 \overline{)29}$

9. $4 \overline{)37}$

10. $9 \overline{)33}$

11. $4 \overline{)51}$

12. $5 \overline{)66}$

13. $6 \overline{)78}$

14. $7 \overline{)83}$

15. $6 \overline{)99}$

16. $7 \overline{)98}$

17. $2 \overline{)55}$

18. $2 \overline{)99}$

19. $41 \div 9 =$ _____

20. $62 \div 9 =$ _____

21. $59 \div 7 =$ _____

22. $88 \div 3 =$ _____

23. $73 \div 5 =$ _____

24. $58 \div 4 =$ _____

25. $67 \div 6 =$ _____

26. $77 \div 7 =$ _____

27. $43 \div 2 =$ _____

Explore Dividing by 1-Digit Numbers

You can use divisibility rules to find out if a number will have a remainder.

Divisibility Rules	
A number is divisible by	
2 if the ones digit is 0, 2, 4, 6, or 8.	6 if it is divisible by both 2 and 3.
3 if the sum of its digits is divisible by 3.	9 if the sum of its digits is divisible by 9.
5 if the ones digit is 0 or 5.	10 if the ones digit is 0.

- 1.** If you divide 315 by 5, will there be a remainder? _____

How do you know?

Divide to prove your answers.

- 2.** If you divide 691 by any 1-digit number, will there be a remainder? _____

How do you know?

Divide to prove your answers.

- 3.** Think about dividing a 3-digit number by each of the following 1-digit numbers: 2, 3, 4, 5, 6, 7, 8, 9.

Which divisions will have remainders? _____

Which divisions will not have remainders? _____

Prove your answers.

Divide by 1-Digit Numbers



Divide $8 \overline{)425}$.

Step 1
Divide the hundreds.

Think: $4 \div 8$.

There aren't enough
hundreds.

$$8 \overline{)425}$$

Step 2
Divide the tens.

Think: $42 \div 8$.

Divide the tens.

$$\begin{array}{r} 5 \\ 8 \overline{)425} \\ -40 \\ \hline 2 \end{array}$$

Multiply: $8 \times 5 = 40$
Subtract: $42 - 40 = 2$

Step 3
Divide the ones.

Bring down the ones.

Divide the ones.

$$\begin{array}{r} 53 \text{ R } 1 \\ 8 \overline{)425} \\ -40 \\ \hline 25 \\ -24 \\ \hline 1 \end{array}$$

Multiply: $8 \times 3 = 24$
Subtract: $25 - 24 = 1$
The remainder is 1.

Check your answer: $53 \times 8 = 424$ $424 + 1 = 425$

Complete.

1. $\begin{array}{r} 2 \boxed{} \boxed{} \\ 3 \overline{)6 \ 8 \ 4} \\ -6 \\ \hline \boxed{} \\ - \\ \boxed{} \boxed{} \\ - \\ \boxed{} \end{array}$

2. $\begin{array}{r} 1 \boxed{} \boxed{} \\ 5 \overline{)7 \ 1 \ 7} \\ -5 \\ \hline \boxed{} \boxed{} \\ - \\ \boxed{} \boxed{} \\ - \\ \boxed{} \end{array} \text{ R } \boxed{}$

3. $\begin{array}{r} \boxed{} \boxed{} \\ 7 \overline{)6 \ 2 \ 4} \\ -5 \ 6 \\ \hline \boxed{} \boxed{} \\ - \\ \boxed{} \end{array} \text{ R } \boxed{}$

Find each quotient.

4. $4 \overline{)573}$

5. $5 \overline{)349}$

6. $5 \overline{)764}$

7. $7 \overline{)293}$

8. $3 \overline{)745}$

9. $7 \overline{)973}$

10. $9 \overline{)854}$

11. $3 \overline{)866}$

12. $662 \div 5 = \underline{\hspace{2cm}}$ 13. $571 \div 8 = \underline{\hspace{2cm}}$ 14. $927 \div 4 = \underline{\hspace{2cm}}$

15. $745 \div 3 = \underline{\hspace{2cm}}$ 16. $680 \div 5 = \underline{\hspace{2cm}}$ 17. $571 \div 6 = \underline{\hspace{2cm}}$

Divide by 1-Digit Numbers

Divide. Check your answer.

1. $2\overline{)698}$

2. $5\overline{)\$675}$

3. $3\overline{)391}$

4. $7\overline{)785}$

5. $5\overline{)557}$

6. $8\overline{)231}$

7. $4\overline{)\$268}$

8. $8\overline{)995}$

9. $4\overline{)398}$

10. $6\overline{)\$6.72}$

11. $3\overline{)935}$

12. $5\overline{)457}$

13. $7\overline{)903}$

14. $2\overline{)723}$

15. $7\overline{)836}$

16. $8\overline{)745}$

17. $9\overline{)999}$

18. $6\overline{)377}$

19. $8\overline{)\$296}$

20. $7\overline{)779}$

21. $215 \div 3 =$ _____

22. $367 \div 5 =$ _____

23. $467 \div 2 =$ _____

24. $593 \div 4 =$ _____

25. $298 \div 6 =$ _____

26. $506 \div 7 =$ _____

27. Divide 726 by 7.

28. Divide 834 by 5.

29. Divide 909 by 8.

Algebra Find each missing number.

30. $1,065 \div n = 213$

31. $c \div 4 = 168$

32. $690 \div m = 345$

33. $b \div 8 = 116$

34. $585 \div d = 195$

35. $t \div 9 = 111$

36. $(250 + 14) \div x = 44$

37. $(700 + y) \div 7 = 106$

38. $756 \div (r + 3) = 126$

Problem Solving

Solve.

39. Morgan plants 906 pine seedlings. She plants 8 pine seedlings in each row. How many rows are there? How many seedlings are left?

40. The school buys 2,880 tickets to the circus. The tickets are divided equally among 9 classes. How many tickets does each class get?

Divide by 1-Digit Numbers

Short division is a quick way to divide. Here is how it works.

Divide $6\overline{)892}$.

Step 1 Divide the hundreds.	Step 2 Divide the tens.	Step 3 Divide the ones.
Multiply and subtract mentally. Write the difference in front of the digit in the tens place. $\begin{array}{r} 1 \\ 6 \overline{)8^29^2} \end{array}$ Think: $6 \times 1 = 6$ $8 - 6 = 2$	Multiply and subtract mentally. Write the difference in front of the digit in the ones place. $\begin{array}{r} 14 \\ 6 \overline{)8^29^52} \end{array}$ Think: $6 \times 4 = 24$ $29 - 24 = 5$	Multiply and subtract mentally. Write the remainder as part of the quotient. $\begin{array}{r} 148 \text{ R4} \\ 6 \overline{)8^29^52} \end{array}$ Think: $6 \times 8 = 48$ $52 - 48 = 4$

Divide $8\overline{)653}$.

Step 1 Divide the hundreds.	Step 2 Divide the tens.	Step 3 Divide the ones.
$8\overline{)653}$ Think: $8 \times 1 = 8$, not enough hundreds.	$\begin{array}{r} 8 \\ 8 \overline{)65^13} \end{array}$ Think: $8 \times 8 = 64$ $65 - 64 = 1$	$\begin{array}{r} 81 \text{ R5} \\ 8 \overline{)65^13} \end{array}$ Think: $8 \times 1 = 8$ $13 - 8 = 5$

Use short division to divide.

1. $2\overline{)342}$

2. $3\overline{)761}$

3. $4\overline{)623}$

4. $5\overline{)823}$

5. $6\overline{)942}$

6. $7\overline{)918}$

7. $8\overline{)894}$

8. $9\overline{)867}$

9. $6\overline{)443}$

10. $6\overline{)432}$

11. $7\overline{)365}$

12. $7\overline{)431}$

13. $5\overline{)327}$

14. $9\overline{)624}$

15. $8\overline{)492}$

16. $8\overline{)944}$

17. $9\overline{)862}$

18. $6\overline{)791}$

Problem Solving: Skill

Interpret the Remainder

There are 26 people seated at tables. Each table seats 8 people. How many full tables are there? How many people are sitting at a table that is not full? How many tables are needed for all 26 people?

There are 3 different ways to interpret the remainder.

1. Use only the quotient.

How many full tables will there be?

Divide to find the number of full tables.

$$26 \div 8 = 3 \text{ R}2$$

There will be 3 full tables.

2. The remainder is the answer.

How many people will sit at a table that is not full?

Look at the remainder.

$$26 \div 8 = 3 \text{ R}2$$

So, 2 people will sit at a table that is not full.

3. Add 1 to the quotient.

How many tables will be needed for all 26 people?

Since there are 3 full tables and 1 table that is not full, there are 4 tables in all.

Choose the correct answer.

There are 94 people who volunteer to clean the park. They will form into groups of 4. How many groups of 4 can they make?

1. Which of the following statements is true?

- A** They will make 24 groups.
- B** Everyone can be in a group of 4.
- C** There are 94 volunteers.

2. How do you interpret the remainder to solve this problem?

- F** Use only the quotient.
- G** Use only the remainder.
- H** Add 1 to the quotient.

The after-school baseball league buys 250 baseballs. The baseballs come in boxes of 6. How many boxes does the league get?

3. How do you interpret the remainder to solve this problem?

- A** Use only the quotient.
- B** Use only the remainder.
- C** Add 1 to the quotient.

4. How many boxes will the league need?

- F** 41 boxes
- G** 42 boxes
- H** 43 boxes

Problem Solving: Skill

Interpret the Remainder

Solve.

1. There are 72 students in the Hockey Club. How many teams of 5 can they make?

3. Paint sets cost \$6. The Art Club has \$93. If the club buys as many paint sets as it can, how much money will be left over?

5. There are 64 members in the Science Club. They travel to the science fair in cars that can hold 5 members each. How many cars are needed?

7. Each song played by a DJ is 4 minutes long. How many songs does he play in a music set that is 30 minutes long?

2. The Hockey Club buys 128 ounces of juice. How many 7-ounce cups can they pour?

4. There are 132 students at a meeting. The seats are arranged in rows of 8. How many rows of seats are needed?

6. There are 83 students. They will sit in rows of 6 seats each. They will start at the front row and fill as many rows as they can. How many students will be in the last row?

8. The DJ's assistant distributes neon sunglasses to 50 people at a party. There are 6 glasses in a box. How many boxes should she open?

Mixed Strategy Review

Solve. Use any strategy.

9. Carla is cooking dinner for friends. She needs 20 minutes to shop for the food, 30 minutes to prepare the food, and 45 minutes to cook the food. If she wants the dinner to be ready at 6:00 P.M., at what time should she start shopping for the food?

Strategy: _____

10. Ed, Fred, and Jed each collect a different type of sports card, either baseball cards, football cards, or basketball cards. Ed collects football cards. Fred does not collect baseball cards. What type of card does Jed collect?

Strategy: _____

Problem Solving: Skill

Interpret the Remainder

1. Mary makes 20 muffins. Each of Mary's muffin trays holds 6 muffins. Write a question that uses only the quotient for the answer. Then write the answer.
-

Write a question that uses the remainder in the answer. Then write the answer.

Write a question that needs to have 1 added to the quotient in the answer. Then write the answer.

2. There are 66 fourth-grade students. They want to make teams of 8 players. Write a question that uses only the quotient for the answer. Then write the answer.
-

Write a question that uses the remainder in the answer. Then write the answer.

Write a question that needs to have 1 added to the quotient in the answer. Then write the answer.

3. Exactly 53 people want to go to the museum. They go in cars that each hold 6 people. Write a question that uses only the quotient for the answer. Then write the answer.
-

Write a question that uses the remainder in the answer. Then write the answer.

Write a question that needs to have 1 added to the quotient in the answer. Then write the answer.

Quotients with Zeros



Divide $3\overline{)629}$. Follow the steps below.

Step 1

Divide the hundreds.

Think: $3 \times 2 = 600$

The first digit is in
the hundreds place.

$$\begin{array}{r} 2 \\ 3\overline{)629} \\ -6 \\ \hline 0 \end{array}$$

Multiply: $3 \times 2 = 6$
Subtract: $6 - 6 = 0$
Compare: $0 < 6$

Step 2

Divide the tens.

Bring down the tens.
There are not enough
tens to divide. Trade 2
tens for 20 ones.

$$\begin{array}{r} 20 \\ 3\overline{)629} \\ -6 \\ \hline 02 \end{array}$$

There are not enough
tens to divide. Write
a 0 in the quotient.
Compare: $0 < 4$

Step 3

Divide the ones.

Bring down the ones.
Divide the ones.

$$\begin{array}{r} 209 \\ 3\overline{)629} \\ -6 \\ \hline 29 \\ -27 \\ \hline 2 \end{array}$$

R2
Multiply: $3 \times 9 = 27$
Subtract: $29 - 27 = 2$

Check your answer: $209 \times 3 = 627$ $627 + 2 = 629$

Complete.

1. $\begin{array}{r} 3\overline{)926} \\ -9 \\ \hline \end{array}$ R

$\begin{array}{r} 3\overline{)926} \\ -9 \\ \hline \end{array}$ R

$\begin{array}{r} 3\overline{)926} \\ -9 \\ \hline \end{array}$ R

2. $\begin{array}{r} 1\overline{)642} \\ -6 \\ \hline \end{array}$

$\begin{array}{r} 1\overline{)642} \\ -6 \\ \hline \end{array}$

$\begin{array}{r} 1\overline{)642} \\ -6 \\ \hline \end{array}$

3. $\begin{array}{r} \overline{} \\ 7\overline{)143} \\ -14 \\ \hline \end{array}$ R

Divide.

4. $4\overline{)816}$

5. $4\overline{)438}$

6. $3\overline{)316}$

7. $7\overline{)765}$

8. $2\overline{)615}$

9. $2\overline{)361}$

10. $3\overline{)628}$

11. $3\overline{)210}$

12. $912 \div 9 =$ _____

13. $452 \div 5 =$ _____

14. $662 \div 3 =$ _____

15. $965 \div 6 =$ _____

16. $905 \div 3 =$ _____

17. $734 \div 7 =$ _____

Name _____

Quotients with Zeros



Divide. Check your answer.

1. $3\overline{)620}$

2. $2\overline{)419}$

3. $9\overline{)92}$

4. $4\overline{)839}$

5. $6\overline{)630}$

6. $8\overline{)856}$

7. $7\overline{)763}$

8. $9\overline{)918}$

9. $5\overline{)549}$

10. $7\overline{)748}$

11. $8\overline{)812}$

12. $2\overline{)819}$

13. $6\overline{)620}$

14. $9\overline{)98}$

15. $3\overline{)211}$

16. $4\overline{)827}$

17. $5\overline{)544}$

18. $8\overline{)855}$

19. $6\overline{)657}$

20. $3\overline{)917}$

21. $2\overline{)981}$

22. $4\overline{)835}$

23. $7\overline{)727}$

24. $8\overline{)406}$

25. $823 \div 4 =$ _____

26. $704 \div 5 =$ _____

27. $981 \div 2 =$ _____

28. $920 \div 3 =$ _____

29. $916 \div 7 =$ _____

30. $845 \div 6 =$ _____

31. $885 \div 8 =$ _____

32. $954 \div 5 =$ _____

33. $965 \div 6 =$ _____

Find only those quotients that are greater than 200.

34. $992 \div 3 =$ _____

35. $920 \div 9 =$ _____

36. $619 \div 3 =$ _____

37. $747 \div 4 =$ _____

38. $818 \div 2 =$ _____

39. $540 \div 2 =$ _____

Problem Solving

Solve.

40. Jenna earns \$636 in 6 months by babysitting. If divided evenly, how much is that a month?

41. A family of 4 spends \$824 when vacationing. If divided evenly, how much is that per person?

Quotients with Zeros

Pick divisors from the list below to create 20 division problems. Then complete the problems. If you have a zero in the quotient, give yourself 2 points. If you do not have a zero in the quotient, give yourself 1 point.

Divisors: 1, 2, 3, 4, 5, 6, 7, 8, 9

1. $\overline{)604}$	2. $\overline{)781}$	3. $\overline{)852}$	4. $\overline{)509}$	5. $\overline{)619}$
6. $\overline{)775}$	7. $\overline{)423}$	8. $\overline{)170}$	9. $\overline{)875}$	10. $\overline{)1,815}$
11. $\overline{)363}$	12. $\overline{)725}$	13. $\overline{)211}$	14. $\overline{)321}$	15. $\overline{)354}$
16. $\overline{)104}$	17. $\overline{)545}$	18. $\overline{)323}$	19. $\overline{)906}$	20. $\overline{)806}$

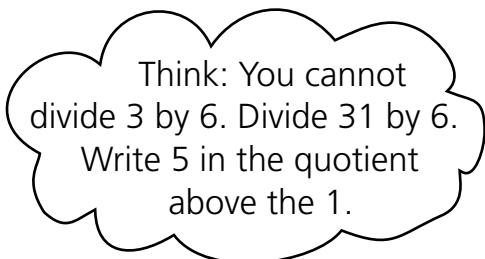
Points Earned _____

- 21.** Think about dividing a 3-digit number by a 1-digit number. When will you get a quotient with a zero in the tens place? Give an example.

Divide Greater Numbers

When you divide greater numbers, begin by deciding where to place the first digit in the quotient.

Divide $3,154 \div 6$.

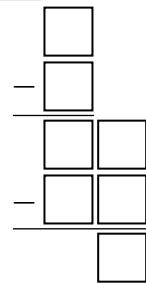


You can see the quotient will have 3 digits.

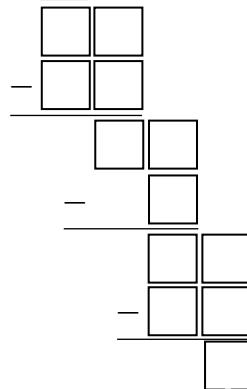
$$\begin{array}{r} 5 \\ \hline 6)3,154 \end{array}$$

Complete.

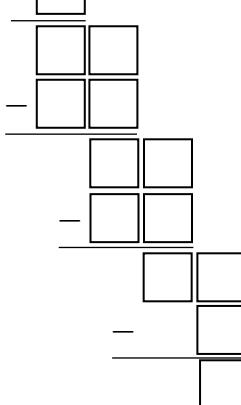
1. $\begin{array}{r} \boxed{} \quad \boxed{} \quad \boxed{} \\ \hline 3)1, \quad 5 \quad 4 \quad 9 \\ -1 \quad 5 \end{array}$ R



2. $\begin{array}{r} \boxed{} \quad \boxed{} \quad \boxed{} \quad \boxed{} \\ \hline 4)7, \quad 6 \quad 5 \quad 3 \\ -4 \end{array}$ R



3. $\begin{array}{r} \boxed{} \quad \boxed{} \quad \boxed{} \quad \boxed{} \\ \hline 2)9, \quad 5 \quad 6 \quad 3 \\ - \end{array}$ R



Divide.

4. $5\overline{)3,472}$

5. $7\overline{)4,986}$

6. $4\overline{)2,624}$

7. $3\overline{)1,373}$

8. $8\overline{)9,275}$

9. $6\overline{)44,738}$

10. $2\overline{)5,117}$

11. $9\overline{)9,818}$

12. $1,671 \div 8 = \underline{\hspace{2cm}}$

13. $7,087 \div 5 = \underline{\hspace{2cm}}$

14. $3,393 \div 4 = \underline{\hspace{2cm}}$

15. $\$19,217 \div 3 = \underline{\hspace{2cm}}$

Name _____

Divide Greater Numbers



Divide. Check your answer.

1. $5 \overline{)65,840}$

2. $4 \overline{)76,832}$

3. $2 \overline{)53,988}$

4. $6 \overline{)90,384}$

5. $8 \overline{)33,767}$

6. $7 \overline{)45,131}$

7. $3 \overline{)6,083}$

8. $9 \overline{)27,505}$

9. $2 \overline{)14,147}$

10. $6 \overline{)31,998}$

11. $5 \overline{)23,079}$

12. $7 \overline{)65,213}$

13. $\$19,328 \div 4 =$ _____

14. $73,895 \div 9 =$ _____

15. $54,620 \div 5 =$ _____

16. $1,841 \div 2 =$ _____

17. $16,697 \div 6 =$ _____

18. $37,986 \div 8 =$ _____

Algebra Find each missing number.

19. $\$26,480 \div n = \$5,296$ 20. $7,240 \div v = 1,810$ 21. $44,356 \div r = 11,089$

Problem Solving

Solve.

22. The King School holds Junior Olympic games in its sports stadium for 3 days. Each day, every seat in the stadium is full. A total of 17,748 people come to the games. How many seats does the stadium have?

23. The King School raises \$75,288 by selling Junior Olympic banners. Each banner costs \$6. How many banners does the school sell?

Name _____

Divide Greater Numbers



Divide to complete the crossnumber puzzle.

Then create and solve your own Across and Down clues.

Across

1. $37,351 \div 6 =$ _____
31. $47,338 \div 5 =$ _____
54. $65,829 \div 3 =$ _____

Down

1. $43,393 \div 7 =$ _____
4. $20,150 \div 4 =$ _____
6. $17,037 \div 9 =$ _____

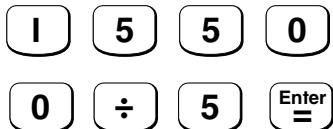
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
11.	12.	13.	14.	15.	16.	17.	18.	19.	20.
21.	22.	23.	24.	25.	26.	27.	28.	29.	30.
31.	32.	33.	34.	35.	36.	37.	38.	39.	40.
41.	42.	43.	44.	45.	46.	47.	48.	49.	50.
51.	52.	53.	54.	55.	56.	57.	58.	59.	60.
61.	62.	63.	64.	65.	66.	67.	68.	69.	70.
71.	72.	73.	74.	75.	76.	77.	78.	79.	80.
81.	82.	83.	84.	85.	86.	87.	88.	89.	90.
91.	92.	93.	94.	95.	96.	97.	98.	99.	100.

Choose a Computation Method

Find $15,500 \div 5$.

Calculator

Press the keys in order, starting on the left of the problem. Then press the ENTER = key.



Read the display. The number to the right of the equal sign is the quotient.

$$\boxed{15500 \div 5 = 3100}$$

Mental Math

First, split 15,500 into two parts so that each part is easy to divide by 5.
 $15,500 = 15,000 + 500$

Next, divide each part by 5.
 $15,000 \div 5 = 3,000$
 $500 \div 5 = 100$

Finally, add the two partial quotients.
 $3,000 + 100 = 3,100$

Paper and Pencil

Divide, multiply, subtract, bring down, and compare until you can no longer divide.

$$\begin{array}{r} 3,100 \\ 5)15,500 \\ -15 \\ \hline 05 \\ -05 \\ \hline 00 \\ -00 \\ \hline 00 \\ -00 \\ \hline 0 \end{array}$$

Divide. Tell which method you used. Write *calculator*, *mental math*, or *paper and pencil*.

1. $3\overline{)7,767}$

2. $6\overline{)31,866}$

3. $7\overline{)8,771}$

Method: _____

4. $5\overline{)18,420}$

5. $4\overline{)\$1,036}$

6. $2\overline{)770}$

Method: _____

7. $12,404 \div 4 =$ _____

8. $8,248 \div 8 =$ _____

9. $603 \div 3 =$ _____

Method: _____

Name _____

Choose a Computation Method



Divide. Tell which method you used.

1. $5 \overline{)5,500}$

2. $9 \overline{)9,468}$

3. $3 \overline{)7,377}$

Method: _____

4. $9 \overline{)18,009}$

5. $4 \overline{)\$20,872}$

6. $7 \overline{)2,849}$

Method: _____

7. $20,328 \div 8 =$ _____

8. $6,713 \div 7 =$ _____

9. $15,369 \div 3 =$ _____

Method: _____

Algebra Find each missing number.

10. $4,050 \div s = 810$

11. $\$20,517 \div n = \$2,931$

12. $4,800 \div x = 1,200$

Problem Solving

Solve.

13. The museum gets 10,500 visitors over 5 days. The same number of people visit the museum each day. How many people visit the museum on each of the 5 days?

14. Suppose the museum makes \$17,633 in entrance fees over a period of 7 days. It makes the same amount of money each day. How much does it make in one day?

Choose a Computation Method

Play a division game with a partner. Take turns.
You will need 2 markers.

How to Play

- Place your marker on START. Solve one of the exercises below. Move your marker the same number of spaces as the digit in the ones place in the quotient.
- The winner is the first player to reach END.

$5)5,005$

$7)35,714$

$6)48,996$

$3)17,631$

$8)49,472$

$2)16,420$

$4)1,284$

$9)59,859$

$7)875$

$8)30,736$

$5)25,050$

$2)17,348$

$4)8,592$

$9)27,900$

$6)4,290$

$7)18,011$

$8)17,120$

$2)13,992$

$5)11,990$

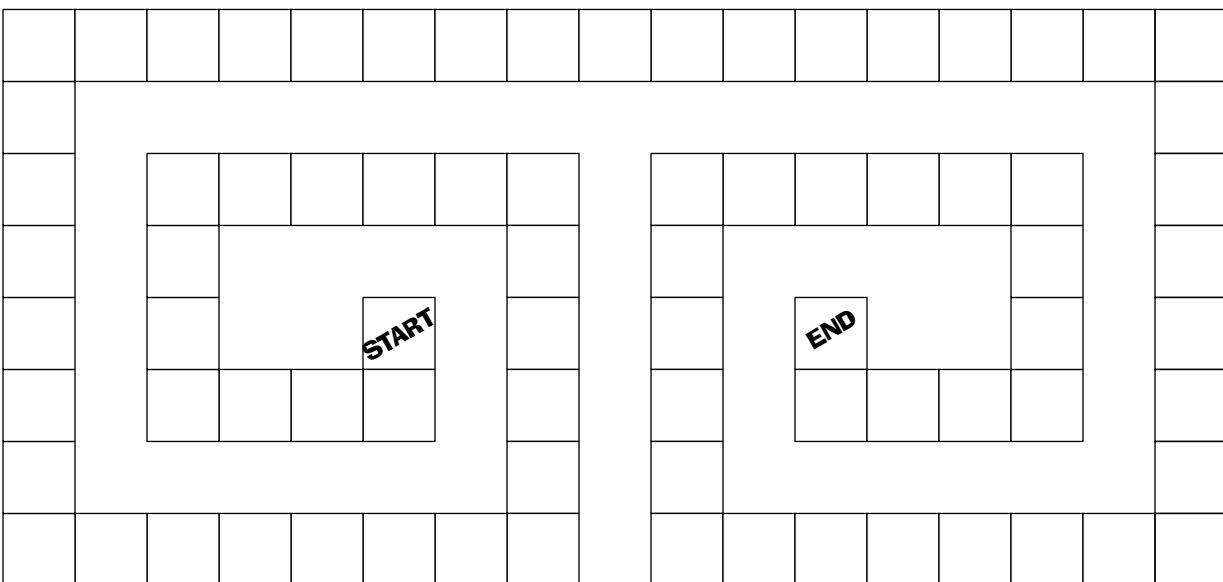
$4)16,824$

$6)37,206$

$9)18,090$

$3)14,265$

$5)1,830$



Problem Solving: Strategy

Guess and Check

Page 317, Problem 3

Jenny fills a bottle with 8 inches of colored sand. She has 2 inches more of red sand than of blue sand. How many inches of each color does she use?

Step 1**Read** →**Be sure you understand the problem.**

Read carefully.

What do you know?

- Jenny's bottle holds _____ inches of sand.
- There are _____ of red sand than of blue sand.

What do you need to find?

- You need to find how many _____

Step 2**Plan** →**Make a plan.**

Choose a strategy.

List the information you know.

Use what you know to make a guess.

Guess how many inches of each color sand are needed to make a total of 8 inches.

Check your guess.

Revise the guess and try again if it is wrong.

Guess, check, and revise until you find the answer that makes sense.

Problem Solving: Strategy

Guess and Check

Step 3**Solve** →**Carry out your plan.**

You know that the bottle holds _____ inches of sand.

You know that Jenny has _____ more inches of _____ sand than of _____ sand.

Guess Start with two numbers that have a sum of 8. Try 6 and 2.

Check $6 + 2 = 8$

_____ inches of red sand, _____ inches of blue sand

There are _____ more inches of red sand.

Does that answer fit the problem? _____

Revise $5 + 3 = 8$

_____ inches of red sand, _____ inches of blue sand

There are _____ more inches of red sand.

Does that answer fit the problem? _____

Step 4**Look Back** →**Is the solution reasonable?**

Reread the problem.

Does your answer make all of the statements true?

Practice

1. A group of friends share 30 stickers equally, with 3 stickers left over.

There are more than 5 friends. How many friends are there? How many stickers does each friend get?

2. Erica buys 9 pens. Each pen costs either \$2 or \$3. If the total cost is \$23, how many \$2 and \$3 pens does Erica buy?

Problem Solving: Strategy

Guess and Check

Use the guess-and-check strategy to solve.

- 1.** Teri puts 57 dolls in a display case. She puts the same number on each shelf and has 3 dolls left. The case has more than 7 shelves. How many shelves does the case have? How many dolls does each shelf hold?
-

- 3.** Jamal buys 59 stickers. Stickers come in packs of 5 or 8. How many packs of 5 stickers does Jamal buy? 8 stickers?
-

- 2.** A group of friends choose cards equally from a deck of 52 cards. There are more than 6 friends. After they have chosen, 4 cards are left. How many friends are there? How many cards does each friend have?
-

- 4.** There are 36 students in an auditorium. There are twice as many girls as boys. How many girls are there? How many boys are there?
-

Mixed Strategy Review

Solve. Use any strategy.

- 5.** Chou makes a display. He puts 1 photo in the first row, 4 photos in the second row, 7 in the third row, and 10 in the fourth row. If the pattern continues, how many photos does Warren put in the fifth row?
-

Strategy: _____

- 7.** Sally wants to arrive 20 minutes early for her job. She starts work at 4:15 P.M. It will take her about 20 minutes to walk from school to the job. When should Sally leave?
-

Strategy: _____

- 6. Social Studies** Each of the 50 states in the United States has a state flag. Evelyn wants to make a drawing of each state flag. She has 3 more flags to draw. How many flags has Evelyn drawn?
-

Strategy: _____

- 8. Create a problem** that can be solved by using the guess-and-check strategy. Share it with others.
-
-

Find the Better Buy

Products often come in different sizes. You can find the better buy by comparing the unit price of each size.

Find the better buy: a 6-ounce jar of pickles for \$1.92, or an 8-ounce jar of pickles for \$2.80.

Step 1

Find the unit prices.

Divide the price by the number of ounces.

$$\begin{array}{r} \$0.32 \\ 6) \$1.92 \\ - 18 \\ \hline 12 \\ - 12 \\ \hline 0 \end{array}$$

$$\begin{array}{r} \$0.35 \\ 8) \$2.80 \\ - 24 \\ \hline 40 \\ - 40 \\ \hline 0 \end{array}$$

Think: Write the dollar sign and the decimal point in the quotient.

Step 2

Compare the unit prices.

$$\$0.32 < \$0.35$$

So, the 6-ounce jar of pickles is the better buy.

Find each unit price. Compare to find the better buy.

1.

3 gallons of paint
for \$43.62

5 gallons of paint
for \$75.00

unit price: _____

unit price: _____

Better buy: _____

2. 2 pints for \$2.98 _____ 3. 3 gallons for \$3.69 _____

4 pints for \$4.96 _____ 5 gallons for \$6.60 _____

Better buy: _____ Better buy: _____

4. 4 yards for \$12.72 _____ 5. 5 feet for \$46.25 _____

6 yards for \$20.70 _____ 7 feet for \$63.35 _____

Better buy: _____ Better buy: _____

6. 3 cups for \$11.22 _____ 7. 6 quarts for \$55.38 _____

8 cups for \$31.52 _____ 9 quarts for \$80.01 _____

Better buy: _____ Better buy: _____

Find the Better Buy

Find each unit price. Find the better buy.

1. 2 ounces for \$6.80 _____

4 ounces for \$14.00 _____

Better buy: _____

2. 3 gallons for \$59.91 _____

5 gallons for \$94.90 _____

Better buy: _____

3. 4 pounds for \$10.92 _____

7 pounds for \$19.53 _____

Better buy: _____

4. 6 pints for \$7.14 _____

9 pints for \$14.31 _____

Better buy: _____

5. 3 yards for \$157.44 _____

4 yards for \$199.80 _____

Better buy: _____

6. 5 inches for \$48.40 _____

9 inches for \$78.21 _____

Better buy: _____

7. 2 quarts for \$99.50 _____

6 quarts for \$315.00 _____

Better buy: _____

8. 4 feet for \$2.08 _____

5 feet for \$2.10 _____

Better buy: _____

Problem Solving

Solve. Use the data from the ad for problems 9–12.

9. What is the unit price for a 2-pound bag of wild bird seed?

10. What is the unit price for a 5-pound bag of wild bird seed?

11. What is the unit price of a 9-pound bag of wild bird seed?

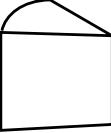
12. Which bag of seed is the best buy?



Find the Better Buy

Two grocery stores, the Food Barn and Best Foods, are across the street from each other. The Food Barn places the ad below in the newspaper.

Food Barn's Weekend Specials!

 <p>Greek olives \$2.60 for a 4-ounce jar</p> <hr/>	 <p>Cheddar cheese \$34.75 for a 5-pound wedge</p> <hr/>	 <p>Six-pack of juice boxes, cranberry, \$4.74</p> <hr/>
 <p>Dog food \$10.88 for an 8-pound bag</p> <hr/>	 <p>Three cans of tuna \$4.86</p> <hr/>	 <p>NEW! Fresh pasta \$3.15 for 9 ounces</p> <hr/>

Best Foods says its prices are lower than Food Barn's prices. Find the unit price for each item in Food Barn's ad. Then create an ad for Best Foods. Use the same items, but different amounts; for example, a 7-ounce jar of Greek olives.

Best Foods—Our Prices Are Always Lower!

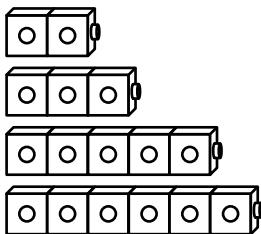
Item/Amount	Price	Unit Price
Greek olives: _____ ounces	_____	_____
Cheddar cheese: _____ pounds	_____	_____
Juice boxes: _____ cranberry,	_____	_____
Dog food: _____ pounds	_____	_____
Tuna: _____ cans	_____	_____
Fresh pasta: _____ ounces	_____	_____

Explore Finding the Mean

You can find the mean of a set of numbers by finding the sum of the numbers and then dividing the sum by the number of addends.

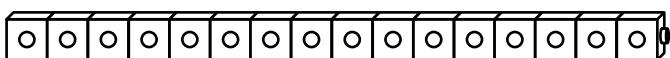
Here is another way to find the mean of 2, 3, 5, and 6 using connecting cubes.

Connect cubes to represent each number.



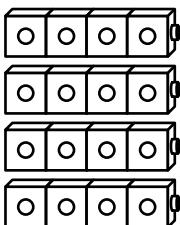
Connect the cubes into one long row.

You should have 16 cubes connected together.



Divide the cubes into 4 equal groups.

You should have 4 cubes in each group.



So, the mean of 2, 3, 5, and 6 is 4.

Find the mean. You may draw cubes to help you.

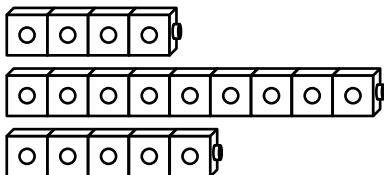
- | | | |
|-----------------------------------|--|-------------------------------|
| 1. 5, 6, 8, 1 _____ | 2. 4, 8, 5, 7 _____ | 3. 12, 10, 2 _____ |
| 4. 2, 9, 3, 5, 6 _____ | 5. 11, 5, 2, 2, 10 _____ | 6. 5, 5, 3, 3, 9 _____ |
| 7. 7, 6, 3, 4 _____ | 8. 7, 8, 2, 4, 3, 6 _____ | 9. 10, 15, 5 _____ |
| 10. 5, 5, 0, 1, 4, 3 _____ | 11. 10, 20, 40, 2, 10, 20 _____ | |

Explore Finding the Mean

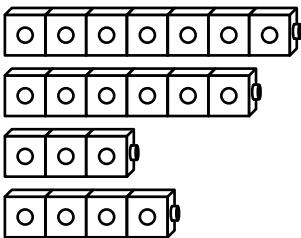
Use the connecting cubes to find the mean.

Redraw the cubes so that the rows are all the same length.

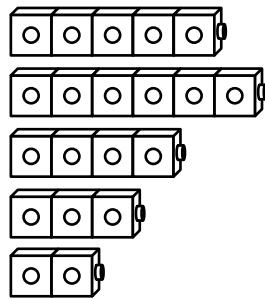
1. 4, 9, 5



2. 7, 6, 3, 4



3. 5, 6, 4, 3, 2



Mean: _____

Mean: _____

Mean: _____

Find the mean. You may use connecting cubes.

4. 2, 2, 9, 9, 8 _____

5. 15, 0, 6 _____

6. 1, 9, 12, 5, 3 _____

7. 5, 10, 15, 20, 0 _____

8. 1, 9, 2, 8, 3, 7 _____

9. 4, 6, 3, 7, 2, 9, 1, 8 _____

10. 10, 10, 30, 30 _____

11. 1, 1, 1, 9, 9, 9, 8, 2 _____

12. 24, 36 _____

13. 20, 15, 20, 25 _____

14. 4, 3, 2, 5, 1, 6, 2, 9 _____

15. 5, 5, 6, 6, 9, 9, 2 _____

16. 5, 10, 15, 20, 30 _____

17. 1, 2, 3, 4, 5, 6, 7, 8, 9 _____

18. 10, 8, 6, 4, 2 _____

Problem Solving

Solve.

- 19.** The students in Homeroom 101 collect soup labels. This week the number of labels brought in to class each day were 8, 6, 10, 6, and 5. What is the mean number of labels brought in each day?

- 20.** Alison plays in a basketball tournament. She scores the following numbers of points in 5 games: 20, 17, 12, 8, and 18. What is her average point total?

Explore Finding the Mean

In Los Angeles, California, from 1961 to 1990, the average, or mean, high temperature in January was 68° Fahrenheit.

- Imagine that the average high temperature for the month below is 68°F. Complete the calendar by writing different temperatures for the days. When you add the temperatures and divide by 31, you should have an average temperature of 68°F.

January						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3 70°	4	5	6	7
8	9	10	11	12 73°	13	14
15 63°	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31 68°				

- Explain how you chose the temperatures.

Find the Mean

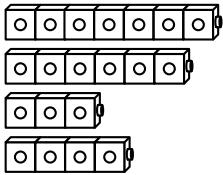
You can use connecting cubes to help you record the steps for finding a mean.

Find the mean of 7, 6, 3, and 4.

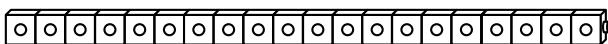
Using Connecting Cubes

Step 1

Build each number with connecting cubes.



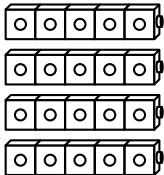
Connect the cubes into one long row. You should have 20 connected cubes.



Step 2

Divide the cubes into 4 equal groups.

You should have 5 cubes in each group.



So, the mean of 7, 6, 3, and 4 is 5.

Find the mean.

1. 4, 5, 7, 4, 5 _____

2. 12, 10, 2 _____

3. 16, 13, 12, 15 _____

4. 21, 15, 12, 12, 20 _____

5. 3, 14, 12, 11 _____

6. 16, 15, 19, 13, 27 _____

7. Weight of five dogs in pounds: 42, 35, 21, 38, 54

8. Number of miles Lance bicycled each day: 74, 69, 80, 57

9. Number of hawks the ranger saw each day: 19, 7, 22, 8, 9, 13, 13

10. Number of cars that used the parking garage each day: 563, 709, 661, 842, 805

Using Pencil and Paper

Step 1

Add the numbers.

$$\begin{array}{r} 7 \\ 6 \\ 3 \\ + 4 \\ \hline 20 \end{array}$$

Step 2

Divide the sum by the number of addends.

$$\begin{array}{r} 5 \\ 4)20 \\ \hline \end{array}$$

So, the mean of 7, 6, 3, and 4 is 5.

Name _____

Find the Mean



Find the mean.

1. $8, 4, 6, 7, 5$ _____

2. $11, 18, 13, 14$ _____

3. $\$25, \$48, \$77$ _____

4. $33, 72, 67, 88$ _____

5. $\$120, \$308, \$446, \506 _____

6. $823, 665, 482, 619, 781$ _____

7. Number of minutes Jason practiced violin this week: $30, 40, 20, 40, 20$
-

9. Number of rolls of film used each day to take class pictures: $6, 4, 8, 3, 2, 1, 4$
-

11. Number of miles Dorothy ran each day: $6, 8, 7, 9, 10, 11, 12$
-

13. Number of books Emily read each month: $2, 3, 5, 6, 1, 1$
-

15. Number of bottles of juice on each shelf: $60, 80, 120, 40, 70, 80, 90, 140$
-

Problem Solving

Solve.

17. Kathy trades 42 baseball cards on Monday, 38 on Tuesday, and 40 on Friday. What is the mean number of cards she trades each day?
-

8. Number of miles traveled each day: $125, 85, 115, 100, 85, 90$
-

10. Number of gallons of gas used each day: $8, 6, 9, 11, 11, 9$
-

12. Number of miles a pilot flew each day: $980, 760, 590, 910, 630$
-

14. Height of six boys in inches: $60, 54, 62, 64, 66, 60$
-

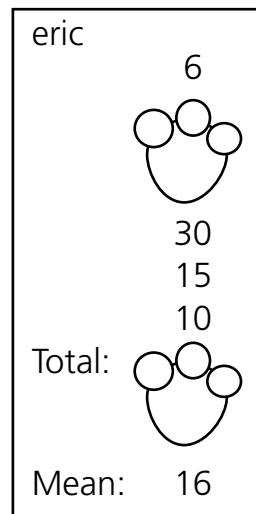
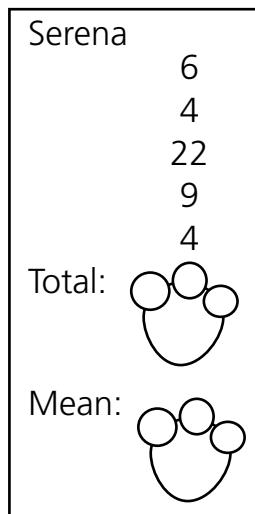
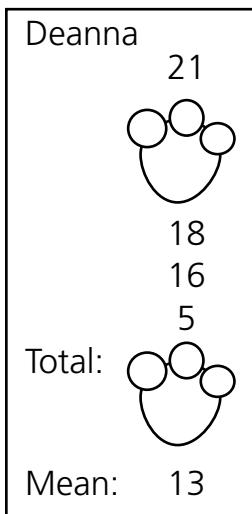
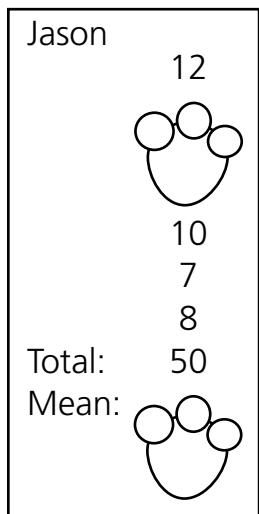
16. Number of boxes of cereal eaten by campers each week: $24, 14, 18, 26, 13$
-

18. From Thursday through Sunday, Pizza Guy sells 97, 116, 208, and 151 pizzas. What is the average number of pizzas sold each day?
-

Find the Mean

The computer at the bowling alley is down, so teams have to keep track of their scores on cards. The scorecards below show the scores for the first five frames, or rounds. A cat with muddy paws ran across the cards.

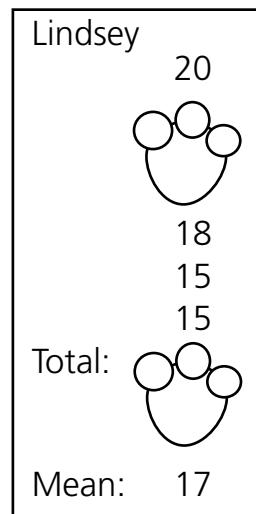
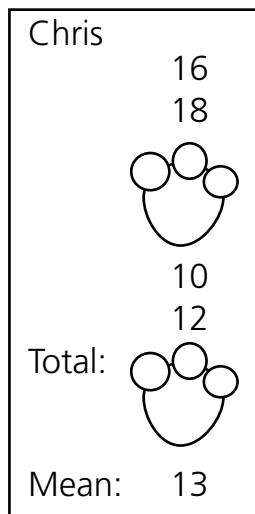
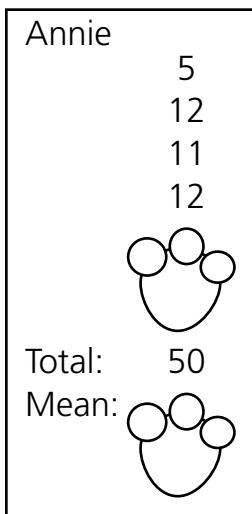
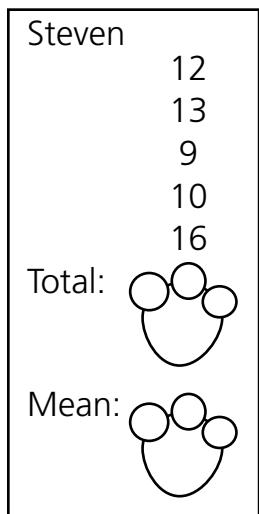
Complete the scorecards by writing the correct numbers in the paw prints. Then fill in the team's total score and mean score.

Team A

Team A's

Total Score: _____

Mean Score per Person: _____

Team B

Team B's

Total Score: _____

Mean Score per Person: _____

Problem Solving: Applying Math and Science

Fly High

Math & Science
WORKSHEET

Experiment with gravity using a cork and an eraser.

Wear goggles to protect your eyes as you hit the objects up into the air with a seesaw.

Work away from other people.

Record your data in the table below.

Object	Distance Traveled in 5 Tries					Mean
	1	2	3	4	5	
Cork						
Eraser						

Show how you found the mean or average distance for each object.

Cork	Eraser
-------------	---------------

Name _____

Problem Solving: Applying Math and Science

Fly High



- 1.** Which object traveled higher? How do you know?

- 2.** Use division to decide how many times higher one object traveled than the other. Show your work in the box provided.

- 3.** In your own words, explain what gravity is.

- 4.** Explain the results of the activity in terms of gravity.

**UNIT
8****Divide by 2-Digit Numbers****CHAPTER 15 • SUPPORT MATERIALS**

Lesson	Titles	Masters	Use with pages
15-1	Division Patterns	R15-1, P15-1, E15-1	340–341
15-2	Estimating Quotients	R15-2, P15-2, E15-2	342–343
15-3	Divide 2-Digit Numbers by Multiples of 10	R15-3, P15-3, E15-3	344–345
15-4	Explore Dividing by 2-Digit Numbers	R15-4, P15-4, E15-4	346–347
15-5	Divide by 2-Digit Numbers	R15-5, P15-5, E15-5	348–350
15-6	Problem Solving: Skill Use an Overestimate or Underestimate	R15-6, P15-6, E15-6	352–353

CHAPTER 16 • SUPPORT MATERIALS

Lesson	Titles	Masters	Use with pages
16-1	Adjusting Quotients	R16-1, P16-1, E16-1	358–360
16-2	Choose a Computation Method	R16-2, P16-2, E16-2	362–363
16-3	Problem Solving: Strategy Choose a Strategy	R16-3, R16-3, P16-3	364–365
16-4	Order of Operations	R16-4, P16-4, E16-4	366–368
	Problem Solving: Decision Making	Worksheet	372–373

R—Reteach

P—Practice

E—Enrich

Division Patterns • Algebra

To divide mentally, you can use basic division facts and look for a pattern.

Find the basic division fact. Then count and subtract zeros.
This will tell you how many zeros the quotient will have.

The basic fact is $6 \div 2 = 3$.

$$\begin{array}{rcl} 60 \div 20 = 3 & \rightarrow & 1 \text{ zero} - 1 \text{ zero} = 0 \text{ zeros} \\ 600 \div 20 = 30 & \rightarrow & 2 \text{ zeros} - 1 \text{ zero} = 1 \text{ zero} \\ 6,000 \div 20 = 300 & \rightarrow & 3 \text{ zeros} - 1 \text{ zero} = 2 \text{ zeros} \end{array}$$

The basic fact is $20 \div 4 = 5$.

$$\begin{array}{rcl} 200 \div 40 = 5 & \rightarrow & 1 \text{ extra zero} - 1 \text{ zero} = 0 \text{ zeros} \\ 2,000 \div 40 = 50 & \rightarrow & 2 \text{ extra zeros} - 1 \text{ zero} = 1 \text{ zero} \\ 20,000 \div 40 = 500 & \rightarrow & 3 \text{ extra zeros} - 1 \text{ zero} = 2 \text{ zeros} \end{array}$$

Complete the pattern. Count and subtract the zeros.

1. $24 \div 3 =$ _____

$240 \div 30 =$ _____

$2,400 \div 30 =$ _____

$24,000 \div 30 =$ _____

2. $12 \div 4 =$ _____

$120 \div 40 =$ _____

$1,200 \div 40 =$ _____

$12,000 \div 40 =$ _____

3. $63 \div 9 =$ _____

$630 \div 90 =$ _____

$6,300 \div 90 =$ _____

$63,000 \div 90 =$ _____

4. $30 \div 5 =$ _____

$300 \div 50 =$ _____

$3,000 \div 50 =$ _____

$30,000 \div 50 =$ _____

5. $9 \div 3 =$ _____

6. $90 \div 30 =$ _____

7. $900 \div 30 =$ _____

8. $18 \div 3 =$ _____

9. $180 \div 30 =$ _____

10. $1,800 \div 30 =$ _____

11. $42 \div 6 =$ _____

12. $420 \div 60 =$ _____

13. $4,200 \div 60 =$ _____

14. $40 \div 8 =$ _____

15. $400 \div 80 =$ _____

16. $4,000 \div 80 =$ _____

Name _____

Division Patterns • Algebra



Write the number that makes each equation true.

1. $36 \div 9 = n$ _____

2. $64 \div 8 = s$ _____

3. $18 \div b = 6$ _____

$360 \div 90 = n$ _____

$640 \div 80 = s$ _____

$b \div 30 = 6$ _____

$3,600 \div 90 = n$ _____

$6,400 \div 80 = s$ _____

$1,800 \div 30 = b$ _____

$36,000 \div 90 = n$ _____

$64,000 \div 80 = s$ _____

$18,000 \div 30 = b$ _____

$360,000 \div 90 = n$ _____

$640,000 \div 80 = s$ _____

$180,000 \div 30 = b$ _____

Divide. Use mental math.

4. $60 \overline{)120}$

5. $40 \overline{)2,800}$

6. $70 \overline{)35,000}$

7. $80 \overline{)560,000}$

8. $10 \overline{)\$400}$

9. $70 \overline{)\$21,000}$

10. $40 \overline{)\$2,000}$

11. $90 \overline{)450,000}$

12. $150 \div 30 =$ _____

13. $16,000 \div 80 =$ _____

14. $2,700 \div 90 =$ _____

15. $18,000 \div 20 =$ _____

16. $1,200 \div 20 =$ _____

17. $56,000 \div 70 =$ _____

18. $810 \div 90 =$ _____

19. $42,000 \div 70 =$ _____

20. $3,600 \div 40 =$ _____

21. $45,000 \div 50 =$ _____

Algebra Find each missing number.

22. $140 \div a = 2$

23. $d \div 70 = 7$

24. $3,000 \div 60 = x$

25. $t \div 60 = 70$

26. $28,000 \div b = 400$

27. $40,000 \div 50 = y$

Problem Solving

Solve.

28. A box of 400 stickers is divided equally among 80 students. How many stickers did each student receive?

29. If 6,300 books are divided equally among 90 libraries, how many books will each library get?

Name _____

Division Patterns • Algebra



Circle the correct answer for each problem. Then use the remaining two answers to write the next division equation. Repeat until you finish the page.

1. $8,000 \div 10 = 800$

- a. 3,200 b. 800 c. 80

2. $3,200 \div 80 =$ _____

- a. 40 b. 4,000 c. 50

3. _____

- a. 90 b. 80 c. 4,500

4. _____

- a. 4,200 b. 60 c. 50

5. _____

- a. 70 b. 4,000 c. 80

6. _____

- a. 50 b. 2,800 c. 40

7. _____

- a. 54,000 b. 60 c. 70

8. _____

- a. 900 b. 90 c. 81,000

9. _____

- a. 900,000 b. 900 c. 90

10. _____

- a. 10 b. 10,000 c. 100,000

11. _____

- a. 100,000 b. 10,000 c. 20

12. _____

- a. 5,000 b. 500 c. 50

13. Look at problem 12. How did you decide how many zeros were in the quotient?

Estimating Quotients

Compatible numbers are numbers you can divide easily. You can use compatible numbers to estimate quotients.

Estimate $3,463 \div 73$.

3,463 ÷ 73 Think: A basic fact that is close is $35 \div 7$.

$$3,500 \div 70 = 50$$

So, $3,463 \div 73$ is about 50.

Complete.

- 1.** Estimate $1,785 \div 31$.

Division fact: $18 \div 3 =$ _____

Estimate: $1,800 \div 30 =$ _____

- 2.** Estimate $2,880 \div 29$.

Division fact: $27 \div 3 =$ _____

Estimate: $2,700 \div 30 =$ _____

- 3.** Estimate $5,726 \div 72$.

Division fact: _____

Estimate: _____

- 4.** Estimate $3,952 \div 79$.

Division fact: _____

Estimate: _____

Use compatible numbers to estimate each quotient.

5. $1,482 \div 33$

6. $6,512 \div 78$

7. $7,164 \div 89$

8. $2,207 \div 68$

9. $3,512 \div 42$

10. $2,587 \div 53$

11. $3,123 \div 64$

12. $4,132 \div 71$

13. $2,712 \div 32$

14. $1,789 \div 27$

15. $2,797 \div 43$

16. $6,432 \div 92$

Name _____

Estimating Quotients



Estimate the quotient. Choose compatible numbers.

1. $19 \overline{)389}$

2. $17 \overline{)211}$

3. $18 \overline{)586}$

4. $16 \overline{)789}$

5. $49 \overline{)1,585}$

6. $72 \overline{)6,280}$

7. $32 \overline{)8,920}$

8. $61 \overline{)3,256}$

9. $68 \overline{)34,912}$

10. $2,806 \div 38$

11. $7,903 \div 86$

12. $1,113 \div 31$

13. $7,160 \div 93$

14. $2,806 \div 56$

15. $2,210 \div 48$

16. $21 \overline{)1,732}$

17. $63 \overline{)546}$

18. $53 \overline{)2,612}$

19. $41 \overline{)1,512}$

20. $78 \overline{)4,106}$

21. $86 \overline{)1,709}$

Algebra Compare. Write $>$ or $<$.

22. $396 \div 21 \bigcirc 914 \div 31$

23. $492 \div 68 \bigcirc 556 \div 71$

24. $1,947 \div 38 \bigcirc 2,011 \div 48$

25. $1,300 \div 21 \bigcirc 2,300 \div 13$

26. $5,106 \div 82 \bigcirc 6,206 \div 91$

27. $3,100 \div 82 \bigcirc 4,700 \div 71$

Problem Solving

Solve.

28. Karen drove 283 miles at a speed of 46 miles per hour. About how many hours did she drive?

29. A jet flew 3,116 miles in 6 hours. About how many miles per hour did it fly?

Estimating Quotients

Choose the best estimate from each box to complete the sentence. Then write the answer next to the letter of the box to make a code. Use the code to answer the question.

Who was the first American in space?

A.

24	33
42	51

D.

63	53
71	48

E.

82	75
64	92

$2,430 \div \underline{\quad}$ is about 80. $4,356 \div \underline{\quad}$ is about 70. $3,575 \div \underline{\quad}$ is about 40.

H.

27	44
52	38

L.

24	32
58	44

N.

31	42
52	28

$2,277 \div \underline{\quad}$ is about 40. $12,250 \div \underline{\quad}$ is about 600. $15,880 \div \underline{\quad}$ is about 400.

P.

68	72
84	91

R.

68	74
47	59

S.

7	81
72	64

$25,370 \div \underline{\quad}$ is about 300. $29,790 \div \underline{\quad}$ is about 500. $34,841 \div \underline{\quad}$ is about 500.

A	D	E
H	L	N
P	R	S

_____ **B.** _____, JR.
 33 24 33 42 72 52 92 84 33 59 63

Explain how you estimated the divisors.

Divide 2-Digit Numbers by Multiples of 10

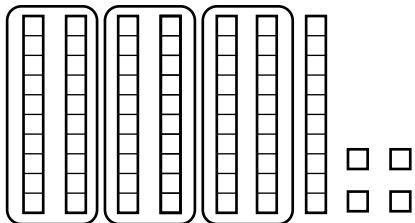
You can use models to help you divide by multiples of 10.

Find $74 \div 20$. Think: How many groups of 20 are in 74?

Using Models

Show 74 using place-value models.

Then make as many groups of 20 as you can.



You can make 3 equal groups of 20 with 14 remaining.

Using Pencil and Paper

Step 1: Divide 74 by 20.

Think: $60 \div 20 = 3$.

$$\begin{array}{r} 3 \\ 20)74 \\ -60 \\ \hline 14 \end{array}$$

Step 2: Subtract. Write the remainder in the quotient.

$$\begin{array}{r} 3 \text{ R}14 \\ 20)74 \\ -60 \\ \hline 14 \end{array}$$

Divide. You may use place-value models.

1. $63 \div 30 =$ _____ 2. $88 \div 40 =$ _____ 3. $55 \div 10 =$ _____

4. $48 \div 20 =$ _____ 5. $74 \div 10 =$ _____ 6. $93 \div 30 =$ _____

7. $85 \div 30 =$ _____ 8. $81 \div 20 =$ _____ 9. $76 \div 10 =$ _____

10. $51 \div 30 =$ _____ 11. $63 \div 50 =$ _____ 12. $84 \div 60 =$ _____

13. $90 \div 40 =$ _____ 14. $74 \div 20 =$ _____ 15. $71 \div 20 =$ _____

16. $27 \div 10 =$ _____ 17. $59 \div 50 =$ _____ 18. $59 \div 30 =$ _____

Name _____

Divide 2-Digit Numbers by Multiples of 10



Divide.

1. $82 \div 20 =$ _____

2. $75 \div 10 =$ _____

3. $51 \div 20 =$ _____

4. $94 \div 30 =$ _____

5. $88 \div 20 =$ _____

6. $87 \div 10 =$ _____

7. $93 \div 40 =$ _____

8. $71 \div 30 =$ _____

9. $97 \div 20 =$ _____

10. $74 \div 20 =$ _____

11. $52 \div 10 =$ _____

12. $67 \div 30 =$ _____

13. $91 \div 10 =$ _____

14. $62 \div 40 =$ _____

15. $94 \div 40 =$ _____

16. $20\overline{)61}$

17. $50\overline{)78}$

18. $40\overline{)81}$

19. $30\overline{)63}$

20. $10\overline{)76}$

21. $20\overline{)95}$

22. $60\overline{)84}$

23. $40\overline{)49}$

24. $10\overline{)96}$

25. $30\overline{)59}$

26. $20\overline{)44}$

27. $50\overline{)59}$

Algebra Find each missing number.

28. $27 \div m = 2$ R7 _____

29. $51 \div k = 1$ R21 _____

30. $63 \div a = 1$ R13 _____

31. $74 \div p = 3$ R14 _____

32. $71 \div y = 3$ R11 _____

33. $90 \div r = 2$ R10 _____

Problem Solving

Solve.

34. Sam puts 76 pencils into packages. Each package has 10 pencils. How many packages does Sam make? How many pencils are left over?

35. Kenya puts 84 cans of tennis balls in boxes. Each box has 20 cans. How many boxes does Kenya fill? How many cans does she have left over?

Divide 2-Digit Numbers by Multiples of 10

Play a division game.

- Label the faces of a number cube 20, 30, 40, 50, 60, and 70.
- Place a marker on 72, the starting position. Take turns tossing the number cube. Divide the number your marker is on by the number tossed. Find the whole number quotient. Move forward that number of spaces.
- Continue moving forward until you have gone around the board once. After passing “Start,” you may move forward or backward. The winner is the person who lands on “Start.”

Start 72	85	97	100	115	120
260					138
253					149
250					150
235					164
226	219	205	197	186	173

Explore Dividing by 2-Digit Numbers

You can use estimation and models to help you divide.

Find $148 \div 12$.

Think: How many groups of 12 are there in 148?

Show 148 using place-value models.	Exchange 1 hundred for 10 tens.	Divide the tens. Make 12 groups with equal numbers in each group.	Exchange tens for ones so you can keep making groups. You can make 12 equal groups of 12 with 4 ones remaining.

So, $148 \div 12 = 12 \text{ R}4$.

Divide. You may use place-value models to help you.

1. $163 \div 13 =$ _____ 2. $158 \div 10 =$ _____ 3. $214 \div 12 =$ _____

4. $285 \div 14 =$ _____ 5. $352 \div 16 =$ _____ 6. $385 \div 15 =$ _____

7. $183 \div 17 =$ _____ 8. $268 \div 11 =$ _____ 9. $376 \div 18 =$ _____

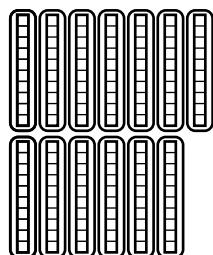
Name _____

Explore Dividing by 2-Digit Numbers



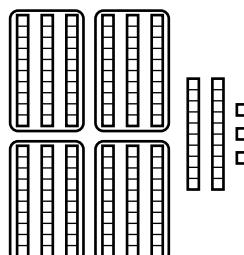
Divide.

1.



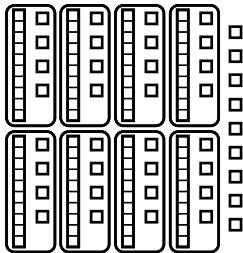
$130 \div 10 = \underline{\quad}$

2.



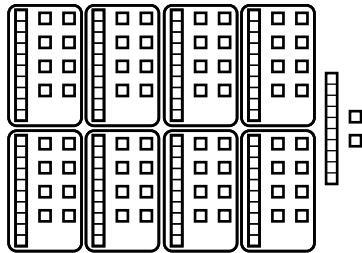
$143 \div 30 = \underline{\quad}$

3.



$121 \div 14 = \underline{\quad}$

4.



$156 \div 18 = \underline{\quad}$

Divide. You may use place-value models.

5. $13\overline{)87}$

6. $15\overline{)137}$

7. $12\overline{)93}$

8. $14\overline{)125}$

9. $16\overline{)293}$

10. $17\overline{)235}$

11. $19\overline{)258}$

12. $25\overline{)441}$

13. $135 \div 16 = \underline{\quad}$ 14. $134 \div 14 = \underline{\quad}$ 15. $115 \div 15 = \underline{\quad}$

16. $282 \div 18 = \underline{\quad}$ 17. $230 \div 19 = \underline{\quad}$ 18. $269 \div 24 = \underline{\quad}$

Problem Solving

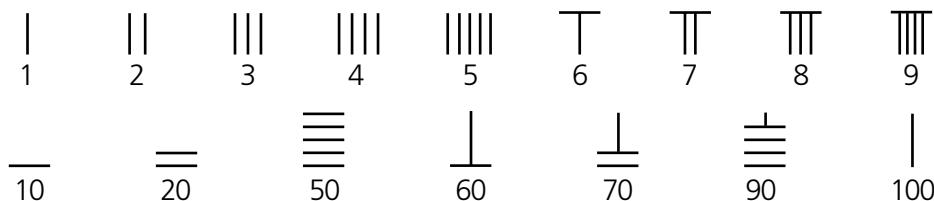
Solve.

19. The dividend is 280. The divisor is 23.
What are the quotient and
remainder?

20. The dividend is 160. The divisor is 12.
What are the quotient and
remainder?

Explore Dividing by 2-Digit Numbers

What if our number system used symbols instead of numerals?
In this Chinese system, numbers are written using the symbols shown.



Using these symbols, 21 is shown as $\underline{=}|$ and 8,946 is shown as $\overline{\overline{\overline{\overline{|||}}}} \overline{\overline{\overline{\overline{|||}}}} \overline{\overline{\overline{|||}}} \overline{\overline{|||}}$.

Example: $21\overline{)8,946} \rightarrow \underline{=}| \overline{\overline{\overline{\overline{|||}}}} \overline{\overline{\overline{\overline{|||}}}} \overline{\overline{\overline{|||}}} \overline{\overline{|||}}$

Use the number system above to create four division problems where the divisor is a 2-digit number. Then exchange problems with a partner and find the quotient using symbols.

1. $\overline{)} \rule[1pt]{1cm}{0.1em}$	2. $\overline{)} \rule[1pt]{1cm}{0.1em}$
3. $\overline{)} \rule[1pt]{1cm}{0.1em}$	4. $\overline{)} \rule[1pt]{1cm}{0.1em}$

5. Is it easier or harder to divide using the number system above? Explain.

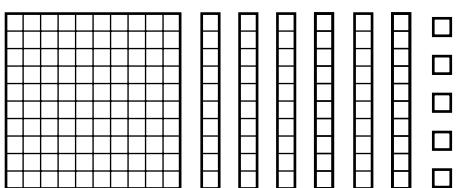
Divide by 2-Digit Numbers

You can use models to help you understand dividing by 2-digit numbers.

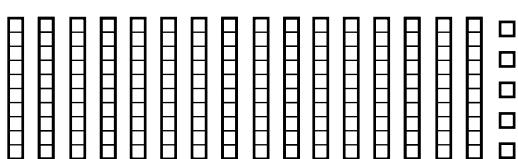
Find $165 \div 25$.

Using Models

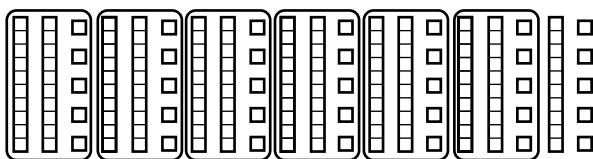
Use place-value models to show 165.



Exchange 1 hundred for 10 tens.



Then make as many groups of 25 as you can. Exchange tens for ones. You can make 6 equal groups of 25 with 15 remaining.



Using Pencil and Paper

Step 1: Divide. Think: $180 \div 30 = 6$

$$\begin{array}{r} 6 \\ 25 \overline{)165} \end{array}$$

Step 2: Multiply.

$$\begin{array}{r} 6 \\ 25 \overline{)165} \\ - 150 \leftarrow 6 \times 25 = 150 \end{array}$$

Step 3: Subtract. Write the remainder in the quotient.

$$\begin{array}{r} 6 \text{ R} 15 \\ 25 \overline{)165} \\ - 150 \\ \hline 15 \leftarrow 165 - 150 = 15 \end{array}$$

Divide. You may use place-value models.

- | | | |
|--------------------------|--------------------------|--------------------------|
| 1. $164 \div 12 =$ _____ | 2. $174 \div 18 =$ _____ | 3. $318 \div 21 =$ _____ |
| 4. $135 \div 14 =$ _____ | 5. $372 \div 23 =$ _____ | 6. $243 \div 17 =$ _____ |
| 7. $212 \div 24 =$ _____ | 8. $435 \div 16 =$ _____ | 9. $166 \div 13 =$ _____ |

Name _____

Divide by 2-Digit Numbers



Divide. Check your answer.

1. $22 \overline{)952}$

2. $31 \overline{)784}$

3. $66 \overline{)7.26}$

4. $54 \overline{)760}$

5. $81 \overline{)891}$

6. $29 \overline{)496}$

7. $44 \overline{)530}$

8. $75 \overline{)984}$

9. $26 \overline{)1,954}$

10. $17 \overline{) \$11.39}$

11. $39 \overline{)2,381}$

12. $46 \overline{)3,818}$

13. $93 \overline{)8,929}$

14. $51 \overline{)3,621}$

15. $62 \overline{) \$55.18}$

16. $88 \overline{)6,518}$

17. $895 \div 24 =$ _____

18. $907 \div 31 =$ _____

19. $367 \div 14 =$ _____

20. $\$7.08 \div 59 =$ _____

21. $814 \div 36 =$ _____

22. $531 \div 45 =$ _____

23. $1,467 \div 24 =$ _____

24. $\$37.76 \div 64 =$ _____

25. $4,780 \div 77 =$ _____

26. $\$48.59 \div 43 =$ _____

27. $7,900 \div 84 =$ _____

28. $8,930 \div 92 =$ _____

Algebra Solve.

29. $(1,700 + 53) \div 37 = w$ _____

30. $(1,000 + 160) \div 46 = d$ _____

31. $(1,900 + 100) \div 29 = v$ _____

32. $(1,600 + 240) \div 83 = x$ _____

33. $(2,300 + 70) \div (12 \times 4) = n$ _____

34. $(1,500 + 80) \div (11 \times 5) = c$ _____

Problem Solving

Solve.

35. Mrs. Tallo's class makes 234 ribbons for the Sports Fair. Each student makes the same number of ribbons. There are 18 students in the class. How many ribbons does each student make?

36. Mr. Willow's class of 25 students sells 200 tickets to the Sports Fair. Each student sells the same number of tickets. How many tickets does each student sell?

Divide by 2-Digit Numbers

Solve. What number am I?

1. I am a number between 10 and 20.
If you divide either 61 or 73 by me,
the remainder is 1.

3. I am a number between 20 and 30.
If you divide either 107 or 128 by
me, the remainder is 2.

5. I am a number between 20 and 30.
If you divide either 76 or 126 by me,
the remainder is 1.

7. I am a number between 10 and 20.
If you divide either 74 or 110 by me,
the remainder is 2.

9. I am a number between 20 and 30.
If you divide either 175 or 204 by
me, the remainder is 1.

11. I am a number between 10 and 20.
If you divide either 69 or 88 by me,
the remainder is 12.

13. I am a number between 10 and 20.
If you divide either 110 or 144 by
me, the remainder is 8.

2. I am a number between 10 and 20.
If you divide either 45 or 56 by me,
the remainder is 1.

4. I am a number between 20 and 30.
If you divide either 68 or 134 by me,
the remainder is 2.

6. I am a number between 30 and 40.
If you divide either 147 or 255 by me,
the remainder is 3.

8. I am a number between 40 and 50.
If you divide either 221 or 265 by
me, the remainder is 1.

10. I am a number between 30 and 40.
If you divide either 74 or 214 by me,
the remainder is 4.

12. I am a number between 20 and 30.
If you divide either 131 or 154 by
me, the remainder is 16.

14. I am a number between 20 and 30.
If you divide either 295 or 322 by
me, the remainder is 25.

Problem Solving: Skill

Use an Overestimate or Underestimate

When dividing, round down the divisor to find an **overestimate**. The estimate will be greater than the exact answer.

When dividing, round up the divisor to find an **underestimate**. The estimate will be less than the exact answer.

Here are some examples.

Use an overestimate.

Problem A total of 80 fourth-grade students will take buses to the museum. Each bus holds 22 students. How many buses are needed?

Estimate $80 \div 22$.

Round 22 down to 20. $80 \div 20 = 4$

So 4 buses are needed to make sure each student gets a seat on a bus.

Use an underestimate.

Problem Each ticket to the museum costs \$3. The school sets aside \$270 to pay for 80 students. Is there enough money?

Estimate $\$270 \div 80$.

Round 80 up to a compatible number.

$\$270 \div 90 = \3

If the committee has enough money to pay for 90 students, it has enough money to pay for 80 students.

Choose the correct answer.

There are 95 volunteers working at the marathon. Each volunteer will get a water bottle. A box contains 24 water bottles. How many boxes are needed?

1. To be sure there are enough water bottles for the volunteers, you should:

- A underestimate the number of volunteers.
- B overestimate the number of volunteers and underestimate the number of boxes needed.
- C underestimate the number of boxes needed.
- D overestimate the number of boxes needed.

2. How many boxes are needed?

F 3

G 4

H 5

I 6

Problem Solving: Skill

Use an Overestimate or Underestimate

Solve.

1. Travis makes first-place ribbons for Sports Day. He uses 111 inches of ribbon. Each ribbon is 8 inches long. Underestimate the number of ribbons he makes.

3. There are 152 people at the Sports Night Dinner. There are 33 tables. What is the greatest number of people that can sit at a table? Explain.

5. A pack of 3 pennants costs \$8. Maryanne has \$30. Is this enough to buy 4 packs of pennants? Explain.

2. The soccer club makes 100 cups of fruit drink. There are 46 students in the soccer club. Is there enough fruit drink for each student to have 2 cups? Explain.

4. Mark wants to buy baseball shirts of different teams. Each shirt costs \$18. Mark has \$62. How many shirts can he buy? Explain.

6. A box of gold medals costs \$56. The Sports Committee has \$185 to spend on medals. How many boxes can the committee buy? Explain.

Mixed Strategy Review

Solve. Use any strategy.

7. Jamal has 288 stickers. He has twice as many animal stickers as sports stickers. How many of each kind does Jamal have?

8. Jamal puts 288 stickers into 24 envelopes. He puts the same number of stickers in each envelope. How many stickers are in each envelope?

Strategy: _____

Name _____



Problem Solving: Skill

Use an Overestimate or Underestimate

Form a conclusion about whether you would overestimate or underestimate. Then solve the problem.

- 1.** A group of 118 people sign up for the 5-kilometer run. Each person will receive a special cap. Caps are sold in boxes of 36. How many boxes are needed?

Should you overestimate or underestimate to solve this problem? Explain.

How many boxes are needed? _____

- 2.** The Flying Disk Club has \$90 to buy disks for its members. A package of 2 disks costs \$8. How many packages of disks can the club buy?

Should you overestimate or underestimate to solve this problem? Explain.

How many packages of disks can the club buy? _____

- 3.** Trophies cost \$9 each. The tournament organizers have \$60 budgeted for trophies. How many trophies can they buy?

Should you overestimate or underestimate to solve this problem? Explain.

How many trophies do they buy? _____

- 4.** A group of 24 students is playing catch. They share 7 softballs. What is the least number of students who can share each softball?

Should you overestimate or underestimate to solve this problem? Explain.

What is the least number of students who can share a softball? _____

Adjusting Quotients



When you divide, sometimes your first estimate is too high or too low. Then you must adjust the quotient.

Divide $125 \div 43$.

Step 1:

Estimate: $120 \div 40 = 3$

$$\begin{array}{r} 3 \\ 43 \overline{)125} \end{array}$$

Step 2:

Use your estimate to divide.

$$\begin{array}{r} 3 \\ 43 \overline{)125} \\ - 129 \end{array} \leftarrow \text{Multiply: } 3 \times 43 = 129$$

Compare: $129 > 125$.

You cannot subtract. The estimate of 3 is too high.

Step 3:

Adjust your estimate and divide.

Multiply to check the answer.

$$\begin{array}{r} 2 \text{ R39} \\ 43 \overline{)125} \\ - 86 \end{array} \leftarrow \text{Multiply: } 2 \times 43 = 86$$

39 Subtract: $125 - 86 = 39$

Compare: $39 < 43$

$$\begin{array}{r} 43 \\ \times 2 \\ \hline 86 \\ + 39 \\ \hline 125 \end{array}$$

Divide. Check your answer.

1. $24 \overline{)110}$

2. $27 \overline{)190}$

3. $29 \overline{)148}$

4. $61 \overline{)120}$

5. $57 \overline{)350}$

6. $16 \overline{)129}$

7. $37 \overline{)223}$

8. $63 \overline{)124}$

9. $173 \div 19 = \underline{\hspace{2cm}}$ 10. $293 \div 44 = \underline{\hspace{2cm}}$ 11. $208 \div 25 = \underline{\hspace{2cm}}$

Adjusting Quotients

Divide. Check your answers.

1. $34 \overline{)249}$

2. $26 \overline{)189}$

3. $56 \overline{)469}$

4. $41 \overline{)367}$

5. $51 \overline{)146}$

6. $84 \overline{)626}$

7. $79 \overline{)350}$

8. $63 \overline{)238}$

9. $92 \overline{)810}$

10. $75 \overline{)295}$

11. $39 \overline{)230}$

12. $25 \overline{)186}$

13. $56 \overline{)476}$

14. $69 \overline{)507}$

15. $92 \overline{)546}$

16. $88 \overline{)339}$

17. $44 \overline{)371}$

18. $24 \overline{)129}$

19. $65 \overline{)247}$

20. $57 \overline{)284}$

21. $81 \overline{)482}$

22. $22 \overline{)186}$

23. $45 \overline{)395}$

24. $36 \overline{)299}$

Algebra Divide only those with quotients between \$5.00 and \$8.00.

25. $18 \overline{\$94.50}$

26. $16 \overline{\$98.40}$

27. $14 \overline{\$60.90}$

28. $25 \overline{\$93.75}$

29. $13 \overline{\$92.95}$

30. $11 \overline{\$99.11}$

31. $15 \overline{\$56.25}$

32. $12 \overline{\$93.12}$

Problem Solving

Solve.

- 33.** Candy wants to walk 220 miles in 30 days. If she walks 7 miles every day, will she meet her goal?

- 34.** Jason wants to save \$180 in 12 months. How much should he save each month?

Adjusting Quotients



Estimate each quotient. Write your estimate. Then divide. If your estimate is too high, circle "Too High." If your estimate is too low, circle "Too Low." Use the circled answers to complete the maze below.

$$1. \quad 73 \overline{)290}$$

$$2. \quad 65) \overline{595}$$

3. $31 \overline{)247}$

4. $21 \overline{) \$68.25}$

Too High Down
Too Low Up

Too High Left
Too Low Right

Too High Down
Too Low Up

Too High Left
Too Low Right

5. $88 \overline{)530}$

6. 91) \$193.83

7. $48 \overline{)343}$

8. $26 \overline{)184}$

Too High Down
Too Low Up

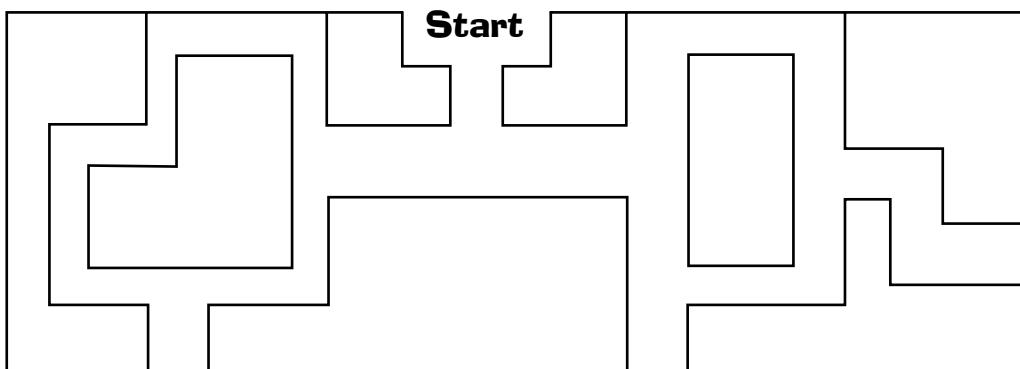
Too High Right
Too Low Left

Too High Up
Too Low Down

Too High Left
Too Low Right

What is the fastest fish, the tallest tree, the biggest dog, and the smallest bird?

To find out, begin at Start. Move one space in the direction given next to each circled answer.



sailfish
redwood
St. Bernard
hummingbird

swordfish maple
greyhound parakeet

dolphin oak
Great Dane sparrow

Choose a Computation Method



Find $28,800 \div 24$.

Mental Math

First, split 28,800 into two parts so that each part is easy to divide by 24.
 $28,800 = 24,000 + 4,800$

Next, divide each part by 24.

$$24,000 \div 24 = 1,000$$

$$4,800 \div 24 = 200$$

Finally, add the two partial quotients.

$$1,000 + 200 = 1,200$$

Paper and Pencil

Divide, multiply, subtract, bring down, and compare until you can no longer divide.

$$\begin{array}{r} 1,200 \\ 24)28,800 \\ -24 \\ \hline 048 \\ -048 \\ \hline 00 \\ -00 \\ \hline 0 \end{array}$$

Calculator

Press the keys in order, starting on the left of the problem. Then press the ENTER = key.

2	8	8	0	0
÷	2	4	Enter =	

Read the display. The number to the right of the equal sign is the quotient.

$$\boxed{28800 \div 24 = 1200}$$

Divide. Tell which method you used, mental math, paper and pencil or calculator.

1. $14)\overline{4,480}$

Method: _____

2. $60)\overline{36,600}$

Method: _____

3. $23)\overline{13,501}$

Method: _____

4. $15)\overline{30,450}$

Method: _____

5. $41)\overline{\$3,567}$

Method: _____

6. $30)\overline{16,260}$

Method: _____

7. $41,944 \div 56 =$ _____

Method: _____

8. $8,585 \div 85 =$ _____

Method: _____

9. $44,220 \div 22 =$ _____

Method: _____

Name _____

Choose a Computation Method



Divide. Tell which method you used.

1. $25 \overline{)25,250}$

Method: _____

2. $49 \overline{)18,032}$

Method: _____

3. $30 \overline{)6,090}$

Method: _____

4. $18 \overline{)37,818}$

Method: _____

5. $74 \overline{)\$4,366}$

Method: _____

6. $51 \overline{)5,610}$

Method: _____

7. $9,288 \div 36 =$ _____

Method: _____

8. $1,250 \div 50 =$ _____

Method: _____

9. $16,967 \div 19 =$ _____

Method: _____

Algebra Find each missing number.

10. $40,000 \div x = 2,000$

11. $\$90,090 \div n = \3003

12. $31,125 \div y = 1,245$

13. $\$18,006 \div q = \$1,500.50$

14. $25,000 \div p = 200$

15. $73,928 \div r = 9,241$

Problem Solving

Solve.

16. Jenny received 1,872 e-mails last year. What was the average number of e-mails she received each month?

17. The Publishing Company bought 28 identical computers for its new office. If the total cost of the computers was \$56,280, how much did each computer cost?

Choose a Computation Method

Write 10 division problems using the numbers in the box as dividends.

3,724 8,800 25,501

12,768 8,655 1,609 24,871

17,563 875 56,279

Your problems must meet the following requirements:

- The divisor must be a 2-digit number from 30 to 50.
- Five problems must have no remainder.
- Two problems must have a remainder less than 10.
- Three problems must have two digits in the quotient.
- One problem must have a quotient less than the divisor.
- Each problem may meet more than one requirement.

You may use mental math, paper and pencil, or a calculator.

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

Problem Solving: Strategy

Choose a Strategy

Page 365, Problem 2

To practice making sharper turns, Camille sets up an obstacle course. She places cones 3 feet apart over a distance of 20 yards. She places the first cone 3 feet from the starting line. How many cones does Camille use?

Step 1
Read

Be sure you understand the problem.

Read carefully.

What do you know?

- The cones are spread over a distance of _____ yards.
- Camille begins 3 feet from the starting line and places cones _____ feet apart.

What do you need to find?

- You need to find the number of feet in _____ yards.
- You need to find how many _____.

Step 2
Plan

- Logical Reasoning
- Draw a Picture or Diagram
- Make a Graph
- Act It Out
- Make a Table or List
- Find a Pattern
- Guess and Check
- Write an Equation
- Work Backward
- Solve a Simpler Problem

Make a plan.

Choose a strategy.

To find the answer, you can draw a diagram.

Find the number of feet in 20 yards.

Show a distance that is that many feet long.

Count by 3s to see how many cones Camille uses if they are placed 3 feet apart.

To find the answer, you can also write an equation.

All the cones are the same distance apart.

Use division to find how many cones Camille uses.

Problem Solving: Strategy

Choose a Strategy

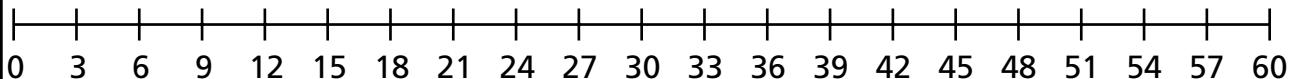
Step 3**Solve** →**Carry out your plan.**

How many feet are in 20 yards?

$$1 \text{ yard} = 3 \text{ feet}$$

$$20 \times 3 = 60$$

Draw a diagram. Show a 60-foot distance. Count by 3s, adding tick marks as shown..



Count the tick marks from 3 to 60. Camille uses _____ cones.

OR: Write an equation.

The distance is _____ feet. There will be 1 cone every _____ feet.

Write a division equation. _____ \div _____ = _____

Camille uses _____ cones.

Step 4**Look Back** →**Is the solution reasonable?**

Reread the problem.

Does your answer make sense? Yes No

Which method do you prefer? Explain.

Practice

- 1.** The parks department builds 5 rows of stands next to a baseball field. Each row is 20 feet long. How many 10-foot-long boards did they need to build the stands?
-

- 2.** Ed has 4 packs of sports stickers. There are 24 stickers in each pack. He divides the stickers among 3 friends. How many stickers does each friend get?
-

Problem Solving: Strategy

Choose a Strategy

Choose a strategy. Use it to solve the problem.

1. The Sports Committee buys 30 yards of material. The material is cut into banners that are 5 feet long. How many banners are made?

3. Liam is building a fence around his backyard. The backyard is 24 feet wide and 60 feet long. If Liam uses sections of fencing that are 12 feet long, how many sections does he use?

2. The Sand Trap Golf Shop has 132 golf balls in stock. The golf balls are packed in tubes of 6. How many tubes of golf balls does the store have?

4. There are 115 students going to the basketball tournament. Each bus can carry 26 students. How many buses are needed?

Mixed Strategy Review

Solve. Use any strategy.

5. Tina makes a display of 36 autographed baseballs. She puts 12 baseballs in a large display case. Tina also has 4 smaller display cases. How can she arrange the baseballs in the smaller cases so that each smaller case has an equal number of baseballs?

Strategy: _____

7. The Stadium Store sells 450 team photos and 369 individual photos. How many photos does it sell in all?

Strategy: _____

6. Francine uses a pattern to make a window display for a sneaker store. The first row has 2 sneakers, the second row has 6 sneakers, the third row has 10, and the fourth row has 14. How many sneakers are in the fifth row?

Strategy: _____

8. **Write a problem** that you could solve by drawing a diagram or by writing a division sentence. Share it with others.

Order of Operations • Algebra

Always use the order of operations to simplify expressions. The rules for the order in which you should perform operations are given below.

Simplify $(20 + 8) \div 4 - 2$.

Step 1:

Do the operations in parentheses first.

$$(20 + 8) \div 4 - 2$$

$$28 \div 4 - 2$$

Step 2:

Multiply and divide from left to right.

$$28 \div 4 - 2$$

$$7 - 2$$

Step 3:

Add and subtract from left to right.

$$7 - 2$$

$$5$$

Which operation should you do first?

1. $12 + 4 \div 2$

2. $4 + (10 - 2)$

3. $2 \times 8 \div 4$

4. $(3 + 7) \div 2$

5. $9 + 3 \times 2$

6. $8 + 2 - 4$

7. $6 \times (8 - 5)$

8. $8 - 4 \times 2$

9. $12 \div (2 + 2)$

Simplify. Use the proper order of operations.

10. $3 \times (2 + 5) =$ _____

11. $14 \div 7 + 2 =$ _____

12. $9 + (6 - 2) =$ _____

13. $4 + 2 \times 5 =$ _____

14. $8 \div 2 - 2 =$ _____

15. $10 - 8 \div 4 =$ _____

16. $12 \div 3 - 2 =$ _____

17. $(1 + 5) \times 4 =$ _____

18. $8 - 8 \div 4 =$ _____

19. $(5 + 5) \div 2 =$ _____

20. $14 - 10 + 2 =$ _____

21. $16 \div 4 \div 2 =$ _____

Name _____

Order of Operations • Algebra



Write which operation should be done first.

1. $2 \times 8 + 7$

2. $2 + 3 \times 9$

3. $4 + 10 \div 2$

4. $9 - 2 + 3$

5. $(3 + 2) \times 9$

6. $8 \div (2 + 2)$

7. $6 \div 2 - 1$

8. $1 + 3 \times 5$

9. $10 \div 5 \times 2$

10. $7 - 8 \div 2$

11. $(12 - 4) \div 2$

12. $9 + 2 - 6$

Simplify. Use the proper order of operations.

13. $3 + 2 \times 7 =$ _____

14. $10 \div 2 - 1 =$ _____

15. $9 - 6 \div 2 =$ _____

16. $24 \div 2 - 8 =$ _____

17. $(2 + 6) \times 7 =$ _____

18. $12 - 12 \div 3 =$ _____

19. $(4 + 6) \div 5 =$ _____

20. $12 - 3 + 9 =$ _____

21. $20 \div 5 \div 2 =$ _____

22. $18 \div 9 \times 6 =$ _____

23. $2 \times 8 \div 4 =$ _____

24. $20 - 5 \times 4 =$ _____

25. $2 \times 6 + 4 \times 3 =$ _____

26. $20 \div 2 \times 3 - 6 =$ _____

27. $(2 + 9) \times (7 - 3) =$ _____

28. $4 + (14 - 6) \times 2 + 5 =$ _____

29. $2 \times 9 + 10 \div 5 \times (3 + 2) =$ _____

Problem Solving

Solve.

30. Tamara buys 6 apples for \$0.40 each. She has a \$0.50-off coupon. How much does Tamara spend? Write an expression and simplify.

31. Steven has 126 photos in an album. He adds 18 more photos to the album. Each page holds 12 photos. Write an expression and simplify to find out how many pages Steven fills.

Name _____

Order of Operations • Algebra



Rewrite each equation. Put in parentheses to make it true.

1. $3 + 8 \times 2 - 1 = 21$

2. $5 \times 16 + 14 + 6 \div 2 = 153$

3. $6 \div 9 - 8 = 6$

4. $22 - 3 \times 5 + 2 = 1$

5. $18 \div 2 + 1 + 1 = 7$

6. $6 \times 5 + 9 \div 3 = 28$

7. $5 \times 10 + 1 \div 11 = 5$

8. $3 + 40 \div 8 \times 5 = 4$

9. $10 - 6 \div 4 = 1$

10. $4 \times 5 - 2 = 12$

11. $40 \div 10 - 2 = 5$

12. $20 + 8 \div 4 = 7$

13. $6 + 2 \times 7 = 56$

14. $16 - 6 + 2 = 8$

In your own words describe the rules for the order of operations.

Name _____

Problem Solving: Decision Making

Decision
Making

WORKSHEET

Which means of transportation should the club members use for their trip?
Record your data and notes. Analyze.

	Cost	Advantages and Disadvantages
Bus		
Train		
Car		

Your Decision

What is your recommendation for the club? Should they take buses, the train, or cars to the gymnastics meet? Explain.

**UNIT
9**

Measurement

CHAPTER 17 • SUPPORT MATERIALS

Lesson	Titles	Masters	Use with pages
17-1	Explore Nonstandard Length, Width, and Height	R17-1, P17-1, E17-1	384–385
17-2	Explore Customary Length to 1/4 inch	R17-2, P17-2, E17-2	386–387
17-3	Customary Capacity and Weight	R17-3, P17-3, E17-3	388–391
17-4	Convert Customary Units	R17-4, P17-4, E17-4	392–394
17-5	Problem Solving: Skill Check for Reasonableness	R17-5, P17-5, E17-5	396–397

CHAPTER 18 • SUPPORT MATERIALS

Lesson	Titles	Masters	Use with pages
18-1	Explore Metric Length	R18-1, P18-1, E18-1	402–403
18-2	Metric Capacity and Mass	R18-2, P18-2, E18-2	404–406
18-3	Convert Metric Units	R18-3, P18-3, E18-3	408–410
18-4	Problem Solving: Strategy Logical Reasoning	R18-4, R18-4, P18-4	412–413
18-5	Temperature	R18-56, P18-5, E18-5	414–415
	Problem Solving: Applying Math and Science	Worksheets	418–419

R—Reteach

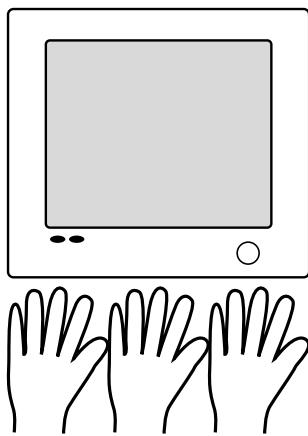
P—Practice

E—Enrich

Explore Nonstandard Units for Length, Width, and Height

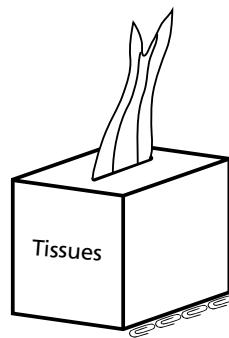
A nonstandard unit can be used to measure length, width, and height.

You can use the width of your hand to model problems.



The computer is about 3 hand units long.

You can use a paper clip to model problems.



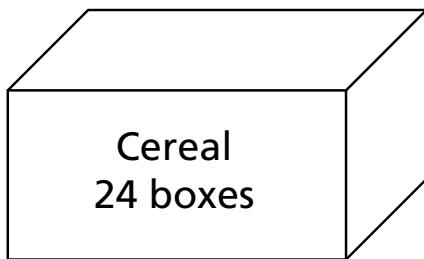
The tissue box is about 4 paper clip units wide.

Use nonstandard units to measure the items. Tell what units you use.

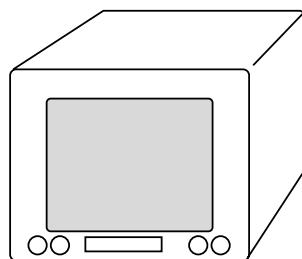
- the length of a pencil



- the height of a box



- the width of a television



- the length of a piece of ribbon



Name _____

Explore Nonstandard Units for Length, Width, and Height



Use nonstandard units to measure. Tell what units you use. Explain why you chose the units you did.

1. the length of your pencil

2. the length of your shoe

3. the width of your classroom

4. the width of your desk

5. the height of your teacher

6. the height of another fourth-grader

Name _____

Explore Nonstandard Units for Length, Width, and Height



Draw a line in the box below.

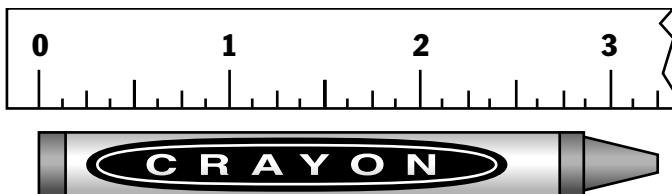
Look at your line. Then look around your classroom. Name 8 objects. Estimate how many line units long, wide, and high each item is. Then cut a strip of paper the length of your line. Use the strip of paper to check your estimates.

Classroom Object	Line Units Long		Line Units Wide		Line Units High	
	Estimate	Actual	Estimate	Actual	Estimate	Actual
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						

Explore Customary Length to $\frac{1}{4}$ Inch

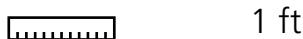
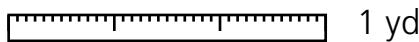
An **inch (in.)** is used to measure short lengths in the customary system.

You can use a ruler to measure in inches.



$3\frac{1}{4}$ in.

The **foot (ft)** and **yard (yd)** are used to measure larger units in the customary system.



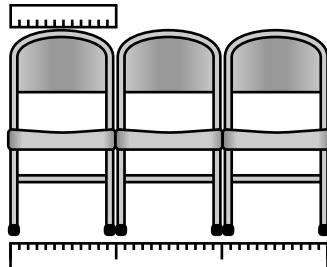
Customary Units of Length

1 foot (ft) = 12 inches (in.)

1 yard (yd) = 3 feet (ft)

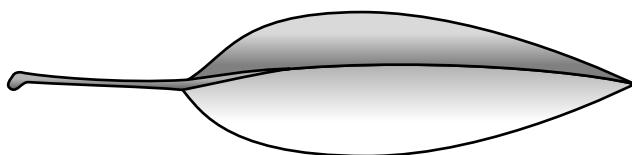
1 mile (mi) = 1,760 yards (yd)

1 mile (mi) = 5,280 feet (ft)



Use an inch ruler to measure each object below. Measure to the nearest $\frac{1}{4}$ inch.

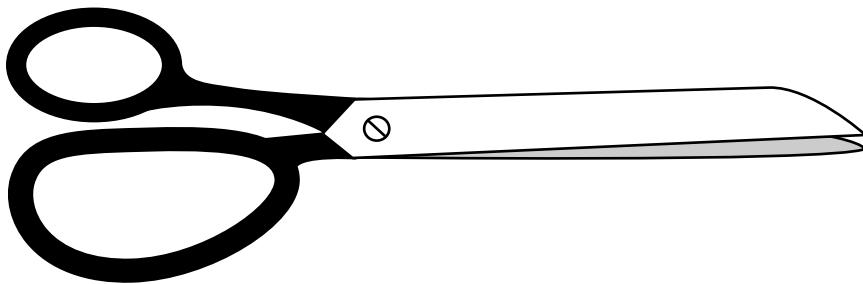
1.



2.



3.



4.



Name _____



Explore Customary Length to $\frac{1}{4}$ Inch

Estimate and then measure. Tell what unit and tool you use.

1. length of a pencil _____
2. height of a desk _____
3. width of a desk _____
4. height of a door _____
5. width of a window _____
6. width of the classroom _____
7. length of a book _____
8. distance you go in a stride _____
9. length of your forearm _____

Measure each line to the closest quarter inch. Write your answer on the line.

10. _____

11. _____

12. _____

13. _____

14. _____

15. _____

16. _____

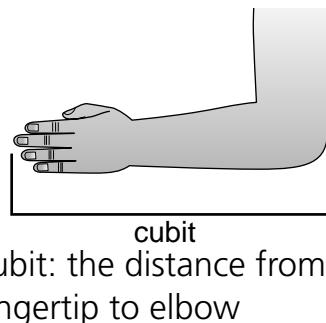
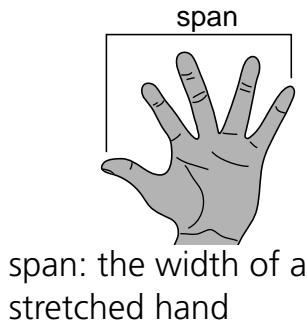
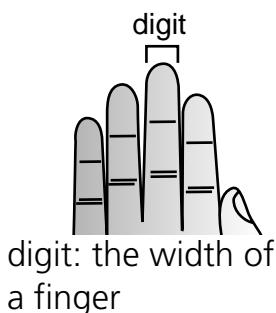
17. _____

18. _____

19. _____

Explore Customary Length to $\frac{1}{4}$ Inch

In early times, distances were measured using fingers, hands, and arms.



Choose *digit*, *span*, or *cubit* as the appropriate unit of measure. Then estimate.

1. width of your desk

2. thickness of your math book

3. length of your notebook

4. diameter of an apple

5. height of the classroom

6. length of a car

7. your friend's height

8. length of your foot

9. What is an advantage of this system? What is a disadvantage?

10. What kinds of distance would be difficult to measure using this system of measurement?

Customary Capacity and Weight



Capacity is the measure of dry or liquid volume of a container. Pour water into empty milk cartons to model the equivalent units of capacity shown below.

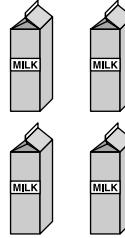
Customary Units of Capacity

8 fluid ounces (fl oz) = 1 cup (c)

2 cups (c) = 1 pint (pt)

2 pints (pt) = 1 quart (qt)

$$4 \text{ quarts (qt)} = 1 \text{ gallon (gal)}$$



$$2 \text{ cups} = 1 \text{ pint}$$

(c) (pt)

$$2 \text{ pints} = 1 \text{ quart}$$

(pt) (qt)

$$4 \text{ quarts} = 1 \text{ gallon}$$

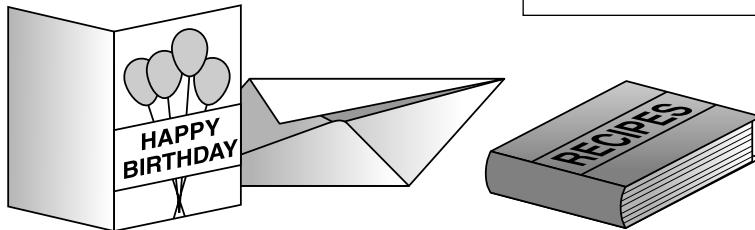
(qt) (gal)

Weight is the measure that tells how heavy an object is.

Customary Units of Weight

16 ounces (oz) = 1 pound (lb)

2,000 pounds (lb) = 1 ton (T)



A card and envelope weigh about 1 ounce.

A book weighs about 1 pound.

Circle the letter of the correct estimate.

- | | | | |
|---------------------------------|--------------------|-----------|--------------------|
| 1. weight of an apple | A. 5 oz | B. 2 lb | C. $\frac{1}{2}$ T |
| 2. weight of a fourth-grader | A. $\frac{1}{2}$ T | B. 20 oz | C. 60 lb |
| 3. amount of water in a bathtub | A. 25 qt | B. 25 gal | C. 25 pt |
| 4. weight of a refrigerator | A. 100 oz | B. 100 lb | C. 5 T |
| 5. amount of water in a pail | A. 5 qt | B. 50 gal | C. 500 c |

Name _____

Customary Capacity and Weight



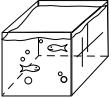
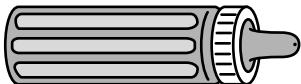
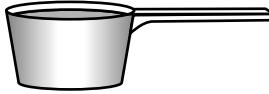
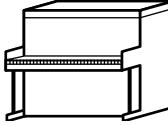
Estimate and then measure the capacity of each object.

1. a water glass _____
2. a large pot _____
3. a cereal bowl _____
4. a milk carton _____
5. Order the objects above from least to greatest capacity.

Estimate and then measure the weight of each object or objects.

6. an apple _____
7. four potatoes _____
8. two envelopes _____
9. a pencil _____
10. Order the objects above from least to greatest weight.

Circle the letter of the correct estimate.

11.  A. 5 c B. 5 pt C. 5 gal
12.  A. 1 c B. 1 pt C. 1 qt
13.  A. 6 c B. 6 qt C. 6 gal
14.  A. 2 fl oz B. 2 c C. 2 pt
15.  A. 500 oz B. 500 lb C. 500 T

Problem Solving

Solve.

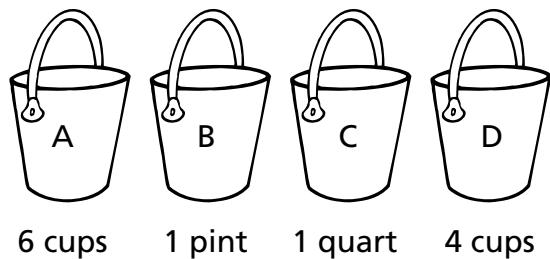
16. A box of Krispy Krunch cereal holds 20 oz. Kyle pours 3 oz of cereal into his bowl. How much cereal is left in the box?
17. Sarah buys a 48-fl-oz bottle of apple juice. How many cups of juice can she pour from the bottle?

Customary Capacity and Weight

1. There is water in each bucket.

Which bucket holds the greatest amount of water? _____

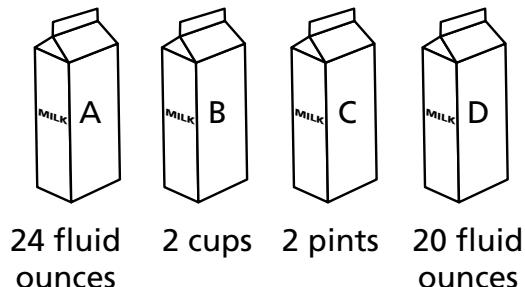
Which bucket holds the least amount of water? _____



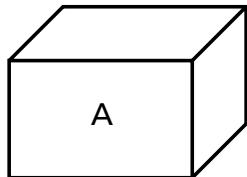
2. There is milk in each container.

Which container holds the greatest amount of milk? _____

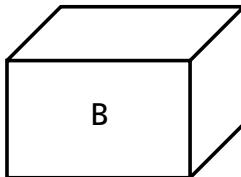
Which container holds the least amount of milk? _____



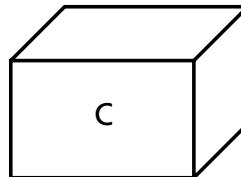
3. There is sand in each box.



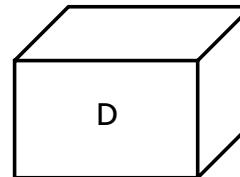
32 ounces



$1\frac{1}{2}$ pounds



1 pound 3 ounces

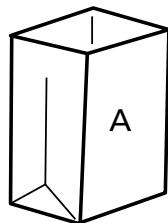


20 ounces

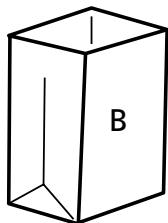
Which box is the heaviest? _____

Which box is the lightest? _____

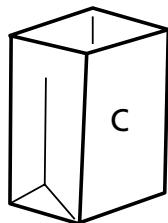
4. There are apples in each bag.



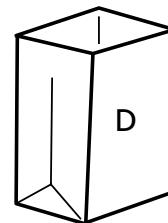
3 pounds 2 ounces



48 ounces



$3\frac{1}{2}$ pounds



60 ounces

Which bag is the heaviest? _____

Which bag is the lightest? _____

Converting Customary Units • Algebra



You can use tables to help you convert customary units of measure.

To convert a larger unit to a smaller unit, multiply. Think: $2 \text{ gallons} \times 4 = 8 \text{ quarts}$

To convert a smaller unit to a larger unit, divide. Think: $8 \text{ quarts} \div 4 = 2 \text{ gallons}$

Inches	Feet	Yards
12	1	
24	2	
36	3	1
48	4	
60	5	
72	6	2
84	7	
96	8	
108	9	3

Feet	Yards	Miles
5,280	1,760	1
10,560	3,520	2
15,840	5,280	3

Cups	Pints	Quarts	Gallons
2	1		
4	2	1	
6	3		
8	4	2	
10	5		
12	6	3	
14	7		
16	8	4	1

Ounces	Cups	Pounds
8	1	
16	2	1
24	3	
32	4	2
40	5	
48	6	3

Write the number that makes each equation true.

1. $3 \text{ ft} = \underline{\hspace{2cm}}$ in.
2. $24 \text{ in.} = \underline{\hspace{2cm}}$ ft
3. $6 \text{ ft} = \underline{\hspace{2cm}}$ yd
4. $5 \text{ yd} = \underline{\hspace{2cm}}$ ft
5. $8 \text{ c} = \underline{\hspace{2cm}}$ pt
6. $12 \text{ pt} = \underline{\hspace{2cm}}$ qt
7. $12 \text{ qt} = \underline{\hspace{2cm}}$ gal
8. $3 \text{ mi} = \underline{\hspace{2cm}}$ yd
9. $2 \text{ qt} = \underline{\hspace{2cm}}$ pt
10. $3 \text{ pt} = \underline{\hspace{2cm}}$ c
11. $2 \text{ lb} = \underline{\hspace{2cm}}$ oz
12. $48 \text{ oz} = \underline{\hspace{2cm}}$ lb

Converting Customary Units • Algebra

Write the number that makes each equation true.

- | | | |
|---|--|---|
| 1. $7 \text{ ft} = \underline{\hspace{2cm}} \text{ in.}$ | 2. $21 \text{ ft} = \underline{\hspace{2cm}} \text{ yd}$ | 3. $2 \text{ mi} = \underline{\hspace{2cm}} \text{ yd}$ |
| 4. $60 \text{ in.} = \underline{\hspace{2cm}} \text{ ft}$ | 5. $13 \text{ yd} = \underline{\hspace{2cm}} \text{ ft}$ | 6. $2 \text{ mi} = \underline{\hspace{2cm}} \text{ ft}$ |
| 7. $8 \text{ qt} = \underline{\hspace{2cm}} \text{ gal}$ | 8. $144 \text{ in.} = \underline{\hspace{2cm}} \text{ ft}$ | 9. $3 \text{ pt} = \underline{\hspace{2cm}} \text{ c}$ |
| 10. $36 \text{ ft} = \underline{\hspace{2cm}} \text{ yd}$ | 11. $4 \text{ ft} = \underline{\hspace{2cm}} \text{ in.}$ | 12. $12 \text{ ft} = \underline{\hspace{2cm}} \text{ yd}$ |
| 13. $12 \text{ pt} = \underline{\hspace{2cm}} \text{ qt}$ | 14. $2 \text{ lb} = \underline{\hspace{2cm}} \text{ oz}$ | 15. $48 \text{ oz} = \underline{\hspace{2cm}} \text{ lb}$ |
| 16. $3 \text{ T} = \underline{\hspace{2cm}} \text{ lb}$ | 17. $10,000 \text{ lb} = \underline{\hspace{2cm}} \text{ T}$ | 18. $2 \text{ c} = \underline{\hspace{2cm}} \text{ fl oz}$ |
| 19. $3 \text{ gal} = \underline{\hspace{2cm}} \text{ qt}$ | 20. $2 \text{ qt} = \underline{\hspace{2cm}} \text{ pt}$ | 21. $10 \text{ c} = \underline{\hspace{2cm}} \text{ pt}$ |
| 22. $1 \text{ lb } 10 \text{ oz} = \underline{\hspace{2cm}} \text{ oz}$ | 23. $1 \text{ gal } 2 \text{ pt} = \underline{\hspace{2cm}} \text{ pt}$ | 24. $10 \text{ ft} = \underline{\hspace{1cm}} \text{ yd } \underline{\hspace{1cm}} \text{ ft}$ |
| 25. $4 \text{ T } 800 \text{ lb} = \underline{\hspace{2cm}} \text{ lb}$ | 26. $5 \text{ ft } 8 \text{ in.} = \underline{\hspace{2cm}} \text{ in.}$ | 27. $13 \text{ qt} = \underline{\hspace{1cm}} \text{ gal } \underline{\hspace{1cm}} \text{ qt}$ |

Complete the table.

28.

Gallons	1			
Quarts			12	
Pints		16		
Cups				64

29.

Yards	1			
Feet			9	
Inches		72		

30.

Ounces	Pounds
	$\frac{1}{2}$
	$\frac{3}{4}$
16	
32	
48	

31.

Tons	1			
Pounds			6,000	

Problem Solving

Solve.

32. Amy cuts a piece of ribbon 60 in. long. How many feet long is the piece of ribbon?

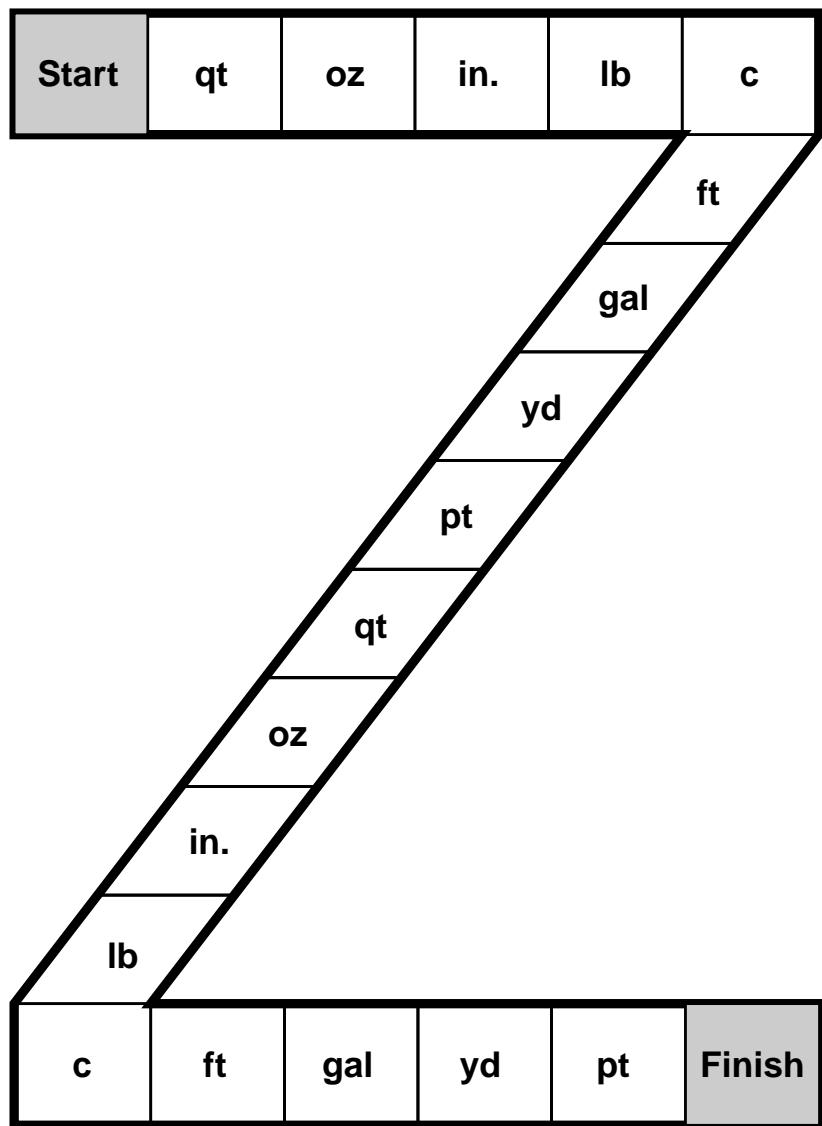
33. The 6 members of the Brown family drink a total of 3 gallons of milk each week. How much is that per person?

Converting Customary Units • Algebra

Play a game with a partner. Take turns.

- For each turn, roll one number cube. Move that many spaces.
- Then roll two number cubes. Convert that number to a larger or smaller unit of measure. For example, with the first roll you land on a **qt** space. On the second roll, you get a 1 and a 6. You then convert 16 or 61 quarts to any units you like—cups, pints, gallons, or a combination of units. For instance, 16 qt = 64c.
- Your partner checks your answer. If your answer is correct, move ahead 1 space. If not, move back 1 space.

The player who reaches FINISH first wins.



Problem Solving: Skill

Check for Reasonableness

A cooler holds 8 gallons of sports drink. Brian says the cooler holds about 2 quarts. Rachel says the cooler holds about 30 quarts. Whose estimate is reasonable?

Step 1 Use what you know.	The cooler holds 8 gallons. 1 gallon = 4 quarts $8 \text{ gallons} = 8 \times 4 \text{ quarts} = 32 \text{ quarts}$ So, the cooler holds 32 quarts.
Step 2 Compare each estimate with what you know.	Brian's estimate is not reasonable, because 2 quarts is much less than 32 quarts. Rachel's estimate is reasonable, because 30 quarts is close to 32 quarts.

Circle the statement that is reasonable.

- 1.** Robert and Anthony ran 3 miles.

Robert says, "We ran about 30,000 feet."

Anthony says, "We ran about 15,000 feet."

Explain your thinking:

- 2.** The distance from April's home to the school is 10,560 feet.

April says, "Our home is about 3,500 yards from the school."

April's sister says, "Our home is about 30,000 yards from the school."

Explain your thinking:

- 3.** A running track is 3,600 yards.

Pablo says, "The track is about 1 mile long."

John says, "The track is more than 2 miles long."

Explain your thinking:

Problem Solving: Skill Check for Reasonableness

Solve. Explain your answer.

- 1.** Tyler walks 4 miles from his home to the movie theater. He says he walks more than 20,000 feet. Is his statement reasonable?

- 3.** Tammy's sled is 65 inches long. She says the sled is more than 5 feet long. Is her statement reasonable?

- 5.** The popcorn stand sells 100 ounces of popcorn. Ben says this is 1,600 pounds of popcorn. Is his statement reasonable?

- 2.** A movie star is 6 feet tall. Meg says that the movie star is more than 80 inches tall. Is her statement reasonable?

- 4.** Earl's house is 1,200 yards from the bus stop. Earl says that is 3,600 feet. Is his statement reasonable?

- 6.** The refreshment stand sells 144 ounces of peanuts. The manager says that this is more than 10 pounds of peanuts. Is his statement reasonable?

Mixed Strategy Review

Solve. Use any strategy.

- 7.** Darryl runs every day. On the first day he ran 1 mile. On the second he ran 3 miles, on the third he ran 5 miles, and on the fourth he ran 7 miles. How many miles will Darryl probably run on the tenth day?

Strategy: _____

- 8.** Ashley and Fiona swim laps in the pool. Ashley swims twice as many laps as Fiona. Fiona swims 10 laps. How many laps does Ashley swim?

Strategy: _____

Problem-Solving: Skill

Check for Reasonableness

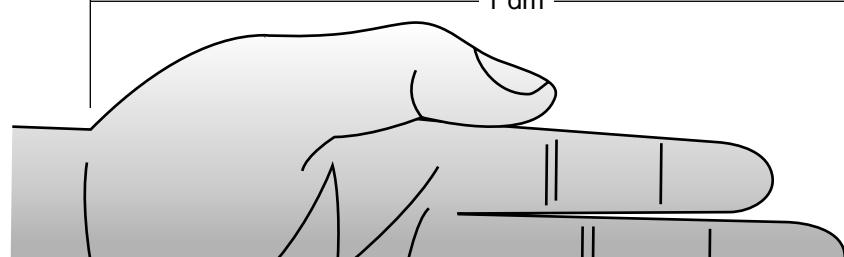
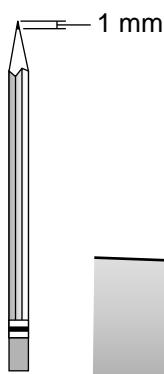
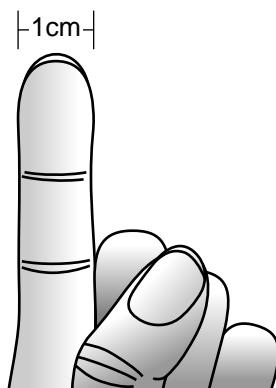
Shade each box that contains a reasonable measure. The shaded boxes will form a path from start to finish.

Finish	A living room is 6 yards long.	Your smile is 1 yard wide.	In an hour, an airplane flew 1,780 miles.	A horse weighs 827 oz.
A pizza weighs 144 oz.	A song is about 3 minutes long.	A goldfish bowl holds 18 cups of water.	An automobile might weigh 2,545 lb.	The pitcher holds 3 qt of lemonade.
A frog can jump 475 feet.	A girl's braid was 3 yards long.	A football field is $\frac{1}{4}$ mile long.	A dog can jump 17 yards.	Jen held her breath for 63 seconds.
You could walk a mile in 20 seconds.	The gate is 40 inches high.	A gallon of paint is enough to paint a large wall.	The kitten drank an ounce of milk.	The movie lasted 107 minutes.
The punch bowl holds 24 cups of punch.	Pat rode his bike 12 mph.	The climbing rope to the tree fort was 37 inches long.	A TV commercial lasts about 600 seconds.	A bathtub holds only 18 pints of water.
The diving pool was 4 yd deep.	The subway sandwich was 12 yd long.	A light bulb weighs 2 ounces.	It took about 3 yards of fabric to make a cape.	The train was 125 yd long.
The baby drank 7 oz of milk.	A banana is 9 inches long.	Beth ran a distance of 10,525 ft.	A sneaker weighs 40 oz.	Start

How did you decide if running a distance of 10,525 feet was reasonable?

Explore Metric Length

Centimeters (cm), millimeters (mm), decimeters (dm), and kilometers (km) are used to measure length in the metric system.



Metric Units of Length

10 millimeters (mm) = 1 centimeter (cm)

10 centimeters (cm) = 1 decimeter (dm)

100 centimeters (cm) = 1 meter (m)

1,000 meters (m) = 1 kilometer (km)

A kilometer measures large distances, such as the distance from your school to a school in another town or city.

Use a centimeter ruler to measure each object below. Write the length.

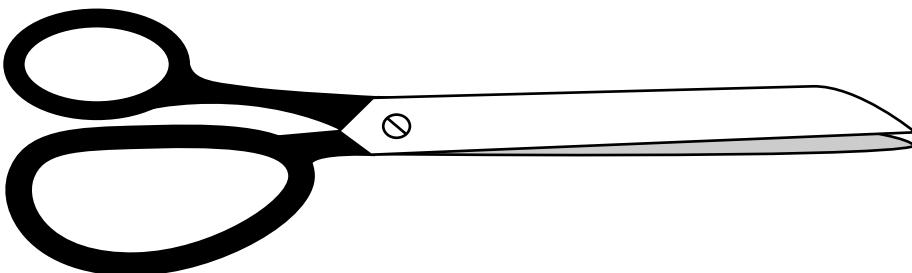
1.



2.



3.



4.



Name _____

Explore Metric Length



Estimate and then measure. Tell what unit and tool you use.

1. the width of your classroom _____
2. the largest step you can take _____
3. the width of a window in your classroom _____
4. the distance from the tip of your hand
to your elbow _____
5. the thickness of a nickel _____
6. the width of a dime _____
7. your height _____
8. length of a sheet of notebook paper _____

Measure each line to the closest centimeter. Write your answer on the line.

9. _____

10. _____

11. _____

12. _____

13. _____

14. _____

15. _____

16. _____

17. _____

18. _____

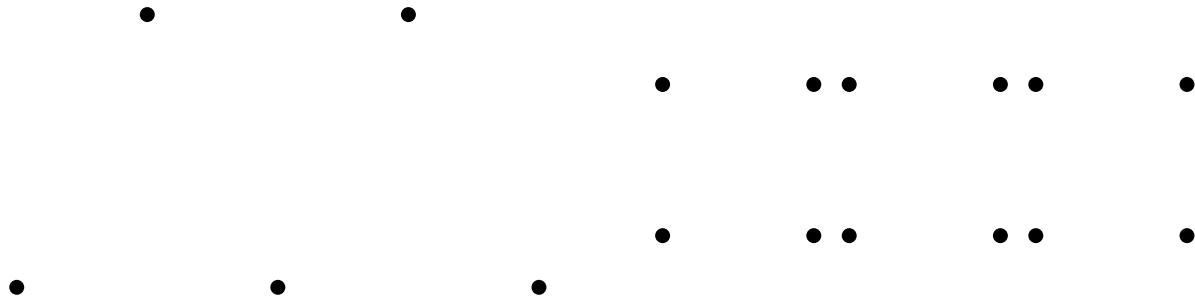
Name _____

Explore Metric Length

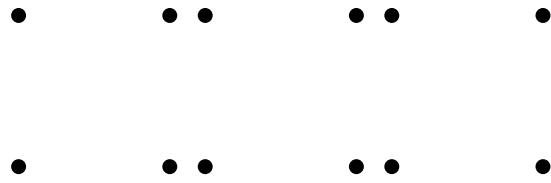


Use a centimeter ruler to connect only those dots that are the given distance apart.

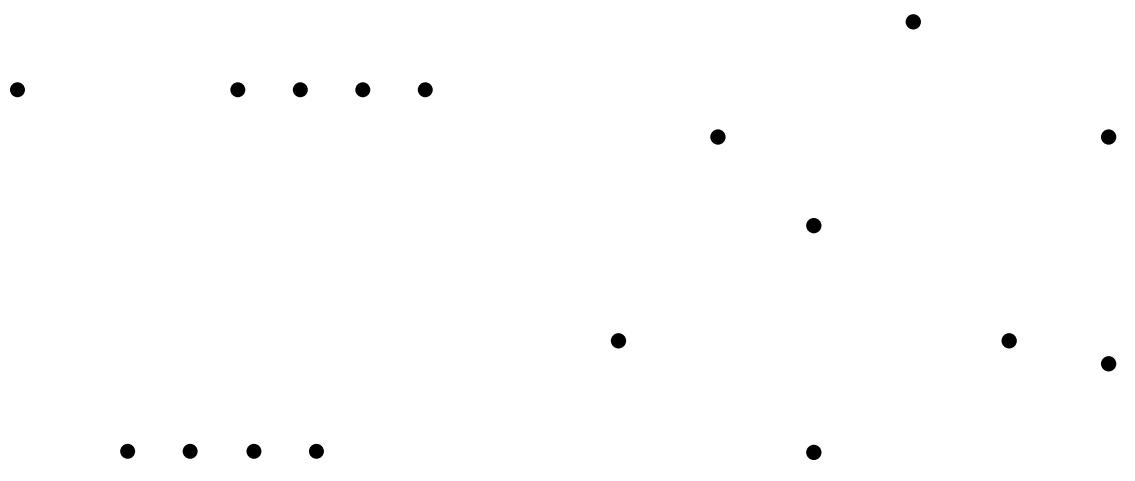
1. 4 cm



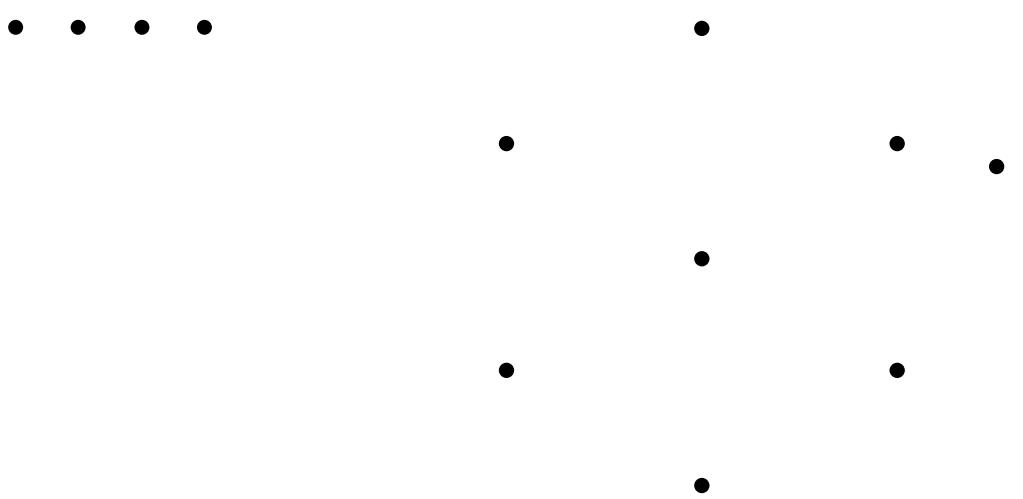
2. 2 cm



3. 5 cm

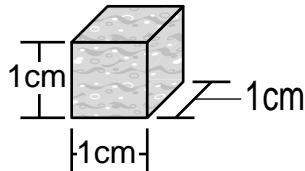


4. 3 cm



Metric Capacity and Mass

Milliliters and **liters** measure capacity in the metric system.



A cube 1 centimeter (cm) long, 1 centimeter wide, and 1 centimeter high will hold 1 milliliter (mL) of water.

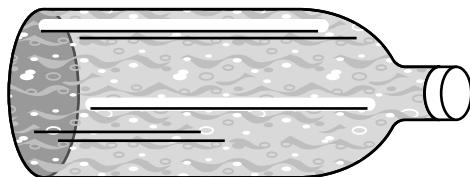
Mass is the amount of matter that makes up an object.



The mass of a paper clip is about 1 gram (g).

Metric Units of Capacity

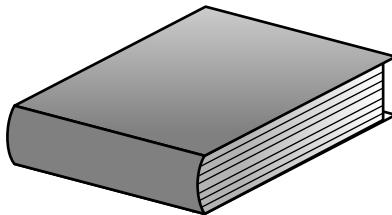
$$1,000 \text{ milliliters (mL)} = 1 \text{ liter (L)}$$



This bottle holds 1 liter (L) or 1,000 milliliters (mL) of water.

Metric Units of Mass

$$1,000 \text{ grams (g)} = 1 \text{ kilogram (kg)}$$



The mass of the book is about 1 kilogram (kg) or 1,000 grams (g).

Circle the letter of the best estimate.

- | | | | |
|------------------------------------|-----------|-----------|-------------|
| 1. mass of a bar of soap | A. 120 g | B. 120 kg | C. 12 kg |
| 2. mass of an iron | A. 1 g | B. 100 g | C. 1 kg |
| 3. amount of water in a bathtub | A. 100 mL | B. 100 L | C. 1,000 mL |
| 4. mass of a horse | A. 500 g | B. 500 kg | C. 1,000 g |
| 5. amount of water in a bottle cap | A. 3 mL | B. 300 mL | C. 3 L |

Name _____

Metric Capacity and Mass



Estimate and then measure the capacity of each object.

1. a water glass _____
2. a large pot _____
3. a cereal bowl _____
4. a milk carton _____
5. Order the objects above from least to greatest capacity.

Estimate and then measure the mass of each object.

6. a box of crayons _____
7. a book _____
8. a paper clip _____
9. a pencil _____
10. Order the objects above from least to greatest mass.

Circle the letter of the best estimate.

- | | | | | |
|-----|--|-----------|----------|-----------|
| 11. | | A. 15 mL | B. 15 L | C. 2 L |
| 12. | | A. 3 mL | B. 31 L | C. 310 mL |
| 13. | | A. 200 mL | B. 200 L | C. 2 mL |

Algebra Complete the table.

14.	Liters	1	2	3		
	Milliliters	1,000			4,000	

Problem Solving

Solve.

15. Sally buys 1 kg of grapes. She packs 200 g of grapes in her lunch. How many grams of grapes are left?
16. Jim buys 1 L of milk. He drinks 300 mL for breakfast. How many milliliters of milk are left?

Metric Capacity and MassCompare. Choose $>$, $<$, or $=$.

1. $50 \text{ mL} \bigcirc 5 \text{ L}$

$>$	$<$	$=$
G	W	B

2. $4,000 \text{ mL} \bigcirc 3 \text{ L}$

$>$	$<$	$=$
A	B	C

3. $3 \text{ L} \bigcirc 400 \text{ mL}$

$>$	$<$	$=$
L	M	N

4. $1 \text{ L} \bigcirc 70 \text{ mL}$

$>$	$<$	$=$
L	B	T

5. $8 \text{ L} \bigcirc 7,500 \text{ mL}$

$>$	$<$	$=$
A	M	C

6. $10,000 \text{ mL} \bigcirc 11 \text{ L}$

$>$	$<$	$=$
B	C	D

7. $12 \text{ L} \bigcirc 12,000 \text{ mL}$

$>$	$<$	$=$
T	H	E

8. $75,000 \text{ mL} \bigcirc 80 \text{ L}$

$>$	$<$	$=$
I	C	U

9. $5 \text{ kg} \bigcirc 5,000 \text{ g}$

$>$	$<$	$=$
R	M	A

10. $400 \text{ g} \bigcirc 4 \text{ kg}$

$>$	$<$	$=$
U	R	I

11. $8,400 \text{ mL} \bigcirc 8 \text{ L}$

$>$	$<$	$=$
O	H	M

12. $6,000 \text{ g} \bigcirc 6 \text{ kg}$

$>$	$<$	$=$
R	S	T

13. $1 \text{ kg} \bigcirc 70 \text{ g}$

$>$	$<$	$=$
H	I	J

14. $7 \text{ kg} \bigcirc 6,900 \text{ g}$

$>$	$<$	$=$
E	F	G

15. $5 \text{ kg} \bigcirc 69,000 \text{ g}$

$>$	$<$	$=$
P	R	S

16. $10,000 \text{ g} \bigcirc 12 \text{ kg}$

$>$	$<$	$=$
R	S	T

Your backpack or windbreaker is probably made out of nylon. Who invented nylon? To find out, write the code letter for each answer. Write the letters in the order of the exercises.

Convert Metric Units • Algebra

You can convert metric units to compare.

Metric Units	
Length	1 centimeter (cm) = 10 milliliters (mm)
	10 centimeters (cm) = 1 decimeter (dm)
	10 decimeters (dm) = 1 meter (m)
	1,000 meters (m) = 1 kilometer (km)
Mass	1 kilogram (kg) = 1,000 grams (g)
	1 gram (g) = 1,000 milligrams (mg)
Capacity	1 liter (L) = 1,000 milliliters (mL)

Convert 9 dm to centimeters (cm).

To convert a larger unit to a smaller unit, multiply.

Think: $1 \text{ dm} = 10 \text{ cm}$

$$9 \text{ dm} = ? \text{ cm}$$

$$9 \text{ dm} = 9 \times 10 \text{ cm}$$

$$9 \text{ dm} = 90 \text{ cm}$$

Convert 6,000 mg to grams (g).

To convert a smaller unit to a larger unit, divide.

Think: $1 \text{ g} = 1,000 \text{ mg}$

$$6,000 \text{ mg} = ? \text{ g}$$

$$6,000 \div 1,000 \text{ mg} = 6 \text{ g}$$

$$6,000 \text{ mg} = 6 \text{ g}$$

Write the number that makes each sentence true.

1. $5 \text{ m} = \underline{\hspace{2cm}} \text{ cm}$

2. $8 \text{ L} = \underline{\hspace{2cm}} \text{ mL}$

3. $6 \text{ kg} = \underline{\hspace{2cm}} \text{ g}$

4. $70 \text{ mm} = \underline{\hspace{2cm}} \text{ cm}$

5. $8 \text{ dm} = \underline{\hspace{2cm}} \text{ cm}$

6. $2 \text{ m} = \underline{\hspace{2cm}} \text{ dm}$

7. $2,000 \text{ mL} = \underline{\hspace{2cm}} \text{ L}$

8. $300 \text{ cm} = \underline{\hspace{2cm}} \text{ m}$

9. $9 \text{ cm} = \underline{\hspace{2cm}} \text{ mm}$

10. $70 \text{ dm} = \underline{\hspace{2cm}} \text{ m}$

11. $5,000 \text{ g} = \underline{\hspace{2cm}} \text{ kg}$

12. $40 \text{ cm} = \underline{\hspace{2cm}} \text{ dm}$

Convert Metric Units • Algebra

Write the number that makes each sentence true.

- | | | |
|--------------------------------|--------------------------------|------------------------------|
| 1. 5 m = _____ cm | 2. 2 L = _____ mL | 3. 7 kg = _____ g |
| 4. 10 mm = _____ cm | 5. 5 kg = _____ g | 6. 2 m = _____ dm |
| 7. 3,000 mL = _____ L | 8. 300 cm = _____ m | 9. 4,000 g = _____ kg |
| 10. 6,000 mL = _____ L | 11. 40 kg = _____ g | 12. 40 cm = _____ dm |
| 13. 700 cm = _____ m | 14. 10 L = _____ mL | 15. 2 km = _____ m |
| 16. 10,000 g = _____ kg | 17. 6,000 cm = _____ m | 18. 4 m = _____ mm |
| 19. 20 cm = _____ mm | 20. 3 dm = _____ mm | 21. 5 L = _____ mL |
| 22. 10 m = _____ cm | 23. 5 cm = _____ mm | |
| 24. 600 mm = _____ cm | 25. 8,000 mm = _____ cm | |
| 26. 4,000 m = _____ km | 27. 7,000 mL = _____ L | |
| 28. 20,000 mL = _____ L | 29. 70,000 g = _____ kg | |

Compare. Write $>$, $<$, or $=$.

- | | | |
|---------------------------|----------------------------|-----------------------------|
| 30. 5,000 g ○ 5 kg | 31. 20 L ○ 200 mL | 32. 50 cm ○ 6 dm |
| 33. 60 cm ○ 6 m | 34. 300 cm ○ 3 m | 35. 2,500 mL ○ 2 L |
| 36. 3 km ○ 300 m | 37. 900 mm ○ 9 cm | 38. 13 L ○ 1,300 mL |
| 39. 500 dm ○ 5 dm | 40. 7 dm ○ 7,000 mm | 41. 18,000 mL ○ 18 L |

Problem Solving

Solve.

- | | |
|---|---|
| 42. Dottie has 1 kg 200 g of food for her cat. How many grams of cat food does she have? | 43. A 1-L bottle of water is half full. How many milliliters of water are in the bottle? |
|---|---|

Convert Metric Units • Algebra

Play a game with your classmates.

Use index cards to make the cards shown below.

Follow instructions on how to play.

10 mm	1 cm	5 km	500 cm	1,000 mm	1 m
100 cm	1 km	10 cm	100 mm	1 m	20 m
40 m	5 m	200 dm	4 dm	5,000 m	1 m
1,000 m	10 dm	20L	20,000 mL	5L	5,000 mL
500g	0.5 kg	59 kg	59,000 g	150,000 g	150 kg

How to Play

- Mix up the cards and place them face down. Players take turns turning over two cards.
- If all players agree that the measurements on the two cards are equivalent, the player who turned them over keeps the cards and takes another turn. If the cards are not equivalent, turn them face down again. The next player turns over two cards.
- Play until there are no more cards left. The player with the most pairs of cards wins.

Problem Solving: Strategy

Logical Reasoning

Page 413, Problem 3

Dan needs to put 6 cups of sea salt into the saltwater tank. He has a 7-cup container and a 5-cup container. How can he use the containers to measure 6 cups?

Step 1**Read****Be sure you understand the problem.**

Read carefully.

What do you know?

- Dan needs to put _____ cups of sea salt in a saltwater tank.
- Dan has containers that hold _____ cups and _____ cups.

What do you need to find?

- You need to find how to use the containers to measure _____ cups.

Step 2**Plan****Make a plan.**

Choose a strategy.

Use logical reasoning to solve the problem.

You can use the difference in the amount each container can hold to measure exactly 6 cups.

- Logical Reasoning
- Draw a Picture or Diagram
- Make a Graph
- Act It Out
- Make a Table or List
- Find a Pattern
- Guess and Check
- Write an Equation
- Work Backward
- Solve a Simpler Problem

Problem Solving: Strategy

Logical Reasoning

Step 3**Solve****Carry out your plan.**

Complete the table. It will show how to use the 7-cup container and the 5-cup container to measure exactly 6 cups.

Steps	Sea Salt in 7-cup Container	Sea Salt in 5-cup Container	Sea Salt in Tank
1. Fill the 7-cup container.		0	0
2. Fill the 5-cup container from the 7-cup container.		5 cups	0
3. Pour what is left in the 7-cup container into the tank.	0	5 cups	
4. Repeat steps 1–3. How much sea salt is in the tank now?	0	5 cups	
5. Repeat steps 1–3. How much sea salt is in the tank now?	0	5 cups	

Step 4**Look Back****Is the solution reasonable?**

Reread the problem.

How can you check your answers?

Practice

1. A worker has a 4-gallon pail and a 9-gallon pail. How can he use them to fill a 10-gallon tank with water?

2. Marcia arrives at the theater 10 minutes before Sam. Sam arrives 25 minutes after Lynn. Paul arrives 10 minutes before Lynn. Lynn gets to the theater at 6:30 P.M. When do the others arrive at the theater?

Problem Solving: Strategy

Logical Reasoning

Use logical reasoning to solve each problem.

- 1.** An aquarium worker needs to fill a tank with 10 gallons of water. He has an 8-gallon pail and a 6-gallon pail. How can he use the pails to get exactly 10 gallons of water in the tank?
-
-

- 3.** The parrot house has 2 times as many birds as the toucan house. The toucan house has 3 more birds than the jay house. The jay house has 6 birds. How many birds do the other houses have?
-
-

- 2.** Simon needs to put 9 cups of sea salt into a saltwater tank. He has a 10-cup container and a 7-cup container. How can Simon use the containers to measure 9 cups?
-

- 4.** The parrots get food 20 minutes before the toucans. The toucans get food 15 minutes after the jays. The jays get food 30 minutes after Bird World opens. Bird World opens at 10:00 A.M. When does each kind of bird get food?
-
-

Mixed Strategy Review

Solve. Use any strategy.

- 5. Language Arts** Kenny writes a 740-word review of a play. The review needs to be cut so that it has 500 words. How many words have to be cut?
-

Strategy: _____

- 7.** A bandstand is 40 feet wide by 80 feet long. It is built from wood planks that are 5 feet wide by 10 feet long. How many planks wide is the bandstand? How many planks long?
-
-

Strategy: _____

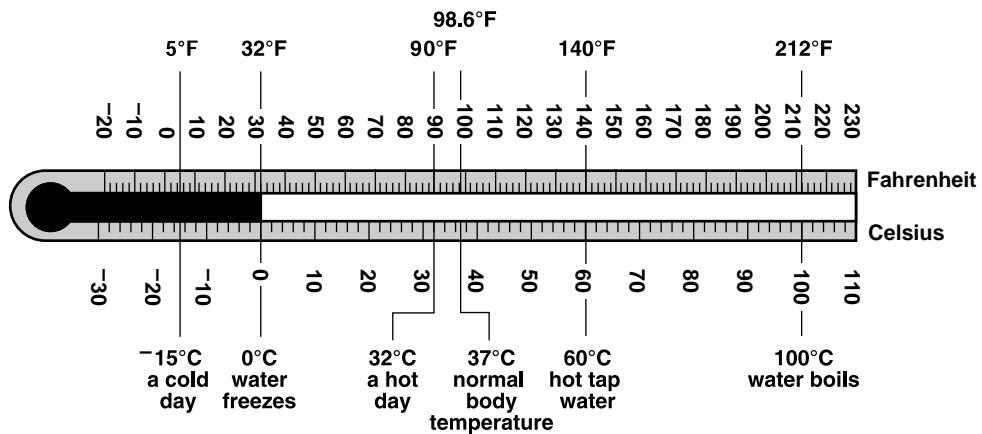
- 6.** There are 24 cars in the theater parking lot. There are 3 times as many 4-door cars as 2-door cars. How many of each kind of car are there?
-

Strategy: _____

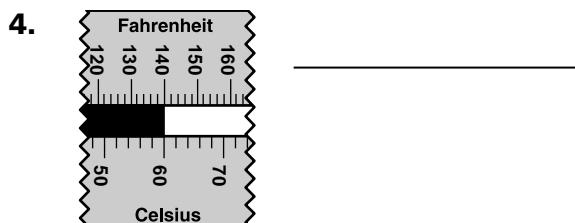
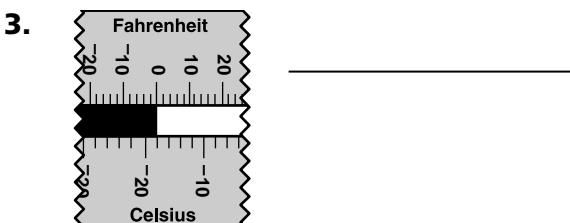
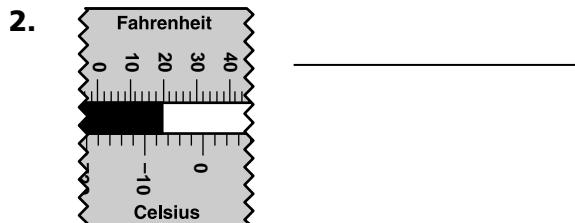
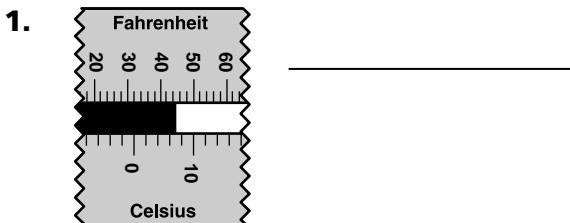
- 8. Write a problem** which you could solve by using logical reasoning. Share it with others.
-
-

Temperature

Temperature is measured in degrees Celsius ($^{\circ}\text{C}$) or in degrees Fahrenheit ($^{\circ}\text{F}$). Compare the two scales shown below.



Write the temperature in degrees Celsius ($^{\circ}\text{C}$) and degrees Fahrenheit ($^{\circ}\text{F}$).



Circle the letter of the better estimate.

- | | | |
|---------------------------------------|--------------------------|--------------------------|
| 5. the temperature of cold water | A. 10°C | B. 10°F |
| 6. the temperature of warm water | A. 100°C | B. 100°F |
| 7. the temperature of a fever | A. 39°C | B. 39°F |
| 8. room temperature | A. 70°C | B. 70°F |
| 9. temperature at an outdoor ice rink | A. 20°C | B. 20°F |
| 10. temperature on a hot beach | A. 30°C | B. 30°F |
| 11. comfortable outdoor temperature | A. 10°C | B. 10°F |

Temperature

Give a reasonable temperature for each. Then use Fahrenheit and Celsius thermometers to measure each temperature.

1. warm water _____
2. temperature in freezer _____

3. cool water _____
4. temperature in cafeteria _____

5. temperature outside _____
6. temperature in classroom _____

Circle the letter of the better estimate.

7. to go skiing A. 20°C B. 20°F
8. to swim in the swimming pool A. 80°C B. 80°F
9. to go to the beach A. 30°C B. 30°F
10. to sleep comfortably A. 20°C B. 20°F
11. to work in the garden A. 70°C B. 70°F
12. to shiver without a coat A. 20°C B. 20°F
13. to picnic in the park A. 25°C B. 25°F
14. to rake leaves A. 10°C B. 10°F
15. to go sledding in the snow A. 30°C B. 30°F
16. to walk your dog A. 65°C B. 65°F

Problem Solving

Solve.

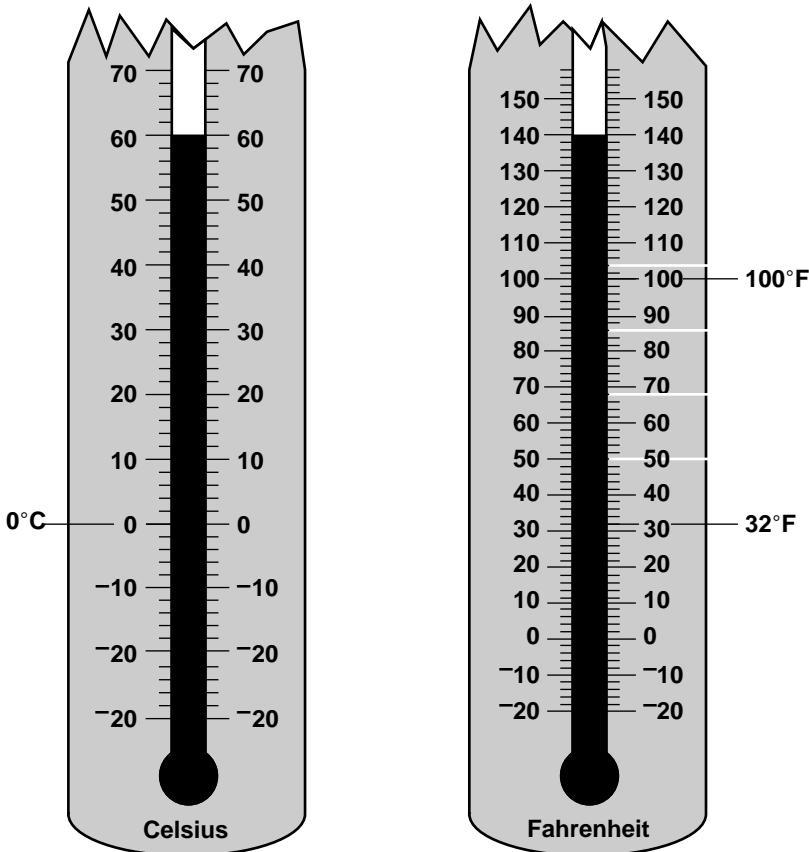
17. The temperature of a can of soup on the shelf is 45°F . Joy heats the soup to 25°F above its shelf temperature. What is the soup's temperature now?

18. At noon the temperature outside was 10°C . At 9:00 P.M. the temperature was -5°C . By how much did the outdoor temperature drop?

Temperature

Label the thermometers below with the following temperatures:

10°C 20°C 30°C 40°C 50°F 68°F 86°F 104°F



The thermometers are drawn so that equivalent measures are the same height on both scales.

1. Write the equivalent temperatures in degrees Fahrenheit.
Use the thermometers above to help you.

$$10^{\circ}\text{C} = \underline{\hspace{2cm}}$$

$$20^{\circ}\text{C} = \underline{\hspace{2cm}}$$

$$30^{\circ}\text{C} = \underline{\hspace{2cm}}$$

$$40^{\circ}\text{C} = \underline{\hspace{2cm}}$$

2. When the Celsius temperature changes 10 degrees, how much does the Fahrenheit temperature change? _____
3. What pattern do you see that will help you predict Fahrenheit temperatures based on Celsius temperatures?

Problem Solving: Applying Math and Science

Which Color Heats Up More?

For this experiment you will need 3 aluminum cans of the same size and shape; a thermometer; a sheet each of white and black paper; a sheet of aluminum foil; and sand. Fill each can with the same amount of sand. Cover one can with black paper, one with white, and one with aluminum foil. Place the covered cans in the sun or under a lamp. Take temperature readings every 30 minutes, until you notice a change. Record the new temperature in the chart. Allow the cans to remain in the sun for another 30 minutes. Then take and record the temperature of each.

Coverings	Start Temperature of Sand	Finish Temperature of Sand	Difference
Black Paper	_____°	_____°	_____°
White Paper	_____°	_____°	_____°
Aluminum Foil	_____°	_____°	_____°

Answer the questions.

- Find the difference between the start and finish temperatures of each can of sand. Show your work. Record the differences in the chart.

- Which can of sand heated up the most? The least?

Name _____

Problem Solving: Applying Math and Science

Which Color Heats Up More?

**Math &
Science**
WORKSHEET

- 3.** Subtract. Find the difference between the greatest and least temperature readings. Show your work. Is the difference large?

- 4.** Why did you put the cans in the sun or under a lamp?

- 5.** If you were playing outside on a sunny day, which color clothing might be warmer, light or dark? Why?

- 6.** Explain the results of the activity in terms of reflection or absorption of light.

**UNIT
10****Geometry****CHAPTER 19 • SUPPORT MATERIALS**

Lesson	Titles	Masters	Use with pages
19-1	3-Dimensional Figures	R19-1, P19-1, E19-1	430–433
19-2	2-Dimensional Figures	R19-2, P19-2, E19-2	434–437
19-3	Lines, Line Segments, and Rays	R19-3, P19-3, E19-3	438–439
19-4	Angles	R19-4, P19-4, E19-4	440–443
19-5	Triangles and Quadrilaterals	R19-5, P19-5, E19-5	444–446
19-6	Problem Solving: Skill Use a Diagram	R19-6, P19-6, E19-6	448–449
19-7	Parts of a Circle	R19-7, P19-7, E19-7	450–451

CHAPTER 20 • SUPPORT MATERIALS

Lesson	Titles	Masters	Use with pages
20-1	Congruent and Similar	R20-1, P20-1, E20-1	456–459
20-2	Transformations and Symmetry	R20-2, P20-2, E20-2	460–462
20-3	Problem Solving: Strategy Find a Pattern	R20-3, R20-3, P20-3	464–465
20-4	Perimeter	R20-4, P20-4, E20-4	466–469
20-5	Circumference	R20-5, P20-5, E20-5	470–473
20-6	Area	R20-6, P20-6, E20-6	474–476
20-7	Explore Volume	R20-7, P20-7, E20-7	478–479
	Problem Solving: Decision Making	Worksheet	482–483

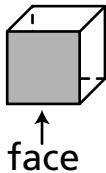
R—Reteach

P—Practice

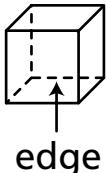
E—Enrich

3-Dimensional Figures

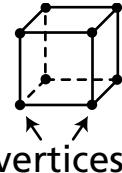
A 3-dimensional figure usually rests on one of its faces, which is called a **base**. Look at the cube below. Count the number of **faces**, **vertices**, and **edges** it has.



A cube has 6 faces.



A cube has 12 edges.



A cube has 8 vertices.

Complete the chart.

Figure	Name	Shape of Base	Number of Faces	Number of Edges	Number of Vertices
1.	triangular prism				
2.	rectangular prism				
3.	triangular pyramid				
4.	square pyramid				
5.	cone				
6.	cylinder				
7.	sphere				

Name _____

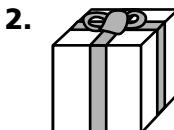
3-Dimensional Figures



Identify the 3-dimensional figure with the same shape as the objects below. Tell how many faces, edges, and vertices it has.



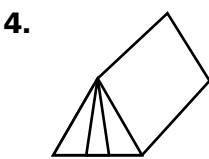
1.



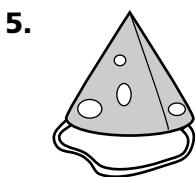
2.



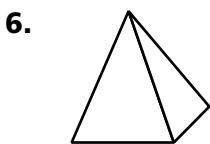
3.



4.

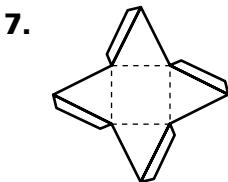


5.

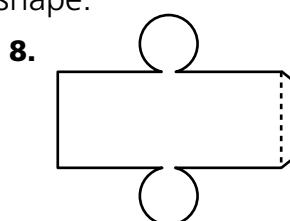


6.

Copy and fold. Identify the 3-dimensional shape.



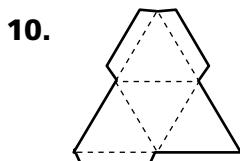
7.



8.



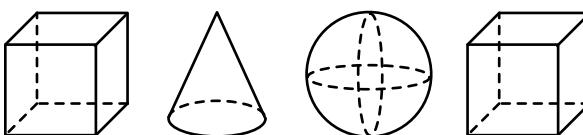
9.



10.

Algebra

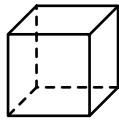
11. What could the next shape be?



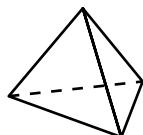
3-Dimensional Figures

The 3-dimensional figures shown below are called **polyhedrons**.

- Each face of a polyhedron is the same size and shape.
- Each edge of a polyhedron is the same length.
- Each angle of each face is equal.



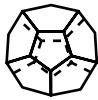
Cube



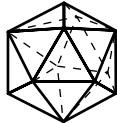
Tetrahedron



Octahedron



Dodecahedron



Icosahedron

Look at the cube.

- It has 6 square faces.
- Each square face has 4 edges.
- Since 2 sides meet at each edge, a cube has $(6 \times 4) \div 2 = 12$ edges.

Use the information about polyhedrons to complete the sentences.

- 1.** A tetrahedron has 4 triangular faces.

Each triangular face has _____ edges. $(4 \times \text{_____}) \div 2 = \text{_____}$
A tetrahedron has _____ edges.

- 2.** An octahedron has _____ triangular faces.

Each triangular face has _____ edges.
An octahedron has _____ edges.

- 3.** A dodecahedron has _____ pentagonal faces.

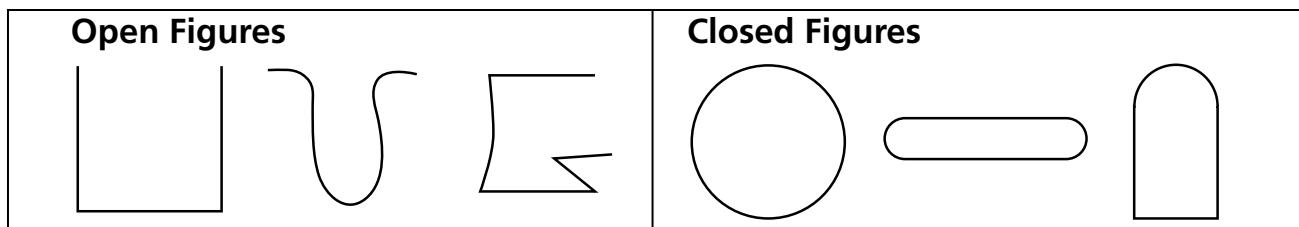
Each pentagonal face has _____ edges.
A dodecahedron has _____ edges.

- 4.** An icosahedron has 20 triangular faces.

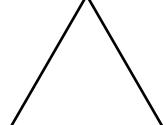
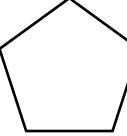
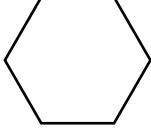
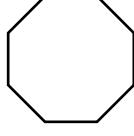
Each triangular face has _____ edges.
An icosahedron has _____ edges.

2-Dimensional Figures

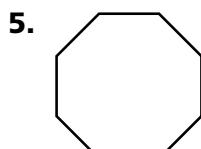
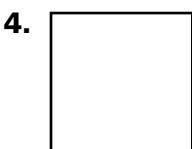
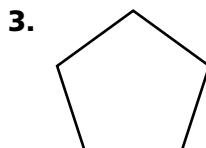
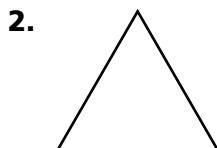
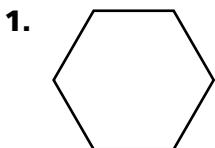
A polygon is a closed 2-dimensional figure that has straight sides.
These figures are **not** polygons.



These figures **are** polygons.

		
square 4 straight sides	rectangle 4 straight sides	triangle 3 straight sides
 pentagon 5 straight sides	 hexagon 6 straight sides	 octagon 8 straight sides

Identify each polygon.

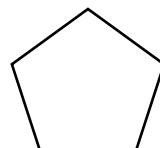
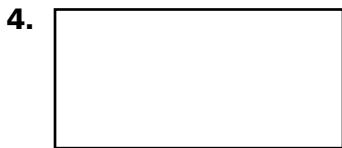
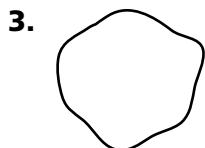
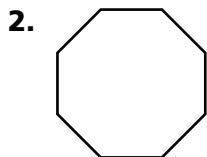
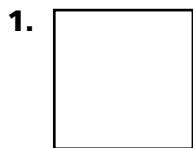


Name _____

2-Dimensional Figures



Tell whether each figure is open or closed. Is it a polygon? If so, classify the figure.



Draw the figure and identify it. Use a separate sheet of paper.

7. a 4-sided figure that is not a square

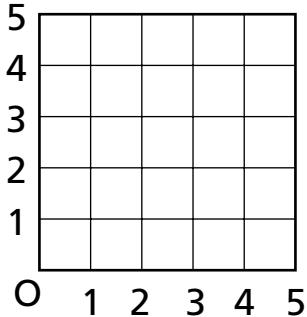
8. a 5-sided figure

9. a 6-sided figure

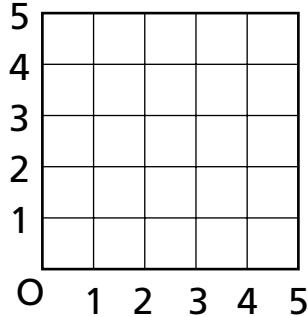
10. an 8-sided figure

Algebra Locate each set of points. Then connect the points to make a geometric figure. Identify the figure.

11. $(2, 2), (4, 3), (3, 5)$



12. $(2, 2), (5, 2), (5, 3), (2, 3)$



Name _____

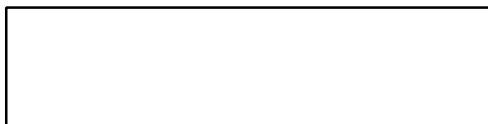
2-Dimensional Figures



A **tangram** is a Chinese puzzle that is made of 2-dimensional figures. The figures can be put together to form different shapes.

Cut out the five figures at the bottom of the page. Use all five figures to form each of the large polygons shown below.

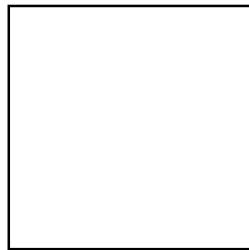
Tangram 1



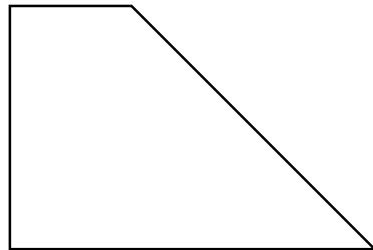
Tangram 2



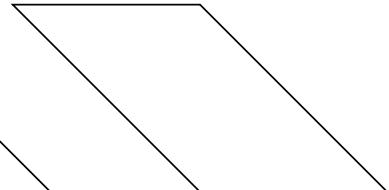
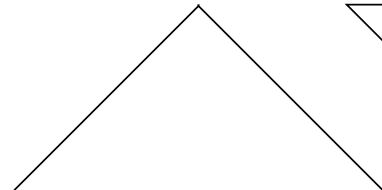
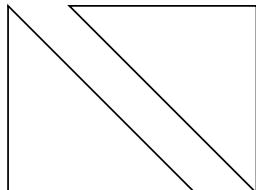
Tangram 3



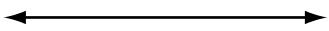
Tangram 4



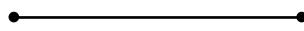
Tangrams



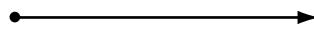
Lines, Line Segments, and Rays



A **line** goes on forever in both directions



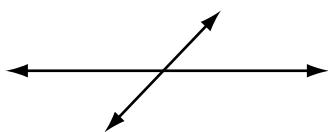
A **line segment** is part of a line. It has two endpoints.



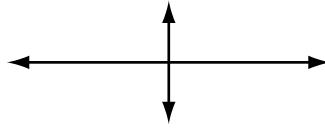
A **ray** has one endpoint.



Parallel lines never meet.



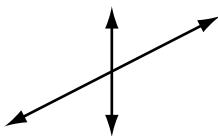
Intersecting lines meet.



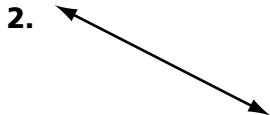
Perpendicular lines form square corners.

Identify each figure.

1.



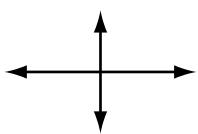
2.



3.



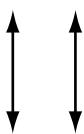
4.



5.



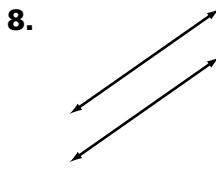
6.



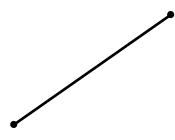
7.



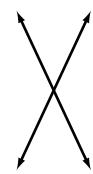
8.



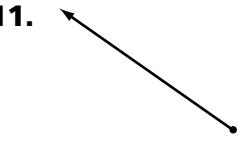
9.



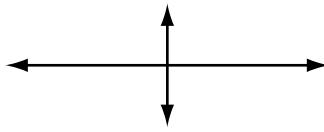
10.



11.



12.



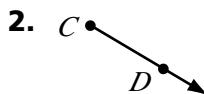
Name _____

Lines, Line Segments, and Rays

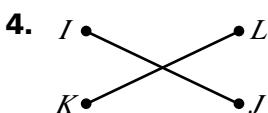


Identify each figure.

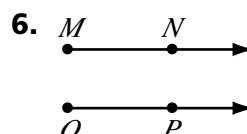












Algebra Locate each set of points. Then connect the points to draw line segments. Classify them as perpendicular or parallel.

7. Line segment OP :

(1, 4) (2, 4) (3, 4) (4, 4)

- Line segment QR :

(1, 2) (2, 2) (3, 2) (4, 2)

6 ● ● ● ● ● ●

5 ● ● ● ● ● ●

4 ● ● ● ● ● ●

3 ● ● ● ● ● ●

2 ● ● ● ● ● ●

1 ● ● ● ● ● ●

1 2 3 4 5 6

Problem Solving

Solve.

8. Compare the number of line segments that form the edges of a pentagon with the number of line segments that form a rectangle. Write a comparison statement.

Lines, Line Segments, and Rays

1. Look at Figure A and Figure B below. Can you trace each figure without lifting your pencil or retracing any line? _____

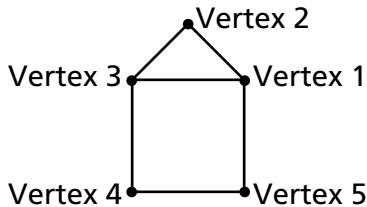


Figure A

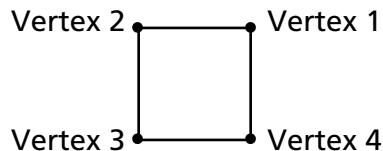


Figure B

2. Can you trace Figure B without lifting your pencil if you start at any vertex?
-

3. Can you trace Figure A without lifting your pencil if you start at any vertex?
-

4. In Figure A, Vertex 4 has an even number of lines that meet at that point. This vertex can be called an even vertex. Vertex 3 has an odd number of lines meeting at that point. Vertex 3 can be called an odd vertex. Label each vertex in the figures. Write E for an even vertex and O for an odd vertex.

5. Can you trace the figures below without lifting your pencil or retracing any line? Label each vertex even or odd.
-

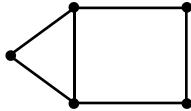


Figure C

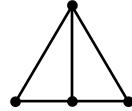


Figure D

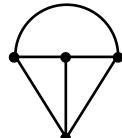
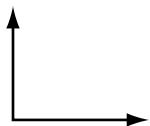


Figure E

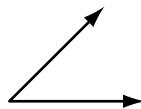
6. What conclusion can you draw about tracing a figure without lifting your pencil?
Hint: Think about the types of vertices a figure has.
-
-
-
-

Angles

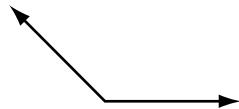
Angles are formed by two rays that have the same endpoint.



A **right** angle forms a square corner.



An **acute** angle is less than a right angle.

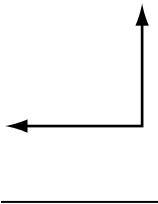


An **obtuse** angle is greater than a right angle.

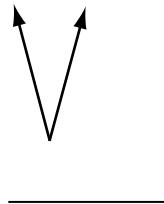
Identify each angle.

Write acute, obtuse, or right. Use the corner of a sheet of paper to help you.

1.



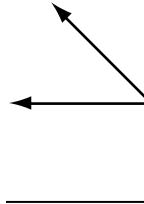
2.



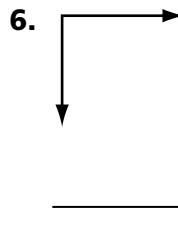
3.



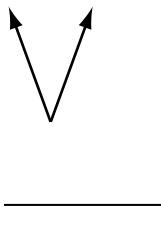
4.



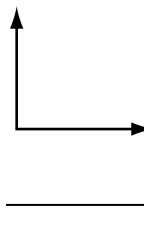
5.



7.

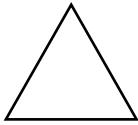


8.



Complete.

9.



This triangle has 3
_____ angles.

10.



This kite has 2
_____ angles and
2 _____ angles.

11.



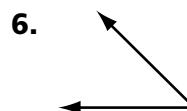
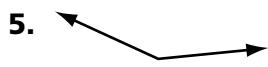
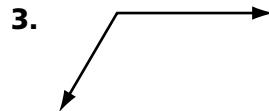
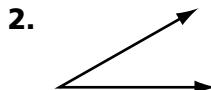
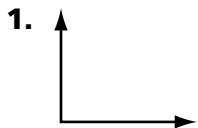
This pentagon has
2 _____ angles,
2 _____ angles, and
1 _____ angle.

Name _____

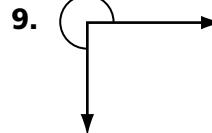
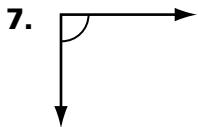
Angles

P 19-4
PRACTICE

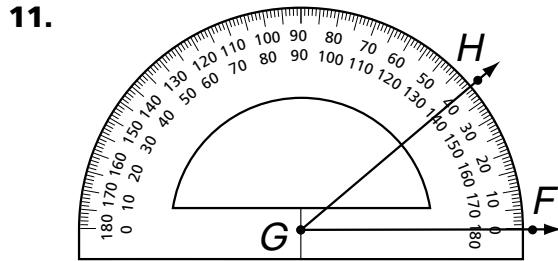
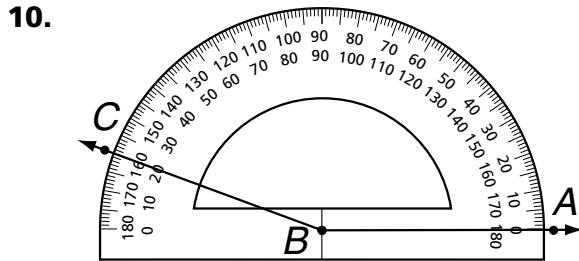
Write *acute*, *obtuse*, or *right* for each angle.



Write the degree measure and fraction of a turn for each angle.



Write the degree measure and classify each angle.

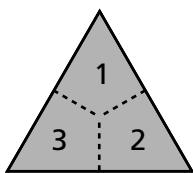


Angles

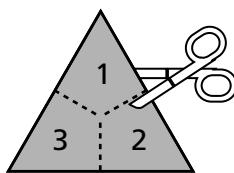
What is the sum of the measures of the angles of a triangle?

The sum will always be 180° , or a straight line.

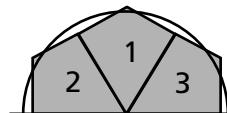
Follow the steps below.


Step 1

Draw a triangle. Then draw lines to show each angle. Shade and number the 3 angles.


Step 2

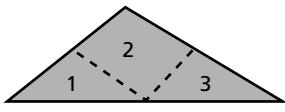
Cut along the lines.


Step 3

Place the corners of the pieces together to form a straight line.

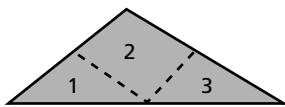
Follow Steps 1–3 for each triangle below.

1.



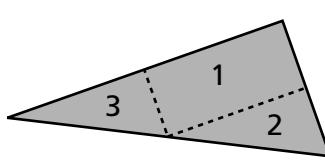
Triangle 1

2.



Triangle 2

3.



Triangle 3

4. What do you think the sum of the measures of the angles of a quadrilateral is?
-

5. Draw a quadrilateral. Draw lines to show the 4 angles. Then shade the corners, cut them out, and put them together to see if you are correct.

Triangles and Quadrilaterals

You can classify a triangle by the lengths of its sides or the measures of its angles.

An **equilateral triangle** has three sides of equal length.

An **acute triangle** has three acute angles (less than 90°).

An **isosceles triangle** has at least two sides of equal length.

An **obtuse triangle** has one obtuse angle (greater than 90° and less than 180°).

A **scalene triangle** has no sides of equal length.

A **right triangle** has one right angle (exactly 90°).

All quadrilaterals have 4 sides and 4 angles.

A **square** has 4 equal sides and 4 right angles.

A **rhombus** has 4 equal sides. Its opposite sides are parallel.

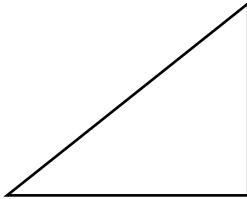
A **rectangle** has 4 right angles. Its opposite sides are equal and parallel.

A **trapezoid** has 1 pair of parallel sides.

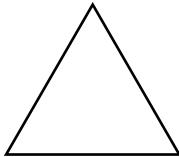
A **parallelogram** has opposite sides that are equal and parallel.

Classify each triangle by its sides and angles.

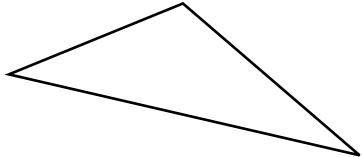
1.



2.



3.



Identify each quadrilateral in as many ways as you can.

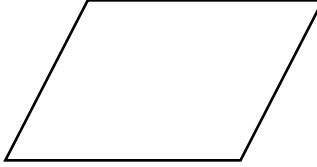
4.



5.



6.

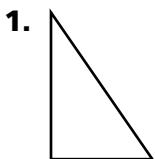


Name _____

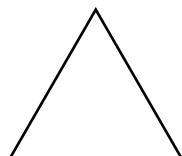
Triangles and Quadrilaterals



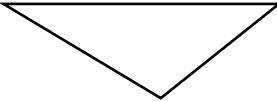
Classify each triangle as *equilateral*, *isosceles*, or *scalene*.
Then classify each triangle as *right*, *acute*, or *obtuse*.



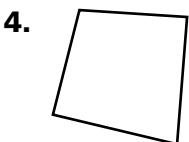
2.



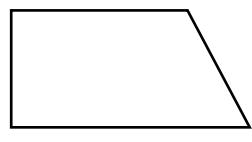
3.



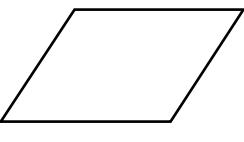
Identify each figure.



5.



6.



Tell if each statement is true or false. Explain why.

7. All rectangles are parallelograms. _____

8. All squares are rhombuses. _____

9. Some right triangles are also equilateral triangles. _____

Problem Solving

Solve.

10. Sue's desk has equal sides of 20 inches and 4 right angles. Nancy's desk has two sides of 20 inches, two sides of 30 inches, and 4 right angles. Both say their desks are rectangles. Who is correct?

11. Mike makes a square out of wooden sticks. He pushes one corner of the square and makes a rhombus. How are the square and rhombus alike? How are they different?

Triangles and Quadrilaterals



Play this bingo game with 2–3 players.

- Work together to make the bingo game. On an index card, write each of the names for geometric figures shown in the box below.
- Then draw each figure in one of the squares on the bingo card below. Be sure to mix up the names.
- Shuffle the index cards and place them face down.
- Players take turns drawing index cards. Each player places a game marker on the matching figure drawn on the bingo card.
- The first player to have markers that fill any row, column, or diagonal wins.

parallel lines	intersecting lines	perpendicular lines	line segment
parallelogram	ray	chord	diameter
radius	right angle	acute angle	obtuse angle
rhombus	octagon	cube	pentagon
hexagon	acute triangle	equilateral triangle	trapezoid
isosceles triangle	obtuse triangle	right triangle	scalene triangle

B**I****N****G****O**

		FREE		

Problem Solving: Skill

Use a Diagram

Delia wants to pin 4 photographs to a bulletin board. She wants to tack each of the four corners. The sides can overlap. What is the least number of tacks she can use?

Step 1**Read****Be sure you understand the problem.**

- What do you know?

There are _____ photographs. Each photograph has 4 corners.

The sides can overlap.

- What do you need to find?
-

Step 2**Plan****Make a plan.**

You can draw a diagram to solve.

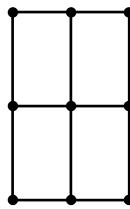
Step 3**Solve****Carry out your plan..**

Draw a rectangle. Divide it into four equal sections.

Draw dots at each intersecting point.

How many dots did you draw?

Delia can use _____ tacks.

**Step 4****Look Back**

How could you solve this using a different plan?

Practice

Use a diagram to solve each problem.

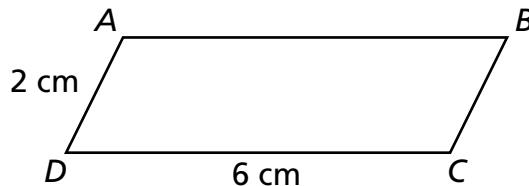
1. Fiona, Beth, Rex, and Ethan belong to the Chess Club. Carter, Alex, Fiona, Gina, and Beth belong to the Hiking Club. How many people are in the two clubs altogether?
2. Sue, Ross, Philip, and Alison all want to play each other in a game of chess. How many games in all will be played?

Problem Solving: Skill

Use a Diagram

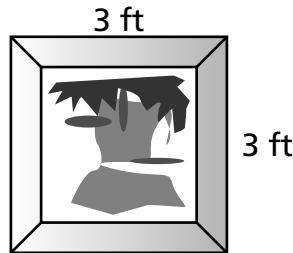
Solve.

1. This figure is a parallelogram. Suppose you draw a line segment from point A to point C. The length of this segment is 5 cm. How would you describe the two new figures you made?



Solve. Use data from the illustration to answer problems 2–6.

2. Orson designed this picture frame. What shapes make up the frame? What shape is made by the outer edge of the frame?



3. Suppose Robert added 2 feet to the height of the frame, but kept the width the same. What shape would be made by the outer edge of the frame?

4. Wendy drew a triangle in which three angles were less than 90° . What kind of triangle did she draw?

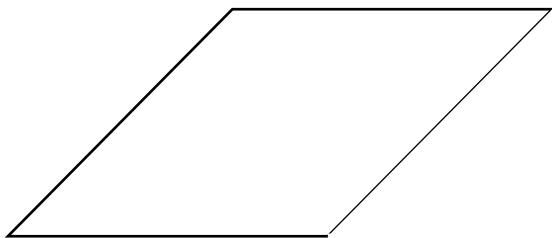
5. Robert drew a square. Then he divided the shape into two parts by drawing a line from one corner of the square, through the center, to the opposite corner. Name two ways to describe the two smaller shapes he created.

6. Max draws a rectangle with sides of 6 inches and 9 inches. He uses one of the short sides of the rectangle as a side of a scalene triangle. Can the lengths of the other two sides of the triangle be 6 inches? Explain.

Problem Solving: Skill

Use a Diagram

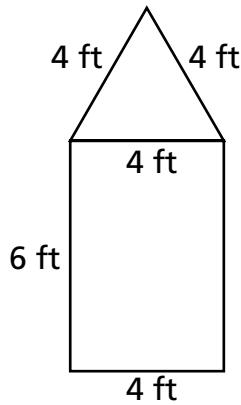
Use the illustration to solve problems 1 and 2.



1. Hugh used the above figure in a painting. Describe the figure in more than one way.

2. What shape could Hugh add to the right side of the figure so that the figure becomes a trapezoid? Add the shape to the figure.

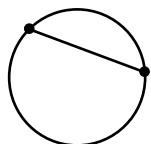
Use the illustration below to solve problems 3 and 4.



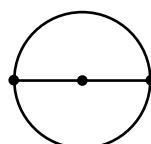
3. Phyllis designed this doorway. What two shapes make up this doorway?

4. What is the length of the missing side of the doorway?

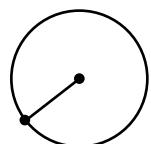
Parts of a Circle



A **chord** is a line that connects two points on a circle.

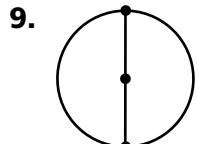
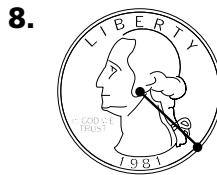
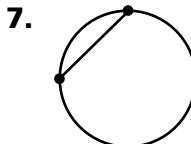
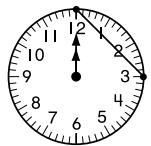
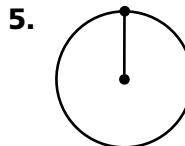
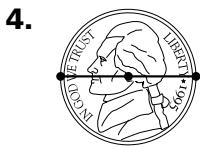
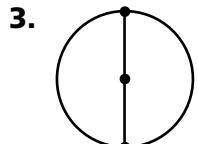
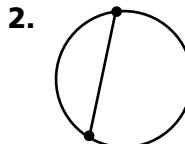
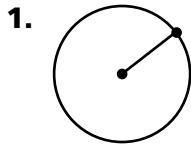


A **diameter** is a chord that goes through the center of the circle.



A **radius** is the distance from the center of a circle to every point on a circle.

Identify the parts of a circle.



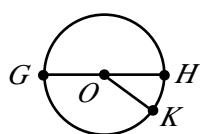
Name _____

Parts of a Circle

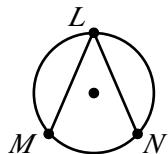


Identify the parts of a circle.

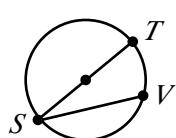
1.



2.



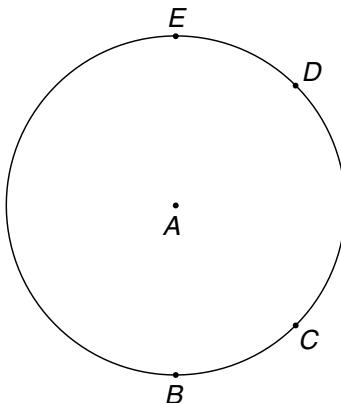
3.



Use data from the circle for problems 4–9.

Locate each pair of points on the circle.

Name the line segments they create and classify them as parts of a circle.



4. A, D

5. E, B

6. C, D

7. D, B

8. A, C

9. B, C

Problem Solving

Solve.

10. Alan drew a chord through the center of a circle. What part of the circle did Alan draw?

11. Make a point below. Use a Triman compass to draw a circle. Then draw and label a diameter, a radius, and a chord.

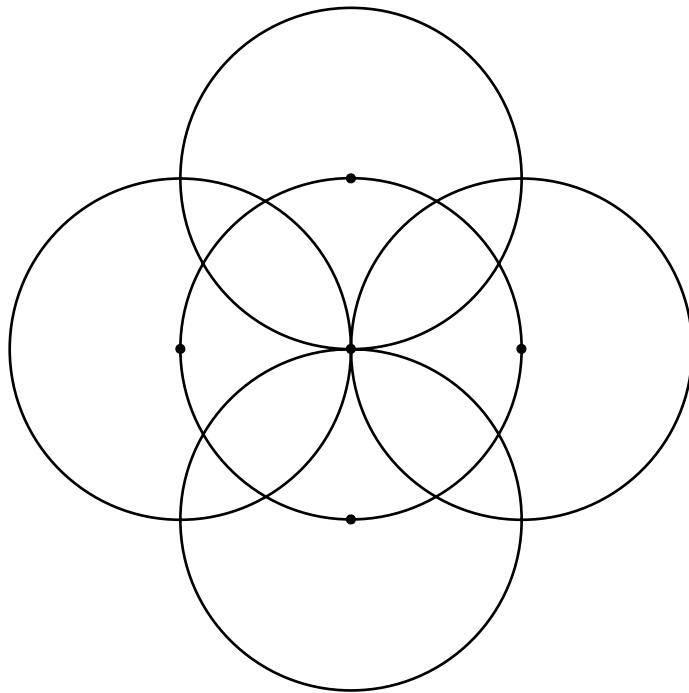
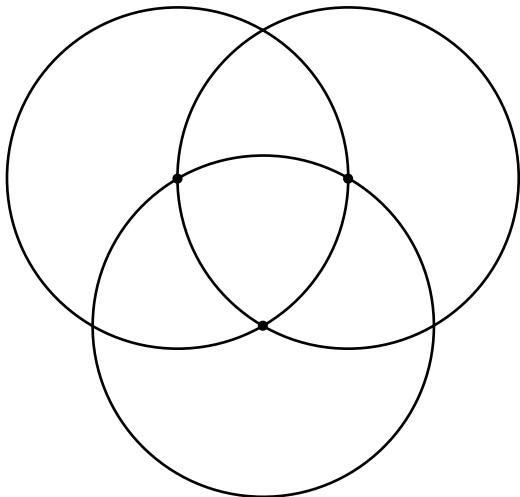
Name _____

Parts of a Circle

E 19-7
ENRICH

Use a Triman compass to draw the designs.
Color each design in an interesting way.

Hint: You may want to practice on a separate sheet of paper first.

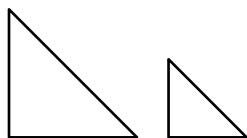


Name _____

Congruent and Similar

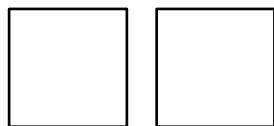


Similar Figures



- same shape
- different sizes

Congruent Figures



- same shape
- same size

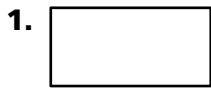
Not congruent Not similar



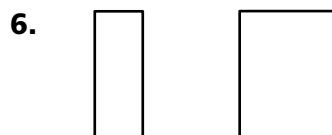
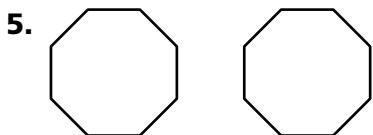
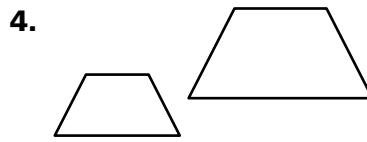
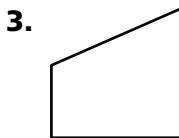
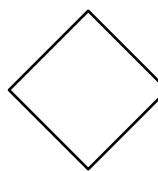
- not the same shape
- not the same size

To see if figures are congruent, trace one figure. If you can make it fit exactly on top of the other figure, the figures are congruent.

Write whether the figures are congruent. If they are not congruent, write whether the figures are similar. You may trace the figures.



2.



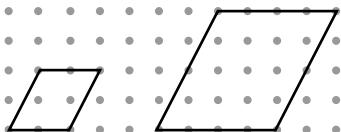
Name _____

Congruent and Similar

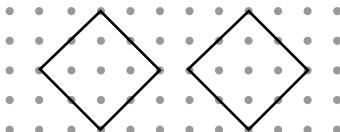


Write whether the figures are similar. Then write whether the figures are congruent.

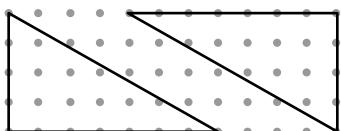
1.



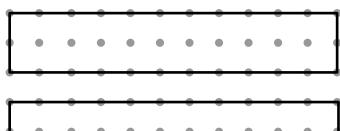
2.



3.

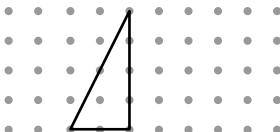


4.

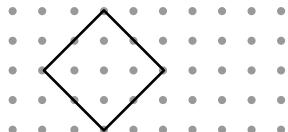


Copy each figure on a separate piece of dot paper. Then draw one congruent figure and one similar figure.

5.



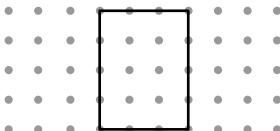
6.



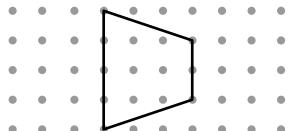
7.



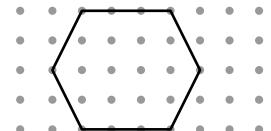
8.



9.



10.



Algebra Use separate grid paper.

11. Draw a figure on a coordinate grid. Then draw a similar figure that is one-half the size of the original. Write the ordered pairs for all vertices.
12. Draw a figure on a coordinate grid. Then draw a similar figure with the length of all sides 2 times the sides of the original. Write the ordered pairs for all vertices.

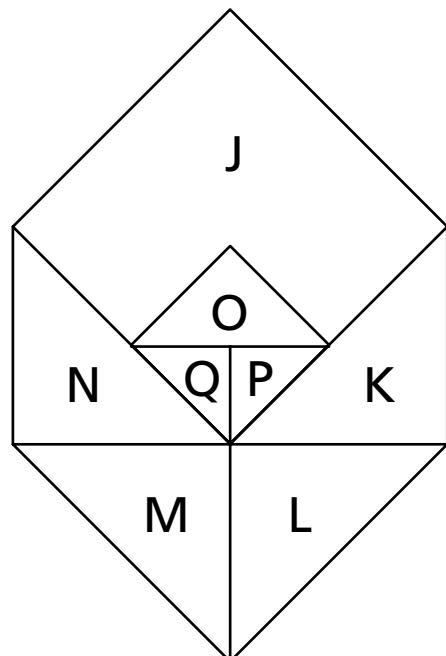
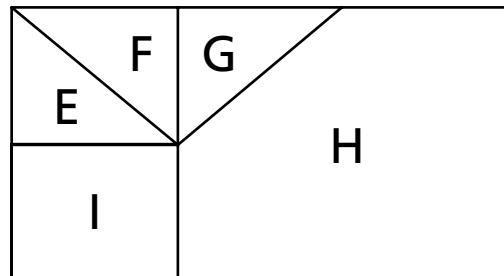
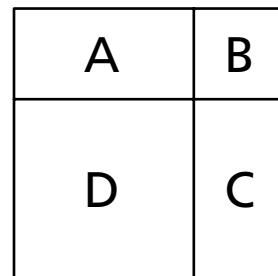
Congruent and Similar

Can you find the similar and congruent figures in the drawings below?

Each figure in the drawings can be named with one or more letters.
Look at the first drawing. Figure A is the rectangle in the upper left corner. Figure AB is the top rectangle.

Complete the sentences. The first one is done for you.

1. Figure B is similar to Figure ABCD.
 2. Figure C is congruent to Figure _____.
 3. Figure BC is congruent to Figure _____.
 4. Figure EF is similar to Figure _____.
 5. Figure F is congruent to Figure _____ and Figure _____.
 6. Figure I is _____ to Figure EF.
 7. How many sets of congruent and similar figures can you find in the drawing at the right? Name each pair or set of figures.
-
-
-
-

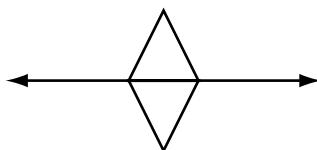


Transformations and Symmetry

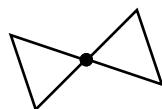
You can move figures in different ways.



You can **slide** a figure across a line to show a **translation**.



You can **flip** a figure over a line to show a **reflection**.



You can **turn** a figure around a point to show a **rotation**.

Follow these steps to find out if a figure has bilateral symmetry.

Trace Figure A and cut it out. Fold it along one of the dashed lines. The two halves match. The dashed line is a **line of symmetry**. The figure has **bilateral symmetry**. Unfold the figure. Fold the figure along the other dashed lines. The halves match, so all the lines are lines of symmetry.

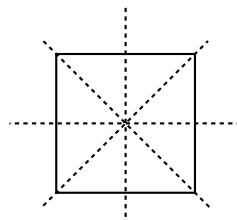


Figure A

Follow these steps to find out if Figure B has rotational symmetry.

Trace Figure B and cut it out. Place it on top of the original Figure B. Put your pencil point on the dot in the center. Turn the top figure 90° . The top figure matches the original figure. Turn the top figure 180° . The figures match. Figure B has **rotational symmetry**.

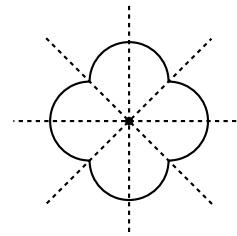
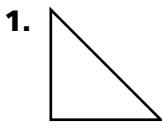
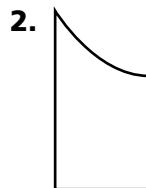
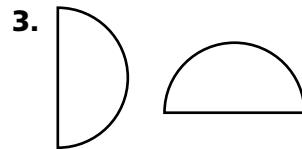


Figure B

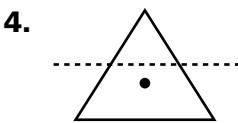
Write *translation*, *reflection*, or *rotation* to tell how each figure was moved.

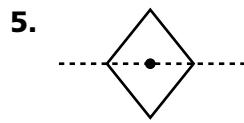


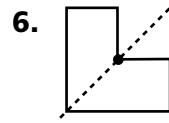




Look at each figure. Is the dashed line a line of symmetry? Then trace each figure. Turn it to see if it has rotational symmetry.







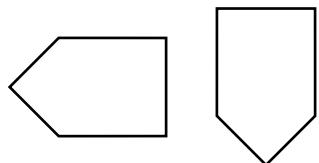
Name _____

Transformations and Symmetry



Write *translation*, *reflection*, or *rotation* to describe how the figure was moved.

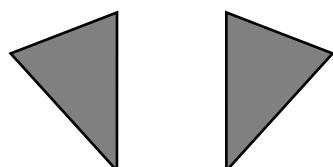
1.



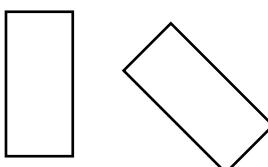
2.



3.

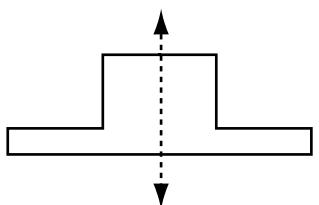


4.

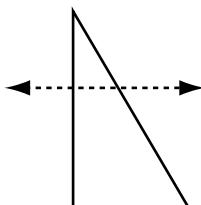


Is the dotted line a line of symmetry?

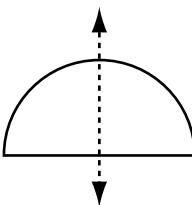
5.



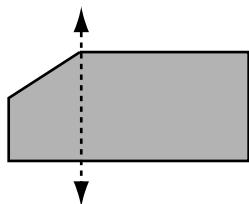
6.



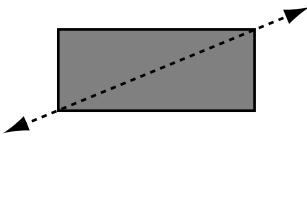
7.



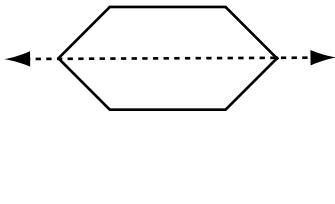
8.



9.



10.



11. On a separate sheet of paper, draw a figure with rotational symmetry.

12. On a separate sheet of paper, draw a figure with bilateral symmetry.

Transformations and Symmetry

Cut out the movement cards and shapes. Turn them face down in two separate piles.

Choose one shape card. On another sheet of paper, trace that shape. Then choose a movement card. Follow the instructions on that card. Return the movement card to the bottom of the pile, and choose another movement card. Repeat with three more movement cards.

Trade your artwork with a partner. Try to guess which movement cards your partner chose to create the drawing.

Movement Cards

Translation

Slide your shape 1 inch to the right.
Trace it again.

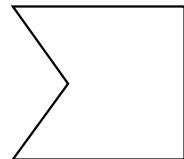
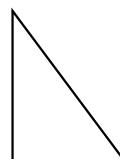
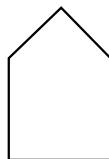
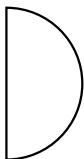
Reflection

Flip over your shape to the right.
Trace it again.

Rotation

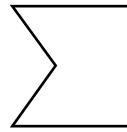
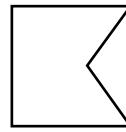
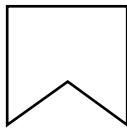
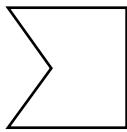
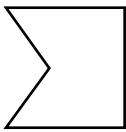
Turn your shape around a point.
Trace it again.

Shape



Sample Artwork

Which cards were chosen to draw this artwork?



Create another shape and another rule for a movement cards.

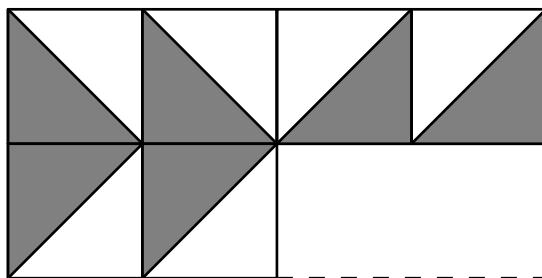
Problem Solving: Strategy

Find a Pattern

Page 465, Problem 2

What shapes do you see in a repeated pattern?

How are the figures moved?

**Step 1****Read**

Be sure you understand the problem.

Read carefully.

What do you know?

- The illustration shown is a tessellation.

What do you need to find?

- You need to identify _____
- _____

Step 2**Plan**

- Logical Reasoning
- Draw a Picture or Diagram
- Make a Graph
- Act It Out
- Make a Table or List
- Find a Pattern
- Guess and Check
- Write an Equation
- Work Backward
- Solve a Simpler Problem

Make a plan.

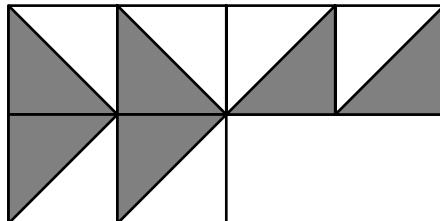
Choose a strategy.

Looking for a pattern will help you solve the problem.

Find shapes that look familiar. Look for a pattern to see how these shapes have been moved.

Problem Solving: Strategy

Find a Pattern

Step 3**Solve****Carry out your plan.**

Look for shapes you know. What shapes do you see?

To find how these shapes have been moved, look for examples of rotations, translations, and reflections.

What is one way to describe how the figures moved?

Step 4**Look Back****Is the solution reasonable?**

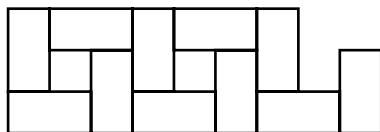
Reread the problem.

Did you answer the question? Yes _____ No _____

What other strategies could you use to solve the problem?

Practice

Use data from this tessellation to solve.



1. What shapes do you see in a repeated pattern? How are they moved?
2. Complete a few more shapes of the tessellation.

Problem Solving: Strategy

Find a Pattern

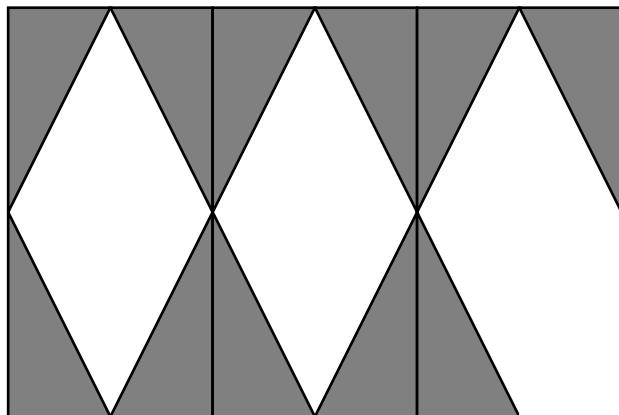
Use data from this tessellation to solve problems 1–4.

1. What shapes do you see in a repeated pattern?

2. How are the shapes moved?

3. Complete the missing piece of the pattern.

4. Suppose you extend this design. You have a total of 20 small right triangles. How many rhombuses will there be in all?



Mixed Strategy Review

Solve. Use any strategy.

5. Aaron buys 5 Picasso T-shirts for his family. A large T-shirt costs \$15 and a small T-shirt costs \$12. Aaron spends \$69. How many large T-shirts does he buy? How many small T-shirts does he buy?

Strategy: _____

7. Mr. Ervin has 32 jars of paint. He has small boxes that will hold 4 jars and a large box that will hold 6 jars. Which box should Mr. Ervin use if he wants to put an equal number of jars in each box? How many boxes will he need?

Strategy: _____

6. **Art** On May 15, 1990, a painting by Van Gogh sold for \$75,000,000. Two days later, a painting by Renoir sold for \$4,000,000 less than that amount. How much did Renoir's painting sell for?

Strategy: _____

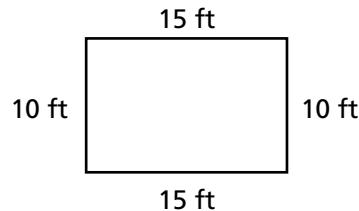
8. **Write a problem** that involves finding a pattern in a tessellation. Share it with others.

Perimeter

Perimeter is the distance around a closed figure. To find the perimeter, add the lengths of all the sides.

To find the perimeter of the rectangle, add the lengths of the sides.

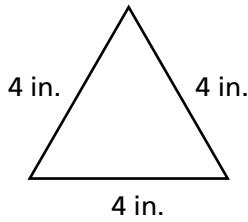
$$\begin{array}{r}
 10 \text{ ft} \\
 15 \text{ ft} \\
 10 \text{ ft} \\
 + 15 \text{ ft} \\
 \hline
 50 \text{ ft}
 \end{array}$$



The perimeter of the rectangle is 50 ft.

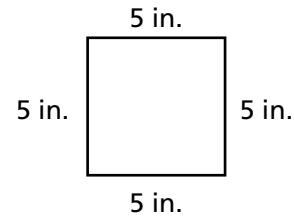
Find the perimeter of each figure.

1.



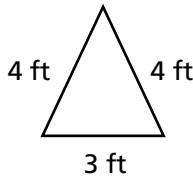
$$\underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad}$$

2.



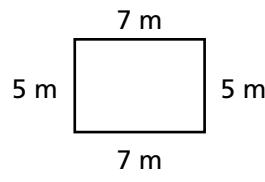
$$\underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad}$$

3.



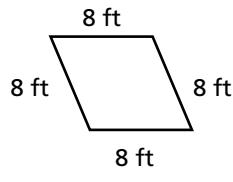
$$\underline{\quad}$$

4.



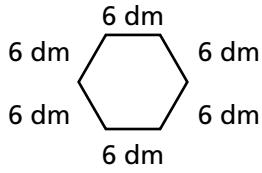
$$\underline{\quad}$$

5.



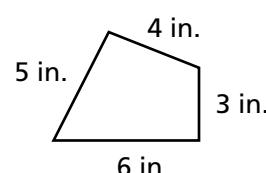
$$\underline{\quad}$$

6.



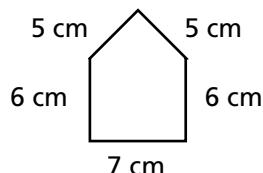
$$\underline{\quad}$$

7.



$$\underline{\quad}$$

8.



$$\underline{\quad}$$

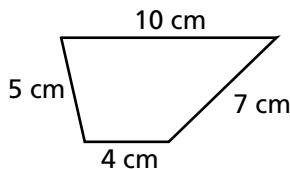
Name _____

Perimeter

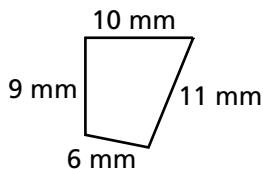


Find the perimeter of each figure.

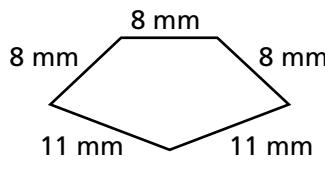
1.



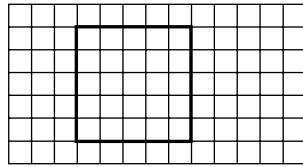
2.



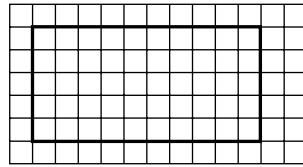
3.



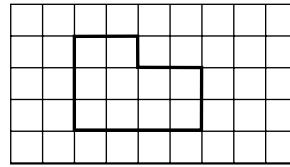
4.



5.

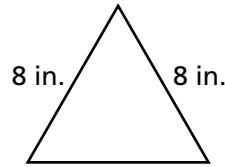


6.



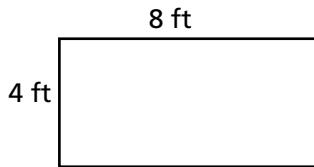
Algebra Find the length of each missing side.

7.



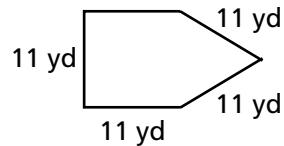
$$\text{perimeter} = 24 \text{ in.}$$

8.



$$\text{perimeter} = 24 \text{ ft}$$

9.



$$\text{perimeter} = 55 \text{ yd}$$

Problem Solving

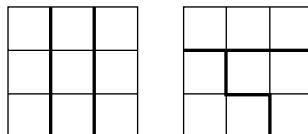
Solve.

10. Gerry plans a rectangular garden plot that is 30 feet long and 15 feet wide. What is the perimeter of the garden plot?

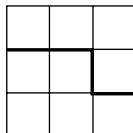
11. A fence around a rectangular corral has a length of 180 feet and a width of 90 feet. What is the perimeter of the fence?

Perimeter

Each square at the right is divided into three regions. Each region has a perimeter of 8 units.

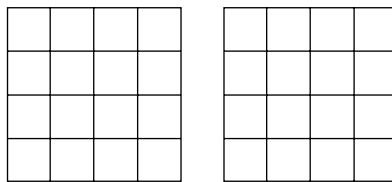


The square at the right is divided into two regions. Each region has a perimeter of 10 units.

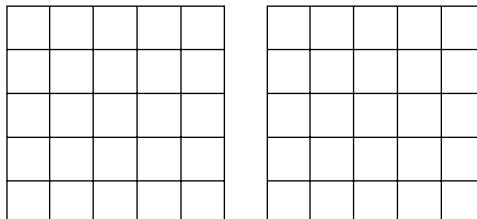


Divide each square below into the number of regions and the perimeter given. Try to do this in two different ways.

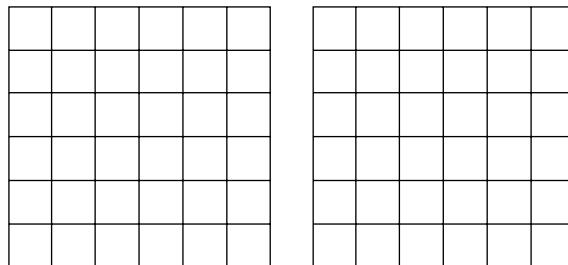
- 1.** Number of regions: 4
Perimeter of each region: 10 units



- 2.** Number of regions: 5
Perimeter of each region: 12 units



- 3.** Number of regions: 6
Perimeter of each region: 12 units



Name _____

Circumference

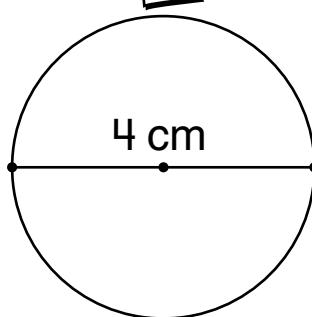
R 20-5
RETEACH

Circumference is the distance around a circle. The circumference of a circle is about three times its diameter.

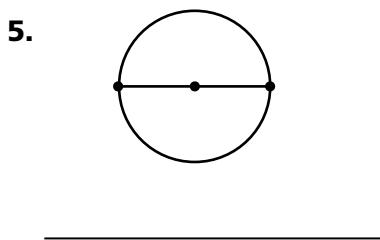
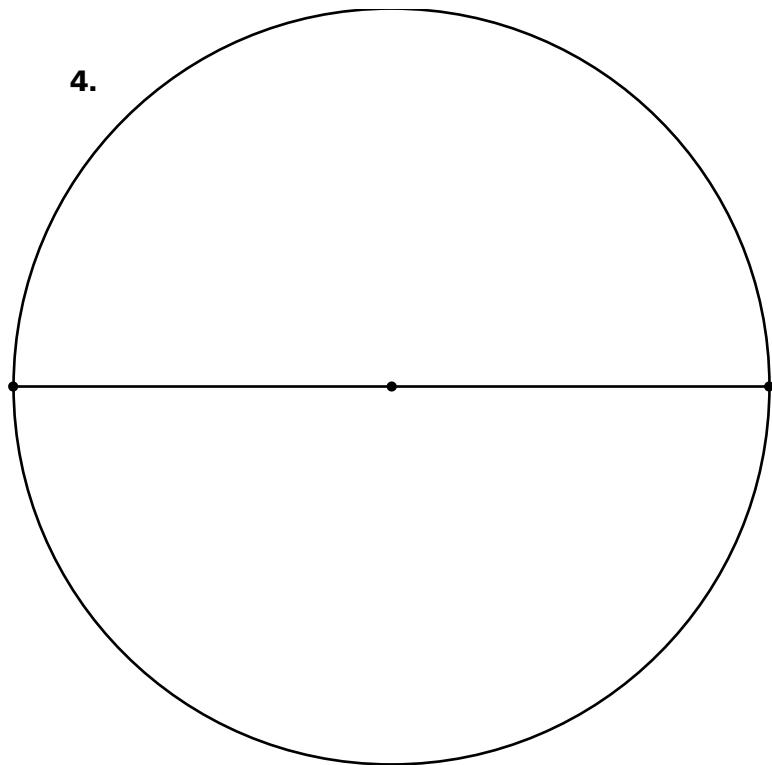
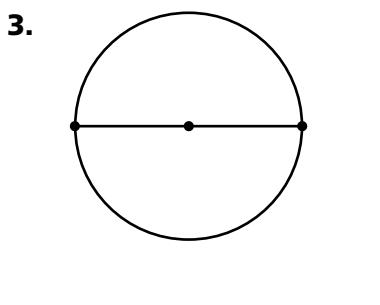
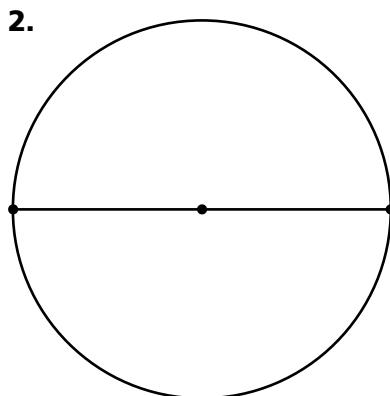
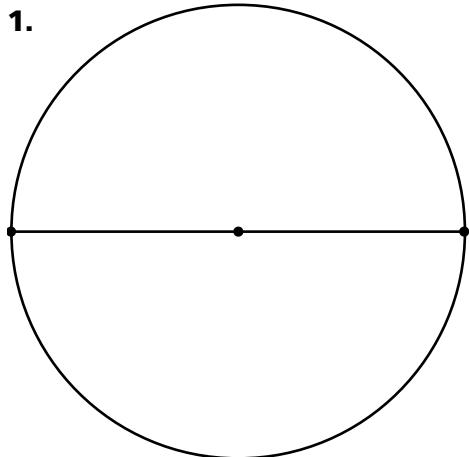
To estimate the circumference of a circle, you can measure the diameter with a ruler and then multiply by 3.

The diameter of the circle is 4 cm.

So, the circumference is about 3×4 cm, or 12 cm.



Measure the diameter with a centimeter ruler. Estimate the circumference.

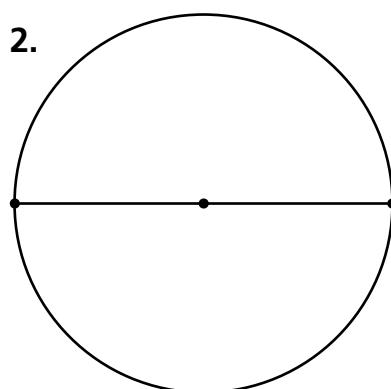
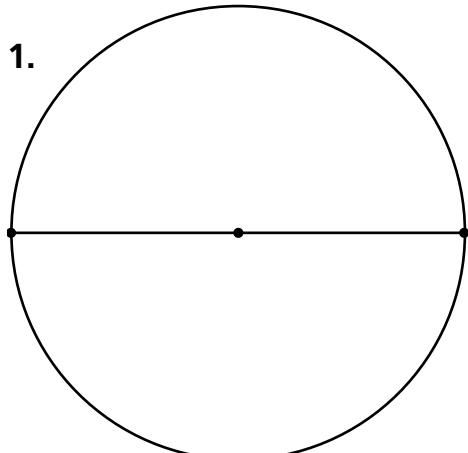


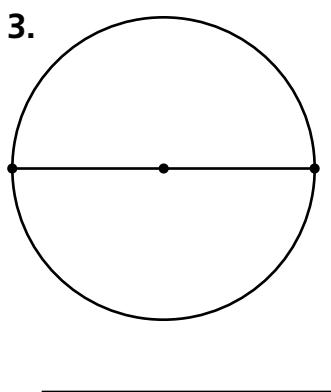
Name _____

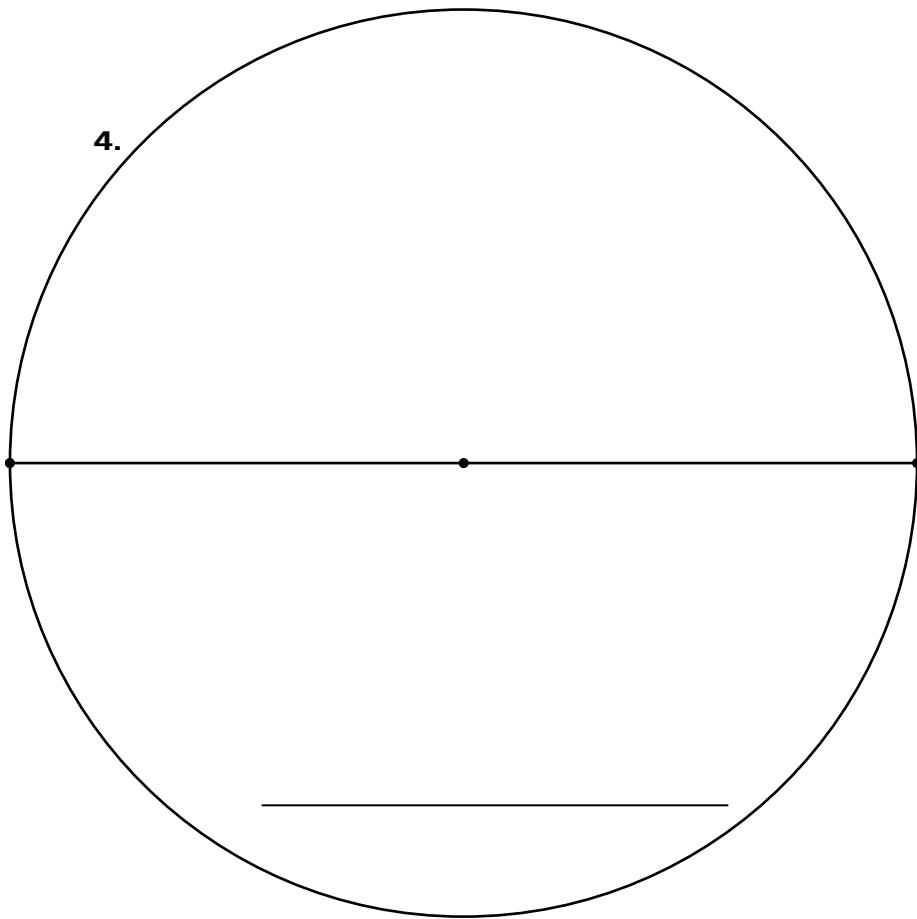
Circumference

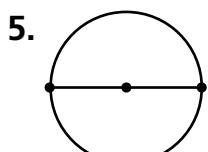
P 20-5
PRACTICE

Measure the diameter with a centimeter ruler. Estimate the circumference.









Problem Solving

Solve.

6. The diameter of a ball is 15 inches.
Estimate its circumference.

7. The diameter of a large globe is 3 feet. The diameter of a small globe is 1 foot. How much larger is the circumference of the large globe than the circumference of the small globe?

Circumference

Use a Triman compass to draw four different-size circles. Use a string and a centimeter ruler to measure the radius of each circle to the nearest centimeter. Then estimate the circumference of each circle.

1.**2.**

The circumference is about _____ cm.

The circumference is about _____ cm.

3.**4.**

The circumference is about _____ cm.

The circumference is about _____ cm.

Area • Algebra

Area is the number of square units needed to cover a region or figure.

You can use these two ways to find the area of a rectangle or square.

- Count the number of square units.

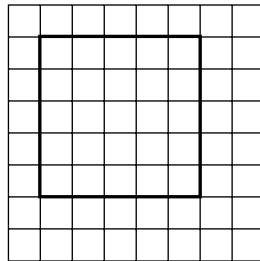
There are 25 square units.

The area is 25 square units.

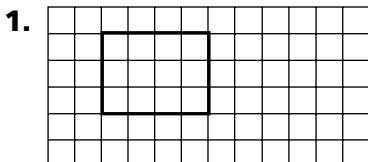
- Multiply the length times the width.

$$5 \times 5 = 25$$

The area is 25 square units.



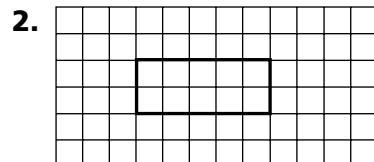
Complete.



length: _____ units

width: _____ units

area = _____ square units

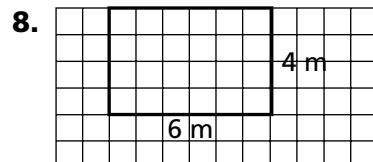
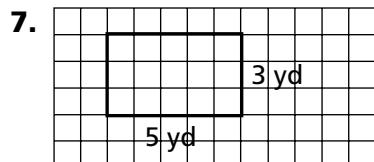
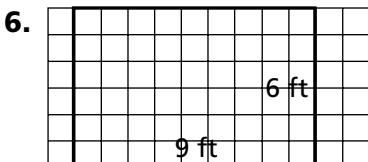
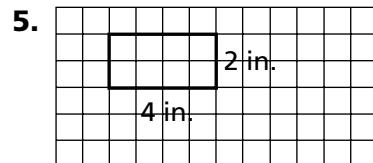
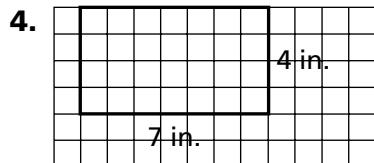
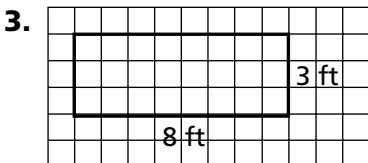


length: _____ units

width: _____ units

area = _____ square units

Find the area of each figure.

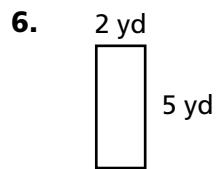
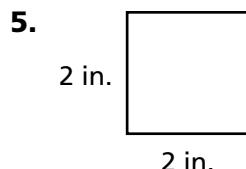
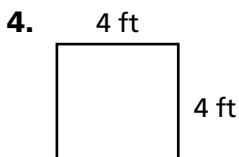
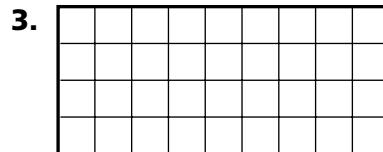
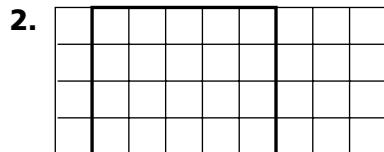
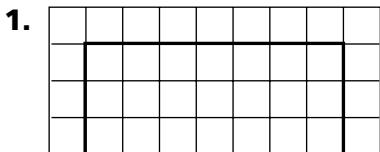


Name _____

Area • Algebra



Find the area of each figure.



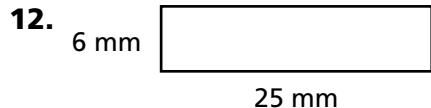
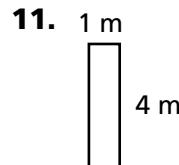
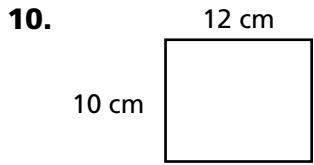
Use graph paper to draw each figure. Tell what the figure is and find the area.

7. length: 5 cm
width: 8 cm

8. length: 7 cm
width: 7 cm

9. length: 7 cm
width: 4 cm

Find the area and perimeter of each figure.



Area • Algebra

Pick's Law can be used to find the area of any polygon.

Draw the polygon on dot paper. Use this formula:

$$A = \frac{1}{2} \times (\text{number of dots on the polygon}) - 1 + (\text{number of dots inside the polygon})$$

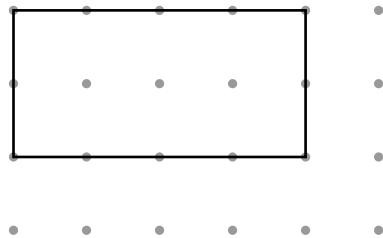
Here's how to use the formula to find the area of this polygon in square units.

$$A = (\frac{1}{2} \times 12) - 1 + 3$$

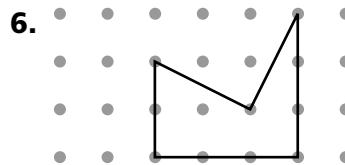
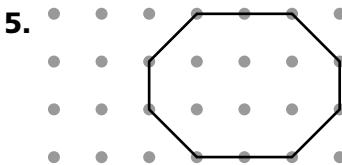
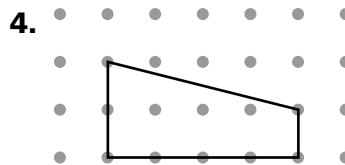
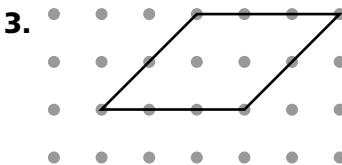
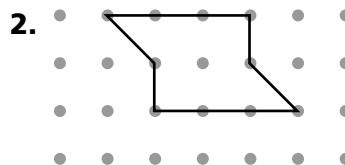
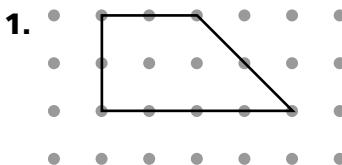
$$A = (6 - 1) + 3$$

$$A = 5 + 3$$

$$A = 8$$



Find the area of each polygon.



Explore Volume • Algebra

Volume is the amount of space a 3-dimensional figure encloses.
Volume is measured in cubic units.

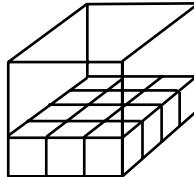
You can use these two ways to find the volume of a rectangular or square prism.

- Count the number of cubes in one layer. The bottom layer has 12 cubes.

There are 3 layers.

$$12 + 12 + 12 = 36$$

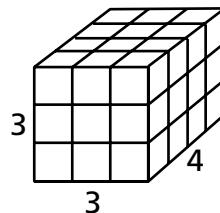
The volume of the cube is 36 cubic units.



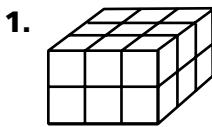
- Multiply: length \times width \times height

$$4 \times 3 \times 3 = 36$$

The volume is 36 cubic units.



Find the volume of each rectangular prism.

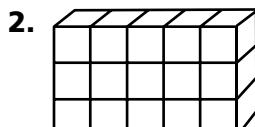


length: _____

width: _____

height: _____

volume = _____ cm³



length: _____

width: _____

height: _____

volume = _____ cm³

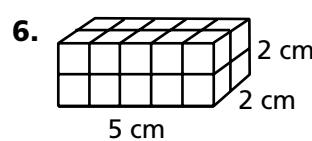
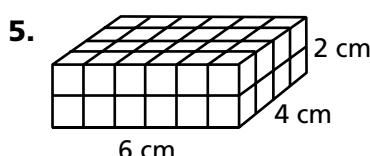
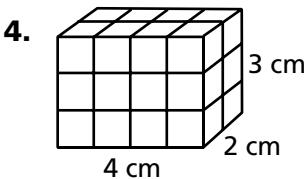


length: _____

width: _____

height: _____

volume = _____ cm³

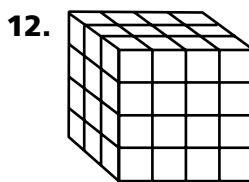
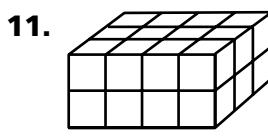
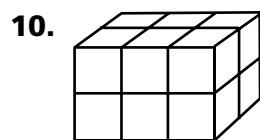
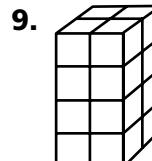
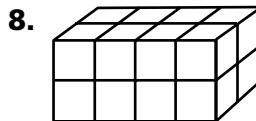
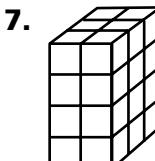
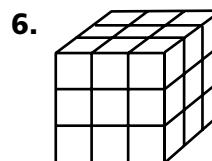
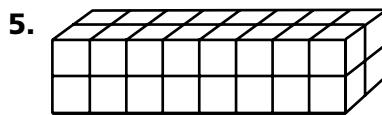
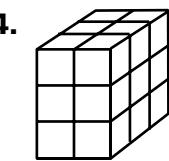
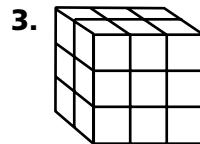
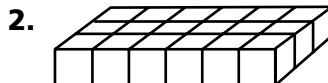
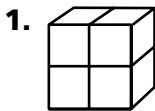


Name _____

Explore Volume • Algebra

P 20-7
PRACTICE

Find the volume of each rectangular prism.



13. length: 9 in.
width: 5 in.
height: 4 in.

14. length: 5 m
width: 8 m
height: 6 m

15. length: 7 cm
width: 2 cm
height: 8 cm

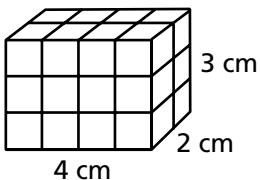
16. length: 10 ft
width: 12 ft
height: 5 ft

Name _____

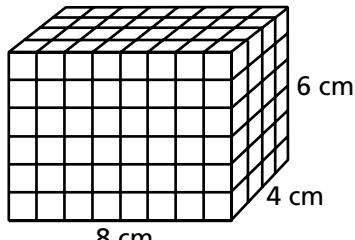
Explore Volume • Algebra

E 20-7
ENRICH

1. What is the volume of Prism A?



2. What do you think will happen to the volume if you double the length, width, and height of Prism A?



3. Find the volume of Prism A doubled. Was your answer to problem 2 correct?

4. Complete the table.

Original Rectangular Prism				Doubled Rectangular Prism			
Length	Width	Height	Volume	Length	Width	Height	Volume
2 cm	2 cm	1 cm		4 cm	4 cm	2 cm	
2 cm	3 cm	3 cm		4 cm	6 cm	6 cm	
1 cm	2 cm	3 cm		2 cm	4 cm	6 cm	
2 cm	2 cm	2 cm		4 cm	4 cm	4 cm	

5. Compare the volumes of the original and doubled prisms. What pattern do you see?

Name _____

Problem Solving: Decision Making

Decision
Making

WORKSHEET

Record your data in the chart.

Size of Garden	Perimeter of Garden	Cost of Fencing Material	Cost of Fencing and Installation

Your Decision

What is your recommendation for Mr. Harris's garden? Explain.

**UNIT
11****Fractions and Probability****CHAPTER 21 • SUPPORT MATERIALS**

Lesson	Titles	Masters	Use with pages
21-1	Parts of a Whole	R21-1, P21-1, E21-1	494–495
21-2	Parts of a Group	R21-2, P21-2, E21-2	496–497
21-3	Find Equivalent Fractions and Fractions in Simplest Form	R21-3, P21-3, E21-3	498–501
21-4	Compare and Order Fractions	R21-4, P21-4, E21-4	502–504
21-5	Problem Solving: Skill Check for Reasonableness	R21-5, P21-5, E21-5	506–507
21-6	Explore Finding Parts of a Group	R21-6, P21-6, E21-6	508–509
21-7	Mixed Numbers	R21-7, P21-7, E21-7	510–512

CHAPTER 22 • SUPPORT MATERIALS

Lesson	Titles	Masters	Use with pages
22-1	Likely and Unlikely	R22-1, P22-1, E22-1	518v520
22-2	Explore Probability	R22-2, P22-2, E22-2	522–523
22-3	Problem Solving: Strategy Draw a Tree Diagram	R22-3, R22-3, P22-3	524–525
22-4	Explore Making Predictions	R22-4, P22-4, E22-4	526–527
	Problem Solving: Reading Math and Science	Worksheets	530–531

R—Reteach

P—Practice

E—Enrich

Parts of a Whole

A fraction can name parts of a whole.



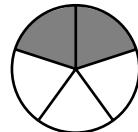
4 parts shaded

7 parts in all

$\frac{4}{7}$ shaded

parts shaded \rightarrow 4 \rightarrow numerator

parts in all \rightarrow 7 \rightarrow denominator



2 parts shaded

5 parts in all

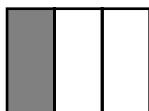
$\frac{2}{5}$ shaded

parts shaded \rightarrow 2 \rightarrow numerator

parts in all \rightarrow 5 \rightarrow denominator

Complete to write a fraction for the part that is shaded.

1.



_____ part shaded

_____ parts in all

fraction _____

2.

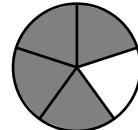


_____ parts shaded

_____ parts in all

fraction _____

3.

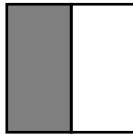


_____ parts shaded

_____ parts in all

fraction _____

4.

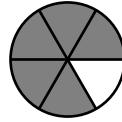


_____ part shaded

_____ parts in all

fraction _____

5.



_____ parts shaded

_____ parts in all

fraction _____

6.



_____ parts shaded

_____ parts in all

fraction _____

Name _____

Parts of a Whole



Write a fraction for the part that is shaded.

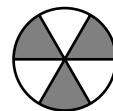
1.



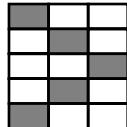
2.



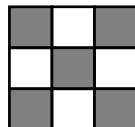
3.



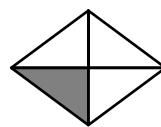
4.



5.



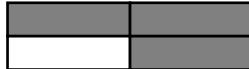
6.



7.



8.



Draw a rectangle with the fraction shaded.

9. $\frac{1}{3}$

10. $\frac{4}{5}$

11. $\frac{5}{7}$

12. $\frac{4}{8}$

13. $\frac{4}{9}$

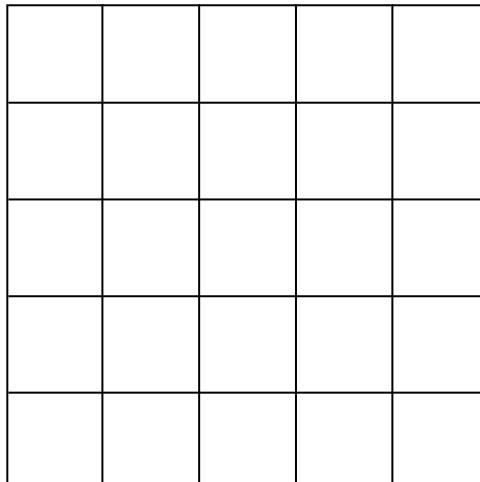
14. $\frac{5}{6}$

Name _____

Parts of a Whole



Design a quilt. Use red, white, blue, and purple crayons to color the squares below.



1. What part of your quilt is red? _____ white? _____
blue? _____ purple? _____

Design a flag. Make it from equal-sized parts. Use red, yellow, green, and blue crayons.

2. What part of your flag is red? _____ yellow? _____
green? _____ blue? _____

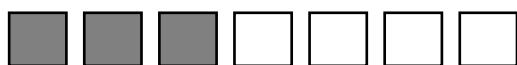
Name _____

Parts of a Group



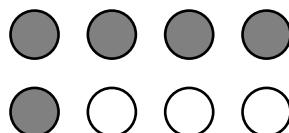
A fraction can name part of a group.

There are 7 squares in all.



$\frac{3}{7}$ are shaded. $\frac{4}{7}$ are **not** shaded.

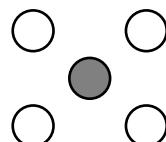
There are 8 circles in all.



$\frac{5}{8}$ are shaded. $\frac{3}{8}$ are **not** shaded.

Complete.

1.



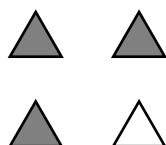
_____ shapes shaded

_____ shapes in all

fraction that is shaded _____

fraction that is **not** shaded _____

2.



_____ shapes shaded

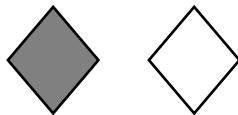
_____ shapes in all

fraction that is shaded _____

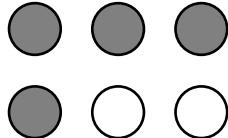
fraction that is **not** shaded _____

Write a fraction that names what part is shaded.

3.



4.



5.



Name _____

Parts of a Group

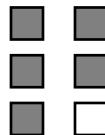


Write a fraction that names what part is shaded.

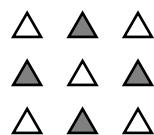
1.



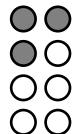
2.



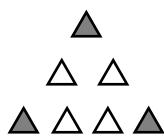
3.



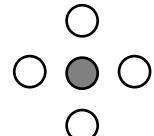
4.



5.



6.



Draw a picture and then write a fraction.

7. Six of eleven balloons are blue.

8. Four of seven hats have stars.

9. All of five kittens are smiling.

10. One of four animals is a chimpanzee.

Problem Solving

Solve.

11. Five of 12 students are in the school chorus. What part of the students are in the chorus?

12. Twenty of 25 students voted for class president. What part of the class did **not** vote for president?

Name _____

Parts of a Group



Each fraction tells what part of a group the shaded figure or figures represent. Complete the group for each fractional part.

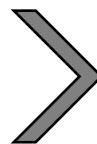
1. $\frac{2}{5}$



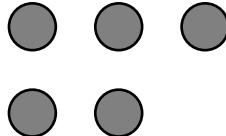
2. $\frac{4}{16}$



3. $\frac{1}{3}$



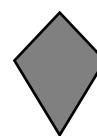
4. $\frac{4}{6}$



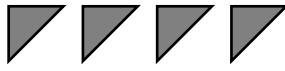
5. $\frac{3}{8}$



6. $\frac{1}{2}$



7. $\frac{4}{7}$



8. $\frac{2}{8}$



9. $\frac{9}{10}$



10. How did you decide how many triangles to draw in problem 1? _____

Find Equivalent Fractions and Fractions in Simplest Form

Equivalent Fractions

Equivalent fractions name the same part. To find an equivalent fraction, multiply the numerator and denominator by the same number.

Find fractions equivalent to $\frac{1}{3}$.

$$\frac{1 \times 2}{3 \times 2} = \frac{2}{6} \quad \frac{1 \times 3}{3 \times 3} = \frac{3}{9} \quad \frac{1 \times 4}{3 \times 4} = \frac{4}{12}$$

So, $\frac{1}{3}$, $\frac{2}{6}$, $\frac{3}{9}$, and $\frac{4}{12}$ are equivalent fractions.

Simplest Form

When a fraction is in simplest form, its numerator and denominator have only 1 as a common factor.

Show $\frac{6}{8}$ in simplest form.

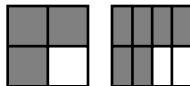
- Find the greatest common factor of the numerator and denominator.
factors of 6: 1, 2, 3, 6
factors of 8: 1, 2, 4
The greatest common factor is 2.
- Divide the numerator and denominator by the greatest common factor.

$$\frac{6}{8} = \frac{6 \div 2}{8 \div 2} = \frac{3}{4}$$

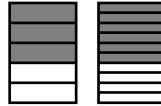
So, the simplest form of $\frac{6}{8}$ is $\frac{3}{4}$.

Complete to find equivalent fractions.

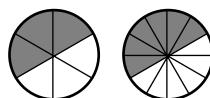
1.



2.



3.



$$\frac{3}{4} = \frac{\square}{8}$$

$$\frac{3}{5} = \frac{\square}{10}$$

$$\frac{3}{6} = \frac{\square}{12}$$

$$4. \frac{3}{4} = \frac{3 \times \square}{4 \times \square} = \frac{\square}{\square}$$

$$5. \frac{3}{5} = \frac{3 \times \square}{5 \times \square} = \frac{\square}{\square}$$

$$6. \frac{3}{6} = \frac{3 \times \square}{6 \times \square} = \frac{\square}{\square}$$

Write each fraction in simplest form.

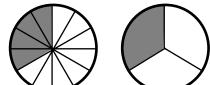
7.



8.



9.



$$\frac{4}{8} = \underline{\quad}$$

$$\frac{2}{10} = \underline{\quad}$$

$$\frac{4}{12} = \underline{\quad}$$

Find Equivalent Fractions and Fractions in Simplest Form

Write an equivalent fraction for each.

1.

$\frac{1}{2}$

2.

$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$
---------------	---------------	---------------

3.

$\frac{1}{5}$	$\frac{1}{5}$	$\frac{1}{5}$	$\frac{1}{5}$
---------------	---------------	---------------	---------------

Complete to find equivalent fractions.

$$\frac{4 \div 2}{10 \div \boxed{}} = \frac{2}{\boxed{}}$$

$$\frac{1 \times \boxed{}}{2 \times 8} = \frac{\boxed{}}{16}$$

$$\frac{2 \div 2}{8 \div \boxed{}} = \frac{1}{\boxed{}}$$

$$\frac{1 \times \boxed{}}{5 \times 4} = \frac{\boxed{}}{20}$$

$$\frac{4}{5} = \frac{\boxed{}}{10}$$

$$\frac{1}{2} = \frac{6}{\boxed{}}$$

$$\frac{4}{\boxed{}} = \frac{1}{4}$$

$$\frac{9}{12} = \frac{\boxed{}}{4}$$

Name an equivalent fraction for each.

$$\frac{3}{7} = \underline{\quad}$$

$$\frac{4}{5} = \underline{\quad}$$

$$\frac{6}{15} = \underline{\quad}$$

$$\frac{4}{12} = \underline{\quad}$$

Write each fraction in simplest form.

$$\frac{4}{10} = \underline{\quad}$$

$$\frac{6}{12} = \underline{\quad}$$

$$\frac{3}{18} = \underline{\quad}$$

$$\frac{6}{18} = \underline{\quad}$$

$$\frac{8}{12} = \underline{\quad}$$

$$\frac{3}{21} = \underline{\quad}$$

$$\frac{10}{30} = \underline{\quad}$$

$$\frac{8}{20} = \underline{\quad}$$

$$\frac{5}{15} = \underline{\quad}$$

$$\frac{9}{24} = \underline{\quad}$$

$$\frac{12}{24} = \underline{\quad}$$

$$\frac{24}{32} = \underline{\quad}$$

Algebra Complete the pattern of equivalent fractions.

$$\frac{1}{4} = \frac{\boxed{}}{8} = \frac{\boxed{}}{12} = \frac{\boxed{}}{16} = \frac{\boxed{}}{20} = \frac{\boxed{}}{24}$$

$$\frac{1}{3} = \frac{\boxed{}}{6} = \frac{\boxed{}}{9} = \frac{\boxed{}}{12} = \frac{\boxed{}}{15} = \frac{\boxed{}}{18}$$

Problem Solving

Solve.

- 30.** A box contains 6 red pencils and 8 black pencils. What fraction of the pencils are red?

- 31.** Paul caught 9 bass and 3 trout. What fraction of the fish were trout?

Find Equivalent Fractions and Fractions in Simplest Form

Look at the fractions in each problem. Cross out the fraction that does not belong. Then write a fraction that does belong.

1.

$\frac{3}{8}$	$\frac{5}{8}$
$\frac{6}{7}$	$\frac{7}{8}$

2.

$\frac{1}{3}$	$\frac{2}{7}$
$\frac{5}{6}$	$1\frac{1}{2}$

3.

$\frac{1}{2}$	$\frac{5}{9}$
$\frac{4}{8}$	$\frac{3}{6}$

4.

$\frac{2}{8}$	$\frac{3}{12}$
$\frac{4}{16}$	$\frac{5}{25}$

5.

$\frac{2}{3}$	$\frac{6}{9}$
$\frac{4}{7}$	$\frac{8}{12}$

6.

$\frac{6}{8}$	$\frac{8}{12}$
$\frac{10}{16}$	$\frac{3}{4}$

7.

$\frac{5}{9}$	$\frac{3}{5}$
$\frac{5}{12}$	$\frac{5}{6}$

8.

$\frac{2}{3}$	$\frac{5}{5}$
$\frac{8}{8}$	$\frac{1}{1}$

9.

$\frac{1}{3}$	$\frac{3}{7}$
$\frac{4}{6}$	$\frac{5}{5}$

Cross out each fraction in simplest form and the letter below it.

$\frac{1}{3}$	$\frac{4}{6}$	$\frac{3}{7}$	$\frac{6}{9}$	$\frac{8}{10}$	$\frac{5}{8}$	$\frac{3}{9}$	$\frac{10}{20}$	$\frac{6}{13}$	$\frac{2}{12}$	$\frac{8}{16}$	$\frac{5}{6}$	$\frac{9}{12}$	$\frac{15}{30}$	$\frac{8}{15}$
B	E	N	X	C	K	E	L	P	L	E	T	N	T	Y

Write the letters that are left. _____

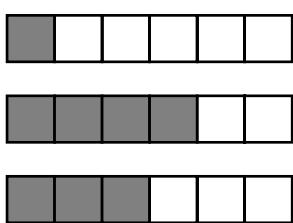
Compare and Order Fractions • Algebra

You can use equivalent fractions to compare and order fractions.

Order the fractions from least to greatest: $\frac{1}{6}$, $\frac{2}{3}$, $\frac{3}{6}$.

Step 1

Write each fraction as an equivalent fraction with the same denominator.



$$\frac{1}{6} = \frac{1}{6}$$

$$\frac{2}{3} = \frac{4}{6}$$

$$\frac{3}{6} = \frac{3}{6}$$

Step 2

Compare the numerators. Put the fractions in order from least to greatest.



$$\frac{1}{6} = \frac{1}{6}$$

$$\frac{3}{6} = \frac{3}{6}$$

$$\frac{4}{6} = \frac{2}{3}$$

From least to greatest, the fractions are $\frac{1}{6}$, $\frac{3}{6}$, $\frac{2}{3}$.

Complete. Write $>$, $<$, or $=$.

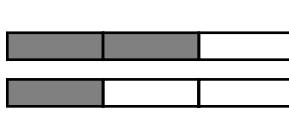
1.



2.



3.



$$\frac{3}{4} \bigcirc \frac{2}{4}$$

$$\frac{3}{10} \bigcirc \frac{5}{10}$$

$$\frac{2}{3} \bigcirc \frac{1}{3}$$

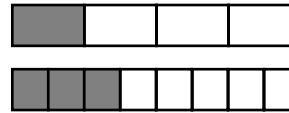
4.



5.



6.



$$\frac{4}{8} \bigcirc \frac{1}{2}$$

$$\frac{5}{6} \bigcirc \frac{2}{3}$$

$$\frac{1}{4} \bigcirc \frac{3}{8}$$

Write the fractions in order from least to greatest.

7. $\frac{6}{6}$, $\frac{2}{6}$, $\frac{5}{6}$

8. $\frac{3}{4}$, $\frac{5}{8}$, $\frac{3}{8}$

9. $\frac{2}{3}$, $\frac{1}{4}$, $\frac{1}{12}$

_____ , _____ , _____

_____ , _____ , _____

_____ , _____ , _____

Name _____

Compare and Order Fractions • Algebra



Complete. Write $>$, $<$, or $=$.

1. $\frac{1}{2}$ $\frac{1}{3}$

2. $\frac{2}{5}$ $\frac{2}{7}$

3. $\frac{4}{9}$ $\frac{2}{3}$

4. $\frac{2}{5}$ $\frac{3}{4}$

5. $\frac{7}{10}$ $\frac{4}{5}$

6. $\frac{3}{4}$ $\frac{2}{3}$

7. $\frac{4}{5}$ $\frac{12}{15}$

8. $\frac{1}{5}$ $\frac{4}{20}$

9. $\frac{1}{5}$ $\frac{2}{15}$

10. $\frac{5}{12}$ $\frac{1}{4}$

11. $\frac{3}{4}$ $\frac{13}{16}$

12. $\frac{8}{9}$ $\frac{7}{8}$

13. $\frac{7}{12}$ $\frac{5}{6}$

14. $\frac{3}{10}$ $\frac{4}{9}$

15. $\frac{7}{8}$ $\frac{3}{4}$

16. $\frac{9}{10}$ $\frac{4}{5}$

17. $\frac{1}{4}$ $\frac{5}{16}$

18. $\frac{3}{5}$ $\frac{7}{10}$

Order from least to greatest.

19. $\frac{1}{4}, \frac{1}{2}, \frac{1}{5}$ _____, _____, _____

20. $\frac{7}{8}, \frac{3}{4}, \frac{3}{8}$ _____, _____, _____

21. $\frac{5}{7}, \frac{1}{7}, \frac{5}{21}$ _____, _____, _____

22. $\frac{4}{9}, \frac{1}{3}, \frac{2}{3}$ _____, _____, _____

Order from greatest to least.

23. $\frac{1}{2}, \frac{2}{3}, \frac{3}{4}$ _____, _____, _____

24. $\frac{4}{9}, \frac{2}{9}, \frac{5}{9}$ _____, _____, _____

25. $\frac{1}{4}, \frac{3}{4}, \frac{3}{16}$ _____, _____, _____

26. $\frac{5}{6}, \frac{7}{12}, \frac{3}{4}$ _____, _____, _____

Problem Solving

Solve.

27. Sandra eats $\frac{1}{6}$ of a cake. Pat eats $\frac{1}{3}$ of the same cake. Who eats more cake? Explain.

28. Karl eats $\frac{1}{2}$ of a pizza. Tim eats $\frac{2}{3}$ of a pizza. Chris eats $\frac{3}{4}$ of a pizza. Order the amounts from greatest to least.

Compare and Order Fractions • Algebra

Play this game with a partner.

- Cut out the cards below. Shuffle them and then place them face down in a pile in front of you. Your partner will do the same thing.
- Each player draws a card at the same time from his or her pile. The player who draws the greater fraction takes both cards. If both fractions are equal, each player draws another card. The player with the greater fraction also takes the fraction cards that were equal.
- When all cards have been used, the player with the greater number of cards wins.

$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{4}$	$\frac{1}{5}$
$\frac{1}{6}$	$\frac{1}{8}$	$\frac{1}{9}$	$\frac{1}{12}$
$\frac{1}{18}$	$\frac{2}{3}$	$\frac{2}{4}$	$\frac{2}{5}$
$\frac{2}{6}$	$\frac{2}{8}$	$\frac{2}{9}$	$\frac{2}{12}$
$\frac{2}{18}$	$\frac{3}{8}$	$\frac{3}{9}$	$\frac{3}{10}$
$\frac{5}{8}$	$\frac{3}{15}$	$\frac{3}{6}$	$\frac{5}{12}$
$\frac{8}{10}$	$\frac{4}{12}$	$\frac{7}{12}$	$\frac{6}{15}$
$\frac{5}{6}$	$\frac{7}{8}$	$\frac{5}{9}$	$\frac{3}{4}$

Problem Solving: Skill

Check for Reasonableness

Jack has 33 minutes to spend doing math and science homework.

He spends $\frac{1}{2}$ of the time on math. Jack guesses that he has 15 minutes to spend on science. Is this a reasonable guess?

Step 1 Use what you know.	Jack has 33 minutes to do all of his homework. He spent $\frac{1}{2}$ of the time on math.
Step 2 Estimate to find how many minutes Jack has left to spend on science.	33 is close to 30. One half of 30 is 15.
Step 3 Compare Jack's guess to the estimate.	$15 = 15$ 15 minutes is a reasonable guess.

Choose the correct answer.

- A group of 18 students goes to the amusement park. Of these students, $\frac{5}{6}$ go on the bumper cars. How many students go on the bumper cars? A reasonable answer for this problem would be

A greater than 18.	C greater than 3 but less than 9.
B less than 3.	D greater than 9 but less than 18.
- Fun Time International has 16 amusement parks. Of these amusement parks, $\frac{3}{4}$ are in the United States. How many Fun Time Amusement Parks are in the United States? A reasonable answer for this problem would be that Fun Time has

F 16 amusement parks in the U.S.	H 4 amusement parks in the U.S.
G 12 amusement parks in the U.S.	J no amusement parks in the U.S.
- Nick spends 120 minutes in the amusement park. He spends $\frac{2}{3}$ of his time on rides. How many minutes does Nick spend on rides? A reasonable answer for this problem would be

A 2 hours.	C greater than 20 minutes but less than 1 hour.
B more than 60 minutes but less than 120 minutes.	D less than 20 minutes.

Problem Solving: Skill Check for Reasonableness

Solve.

1. There are 32 rides at an amusement park. Norman goes on $\frac{3}{8}$ of the rides. How many rides does he go on?
-

3. A dozen students go to the amusement park. A group of $\frac{1}{3}$ of these students goes on the Super Cycle. How many students go on the Super Cycle?
-

5. Each car of the Sling Shot can hold 15 people. A car is $\frac{2}{5}$ full. How many people are in the car?
-

7. Ashley puts 45 stamps in an album. She puts the same number of stamps on each page, and 3 stamps on the last page. There are 2 more pages in the album than the number of stamps on each page. How many pages are in the album? How many stamps are on each page?
-
-

Strategy: _____

2. Donna took 18 rides. She went on the roller coaster $\frac{2}{3}$ of the time. How many roller-coaster rides did Donna take?
-

4. There were 25 students at the amusement park. Of these students, $\frac{2}{5}$ were there for the first time. How many students were there for the first time?
-

6. An amusement park has 36 rides. Bobby goes on $\frac{1}{2}$ of them. How many rides does he go on?
-

8. In the 4th grade at Spring Lake School, 189 students have pet cats, 203 students have dogs, and 83 students have cats and dogs. Make a Venn diagram to show this information.

Strategy: _____

Problem Solving: Skill

Check for Reasonableness

The Jones family is planning a summer vacation at the beach. Use the chart to help them.

Round-trip from home to beach	428 miles
Length of vacation	15 days
Daily budget	\$250
Time in car	8 hours

1. Mother and father agree that each will drive $\frac{1}{2}$ the round trip distance. Which is the more reasonable guess? Each parent will drive for more than 200 miles, or less than 100 miles? Explain.

2. The family members agree to spend $\frac{2}{3}$ of the vacation time outdoors. Is it reasonable to say they will spend more than 8 days but less than 12 days outdoors? Explain.

3. Mr. and Mrs. Jones decide to spend $\frac{4}{5}$ of the daily budget on hotels and food. They guess that they will spend \$50 on hotels and food. Is this a reasonable guess? Explain.

4. The Jones children plan to sing songs for $\frac{1}{4}$ of the time spent traveling to and from the vacation site. Is it reasonable to say that Jack and Sue will sing for less than 1 hour but for more than $\frac{1}{2}$ hour? Explain.

Name _____

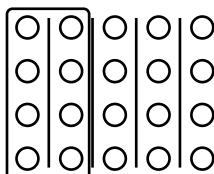
Explore Finding Parts of a Group



You can use counters to find a part of a group.

Suppose you have 20 counters. You want to find $\frac{2}{5}$ of 20 counters.

The denominator tells you how many equal groups to make.
Divide the 20 counters into 5 equal groups.



There are 8 counters in 2 groups.

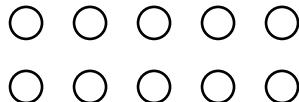
So $\frac{2}{5}$ of 20 is 8.

Complete. Circle the part of each group.

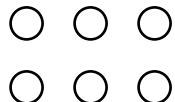
1. $\frac{1}{2}$ of 8 = _____



2. $\frac{2}{5}$ of 10 = _____



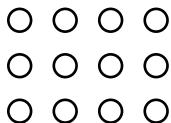
3. $\frac{1}{3}$ of 6 = _____



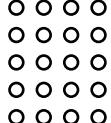
4. $\frac{2}{3}$ of 15 = _____



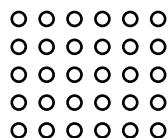
5. $\frac{3}{4}$ of 12 = _____



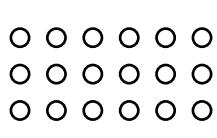
6. $\frac{1}{4}$ of 20 = _____



7. $\frac{1}{6}$ of 30 = _____



8. $\frac{5}{6}$ of 18 = _____

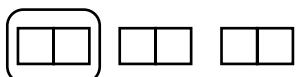
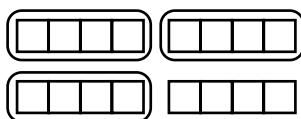
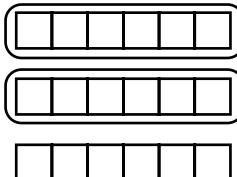


9. $\frac{4}{5}$ of 10 = _____



Explore Finding Parts of a Group

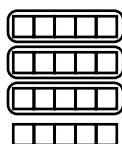
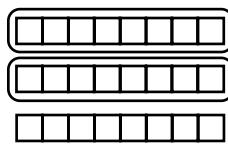
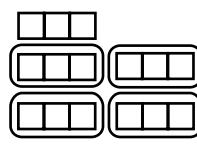
Use the models to help you find the fraction of each group.

1.**2.****3.**

$\frac{1}{3}$ of 6 = _____

$\frac{3}{4}$ of 16 = _____

$\frac{2}{3}$ of 18 = _____

4.**5.****6.**

$\frac{3}{4}$ of 20 = _____

$\frac{2}{3}$ of 24 = _____

$\frac{4}{5}$ of 15 = _____

Find the fraction of each number. You may use connecting cubes.

7. $\frac{1}{2}$ of 18 = _____

8. $\frac{2}{3}$ of 15 = _____

9. $\frac{3}{5}$ of 30 = _____

10. $\frac{5}{6}$ of 12 = _____

11. $\frac{3}{7}$ of 14 = _____

12. $\frac{1}{8}$ of 32 = _____

13. $\frac{2}{9}$ of 18 = _____

14. $\frac{1}{10}$ of 40 = _____

15. $\frac{4}{7}$ of 21 = _____

16. $\frac{5}{8}$ of 40 = _____

17. $\frac{1}{3}$ of 21 = _____

18. $\frac{1}{4}$ of 20 = _____

19. $\frac{2}{5}$ of 30 = _____

20. $\frac{1}{6}$ of 36 = _____

21. $\frac{3}{8}$ of 16 = _____

22. $\frac{3}{7}$ of 28 = _____

23. $\frac{6}{7}$ of 49 = _____

24. $\frac{7}{10}$ of 60 = _____

Problem Solving

Solve.

- 25.** Of the 24 fourth graders in Mrs. Williams' class, $\frac{1}{4}$ participate in sports. How many fourth-grade students participate in sports?

- 26.** Steven practices cello 15 hours a week. On Monday he practices $\frac{1}{5}$ of that time. How many hours does Steven practice cello on Monday?

Explore Finding Parts of a Group

Use the grocery list to answer each question.

1. Barb adds salt and pepper to $\frac{3}{4}$ of the ground beef. How much ground beef is that?

2. Mark uses $\frac{2}{3}$ of the ground turkey to make meatballs. How many pounds does he use?

3. Melanie uses $\frac{3}{5}$ of the potatoes for potato salad. How many pounds does she use?

4. George boils $\frac{5}{6}$ of the eggs. How many eggs does he boil? _____

5. Sam slices $\frac{3}{4}$ of the bread. How much is that? _____

6. Sarah uses $\frac{1}{8}$ of the bread for stuffing. How much is that? _____

7. Jon barbecues $\frac{3}{4}$ of the sausage and uses the rest for appetizers.

How many pounds does he barbecue? _____

How many pounds does he use for appetizers? _____

8. Jan grills $\frac{1}{2}$ of the chicken. Bob cooks $\frac{1}{6}$ of the chicken for chicken salad.

How much chicken is left? _____

Grocery List

12 pounds of ground beef

9 pounds of ground turkey

15 pounds of potatoes

36 eggs

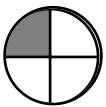
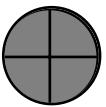
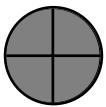
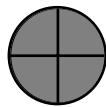
16 loaves of bread

18 pounds of chicken

20 pounds of sausage

Mixed Numbers

You can use models to help you rename $\frac{13}{4}$ as a mixed number.



$$\frac{13}{4} = \frac{4}{4} + \frac{4}{4} + \frac{4}{4} + \frac{1}{4}$$

$$\frac{13}{4} = 1 + 1 + 1 + \frac{1}{4}$$

$$\frac{13}{4} = 3\frac{1}{4}$$

You can also use multiplication and addition to rename a mixed number as a fraction.

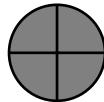
Step 1. Multiply the whole number by the denominator.

Step 2. Add the numerator to the product.

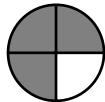
$$1\frac{3}{5} = \frac{(5 \times 1) + 3}{5} = \frac{5 + 3}{5} = \frac{8}{5}$$

Rename each fraction as a mixed number or whole number.

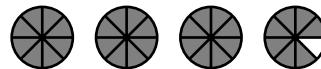
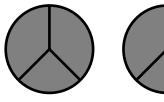
1. $\frac{7}{4}$



2. $\frac{7}{3}$



3. $\frac{31}{8}$



4. $\frac{9}{4} =$ _____

5. $\frac{11}{3} =$ _____

6. $\frac{108}{8} =$ _____

Rename each mixed number as a fraction.

7. $1\frac{1}{4} =$ _____

8. $6\frac{3}{5} =$ _____

10. $8\frac{2}{3} =$ _____

11. $4\frac{1}{3} =$ _____

12. $5\frac{2}{7} =$ _____

13. $3\frac{5}{6} =$ _____

Mixed Numbers

Rename in simplest form. If already in simplest form, rename as a mixed number.

1. $\frac{8}{7} =$ _____

2. $\frac{9}{2} =$ _____

3. $\frac{7}{2} =$ _____

4. $\frac{10}{3} =$ _____

5. $6\frac{2}{6} =$ _____

6. $3\frac{6}{8} =$ _____

7. $4\frac{1}{5} =$ _____

8. $1\frac{5}{7} =$ _____

9. $\frac{22}{10} =$ _____

10. $\frac{21}{6} =$ _____

11. $\frac{13}{2} =$ _____

12. $\frac{19}{4} =$ _____

13. $5\frac{2}{6} =$ _____

14. $2\frac{2}{8} =$ _____

15. $3\frac{2}{6} =$ _____

16. $8\frac{3}{4} =$ _____

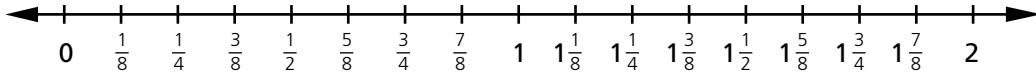
17. $\frac{40}{6} =$ _____

18. $\frac{30}{4} =$ _____

19. $\frac{64}{6} =$ _____

20. $\frac{48}{5} =$ _____

Algebra Use the number line to compare. Write $>$, $<$, or $=$.



21. $1\frac{1}{6}$ ○ $1\frac{1}{8}$

22. 1 ○ $\frac{8}{8}$

23. 2 ○ $1\frac{7}{8}$

24. $1\frac{1}{4}$ ○ $1\frac{5}{8}$

25. $1\frac{1}{8}$ ○ $1\frac{1}{2}$

26. $1\frac{3}{4}$ ○ $1\frac{7}{8}$

Problem Solving

Solve.

27. Ben measures ten one-fourths of a cup of water. What is this as a mixed number?

28. Claudia ran $4\frac{1}{3}$ miles on Monday. On Tuesday she ran $4\frac{1}{2}$ miles. On which day did Claudia run a longer distance? Explain.

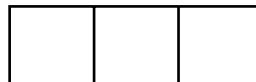
29. Jared drank $\frac{7}{4}$ cups of juice. Aida drank $\frac{9}{6}$ cups. Who drank more juice? Explain.

30. Mary worked $8\frac{1}{2}$ hours on Monday and $8\frac{3}{5}$ hours on Tuesday. On which day did she work longer? Explain.

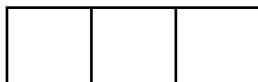
Mixed Numbers

Shade the fraction bars to show a fraction between the two whole numbers given. Write both the fraction and the mixed number.

1. Shade the fraction bars to show a fraction between 1 and 2.



Fraction: _____

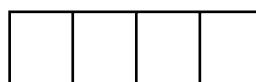
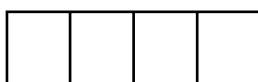


Mixed number: _____

2. Shade the fraction bars to show a fraction between 2 and 3.

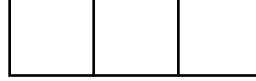
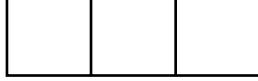


Fraction: _____

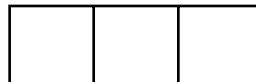


Mixed number: _____

3. Shade the fraction bars to show a fraction between 3 and 4.



Fraction: _____



Mixed number: _____

4. Shade the fraction bars to show a fraction between 2 and 3.



Fraction: _____



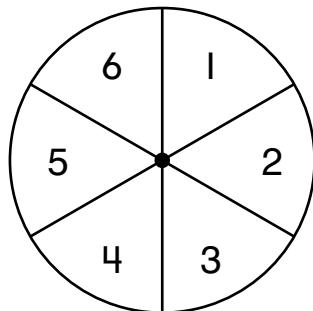
Mixed number: _____

Likely and Unlikely

The chance, or likelihood, that something will happen is called **probability**.

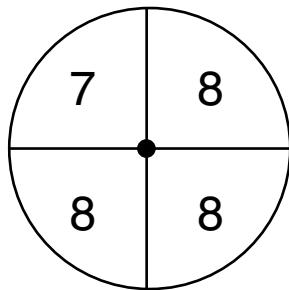
Look at the spinner at the right. You could spin 1, 2, 3, 4, 5, or 6. There are 6 possible outcomes.

- The probability of spinning each number is **equally likely**.
- It is **impossible** to spin an 8.
- It is **certain** that you will spin a number greater than 0.



Look at the spinner at the right.

- The probability of spinning a 7 is **unlikely**.
- The probability of spinning an 8 is **likely**.



Look at the spinner at the right. Use the words *likely*, *equally likely*, *certain*, *unlikely*, or *impossible* to describe the probability.

1. The probability of spinning 12

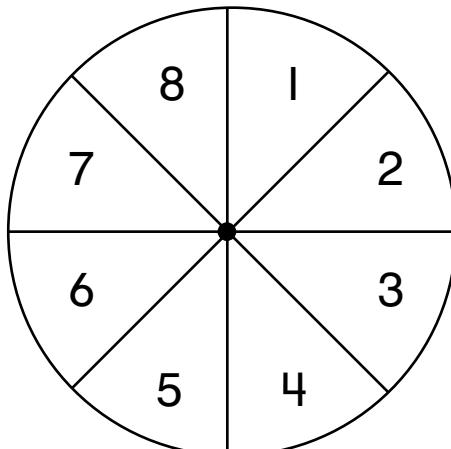
2. It is _____ that you will land on a number greater than 2.

3. It is _____ that you will land on a number less than 2.

4. It is _____ that you will land on a number less than 9.

5. It is _____ that you will land on an odd or even number.

6. It is _____ to land on a number greater than 8.



Likely and Unlikely

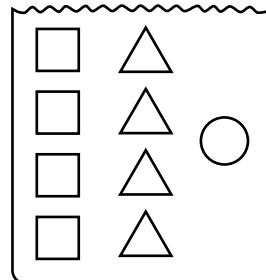
Describe the probability of picking a certain shape from the bag.
Use the words *likely*, *equally likely*, *certain*, *unlikely*, or *impossible*.

1. ○ _____

2.  _____

3. △ or □ _____

4. △, □, or ○ _____



Describe the probability of spinning the number.

5. spinning 2 _____

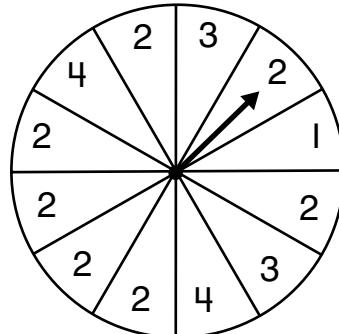
6. spinning 3 _____

7. spinning 6 _____

8. spinning 1 _____

9. spinning 3 or 4 _____

10. spinning 1, 2, 3, or 4 _____



Describe the probability.

11. The month after September will be November. _____

12. It will be sunny or rainy tomorrow. _____

13. It will snow in Alaska this year. _____

Problem Solving

Solve.

14. A bag contains 3 red and 7 white balls. Is it unlikely, more likely, or equally likely you will pick a red ball?

15. A box contains 6 red pencils and 6 black pencils. Is it unlikely, less likely, or equally likely you will pick a red pencil?

Likely and Unlikely

Play this game with a partner.

- Partner A chooses a secret 4-digit number and writes it on a sheet of paper.
- Player B guesses a 4-digit number and writes it in the first row of the guess chart.
- Player A looks at the 4-digit number and then fills in the second chart. He or she writes the number of digits that are correct. Player A also writes the number of digits that are in the correct position. Example: The secret number is 1,093. The first guess is 6,198. The number of correct digits is 2. The number of digits in the correct position is 1.
- Based on that information, Player B makes a second guess.
- Continue playing until the secret 4-digit number is guessed, or until 10 guesses have been used.
- Players then switch roles.

Guess				
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

Number of Correct Numbers	Number of Digits in the Correct Position
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	

What strategy did you use in guessing the numbers?

Explore Probability

You can use a fraction to show a probability.

$$\text{Probability} = \frac{\text{number of favorable outcomes}}{\text{number of possible outcomes}}$$

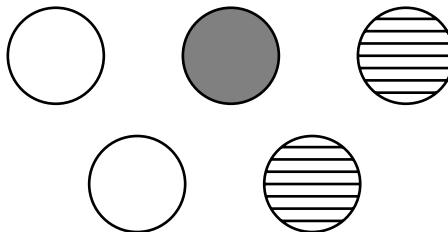
You can use probability to predict an outcome.

If you pick one of these counters without looking, there are 5 possible outcomes.

The probability of picking a is $\frac{2}{5}$.

The probability of picking a is $\frac{1}{5}$.

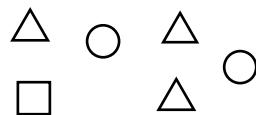
The probability of picking a is $\frac{2}{5}$.



Find the probability of picking each shape and express it as a fraction.

1. ____

2. ____



3. ____

4. ____

Find the probability of picking each letter and express it as a fraction.

5. A ____

6. B ____

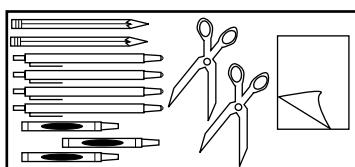
A	B	C	C	D
B	C	C	C	B

7. C ____

8. D ____

Find the probability of picking each item and express it as a fraction.

9. a pencil ____



10. a pen ____

11. an eraser ____

12. a pair of scissors ____

13. a pad of paper ____

14. a crayon ____

Name _____

Explore Probability



Find the probability of spinning the number and express it as a fraction.

1. 3 _____

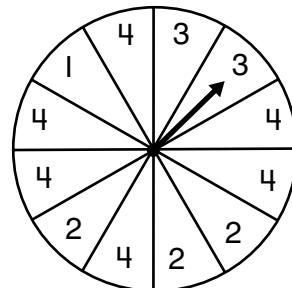
2. 1 _____

3. 4 _____

4. 2 _____

5. 3 or 4 _____

6. 5 _____



Find the probability of picking the shape and express it as a fraction.

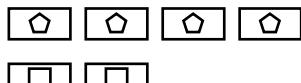
7. circle _____

8. triangle _____



9. square _____

10. pentagon _____



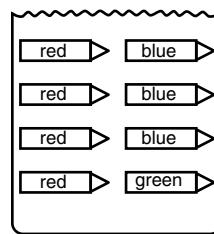
11. hexagon _____

12. triangle or square _____

Find the probability of picking the color and express it as a fraction.

13. blue _____

14. red _____



15. green _____

16. purple _____

17. red or blue _____

18. blue or green _____

Problem Solving

Solve.

19. Greg has a coin in one of his closed hands. What is the probability that Greg's friend will pick the hand the coin is in?

20. Karen turns over 5 paper cups. She hides a coin under one of them. What is the probability that Steven will guess which cup the coin is under?

Explore Probability

1. What if you toss a number cube numbered 1–6 120 times? About how many times do you think you will toss the number 1? Explain.
-
-

2. Toss two number cubes numbered 1–6 120 times. Use tally marks to record your results in the table below.

Number Cube (120 tosses)

1	2	3	4	5	6

3. You get the sums 2–12 when you toss two number cubes and add the numbers. What if you toss two number cubes 72 times? Record your sums in the table below.

Sum of Numbers on Two Number Cubes (72 tosses)

2	3	4	5	6	7	8	9	10	11	12

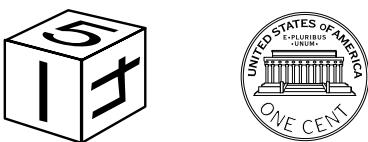
4. What if you toss 3 number cubes? What sums would be least likely to come up? Explain.
-
-

Problem Solving: Strategy

Draw a Tree Diagram

Page 525, Problem 4

What are all of the possible outcomes of tossing a number cube and flipping a coin?



Step 1

Read

Be sure you understand the problem.

Read carefully.

What do you know?

- When you toss a number cube, you can toss a _____, _____, _____, _____, _____, _____.
- When you flip a coin, you can get _____ or _____.

What do you need to find?

- You need to find _____

Step 2

Plan

Make a plan.

Choose a strategy.

A tree diagram can show all of the possible outcomes.

- Logical Reasoning
- Draw a Picture or Diagram
- Make a Graph
- Act It Out
- Make a Table or List
- Find a Pattern
- Guess and Check
- Write an Equation
- Work Backward
- Solve a Simpler Problem

Problem Solving: Strategy

Draw a Tree Diagram

Step 3**Solve**

Make branches to show all of the possible outcomes for tossing the number cube. Then make branches to show all of the possible outcomes for flipping the coin. List each outcome.

Carry out your plan.

Number Cube	Coin	Outcome
1	heads tails	1-heads 1-tails
2	_____	_____
_____	heads tails	_____
4	_____	_____
_____	heads tails	_____
6	_____	_____

Step 4**Look Back****Is the solution reasonable?**

Reread the problem.

How can you check to make sure your answer is correct?
_____**Practice**

1. The amusement park offers discount tickets for 5 rides, 10 rides, or 20 rides. The tickets come as adult tickets or child tickets. What are all of the possible discount tickets?
- _____
- _____

2. Pia wants a fruit drink. She can choose strawberry, banana, orange, grapefruit, or mango. Drinks come in small, medium, or large. What are all of the possible combinations?
- _____

Problem Solving: Strategy

Draw a Tree Diagram

Use a tree diagram to solve.

1. You spin a spinner with 4 equal sections marked 1–4. Then you spin another spinner with 3 equal sections colored red, blue, and yellow. What are all of the possible outcomes?

3. The Boardwalk Shop sells souvenir shirts. The shirts come with long sleeves or short sleeves. The shirts come in white, gray, and blue. What are all of the different kinds of shirts?

2. Karen throws a dart at a target with 5 equal sections marked 1–5. She then throws a dart at a target with two equal sections colored green and blue. What are all of the possible outcomes?

4. Boardwalk Burgers sells burgers made from beef, turkey, chicken, or soy. Burgers can have no cheese, Swiss cheese, or American cheese. How many different choices are there?

Mixed Strategy Review

Solve. Use any strategy.

5. The Target Toss Game has 6 rings. The first ring is worth 4 points, the second ring is worth 8 points, and the third ring is worth 12 points. If the pattern continues, what is the sixth ring worth?

Strategy: _____

7. Marnie brought \$75 to the amusement park. She has \$39 left. How much money did Marnie spend?

Strategy: _____

6. **Social Studies** In a recent year, $\frac{11}{100}$ of all U.S. vacations included time at the beach, $\frac{6}{100}$ included time at sports events, and $\frac{8}{100}$ included time at theme parks. Write these activities in order from least to most popular.

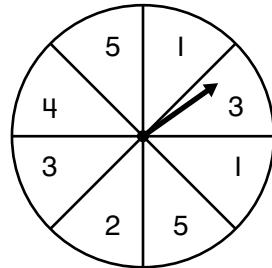
Strategy: _____

8. **Create a problem** which can be solved by drawing a tree diagram. Share it with others.

Explore Making Predictions

Suppose you toss a coin. There are 2 possible outcomes, heads or tails. You can predict that 1 out of 2 times you will toss heads. As an experiment, you can toss a coin 10 times and record your results. Compare the results with your prediction.

Suppose you spin this spinner. You can predict that 2 out of 8 times the spinner will land on 5. There are 2 favorable outcomes and 8 possible outcomes. The probability of spinning a 5 is $\frac{2}{8}$, or $\frac{1}{4}$. You can spin a spinner for 10 or 20 times to check your prediction.



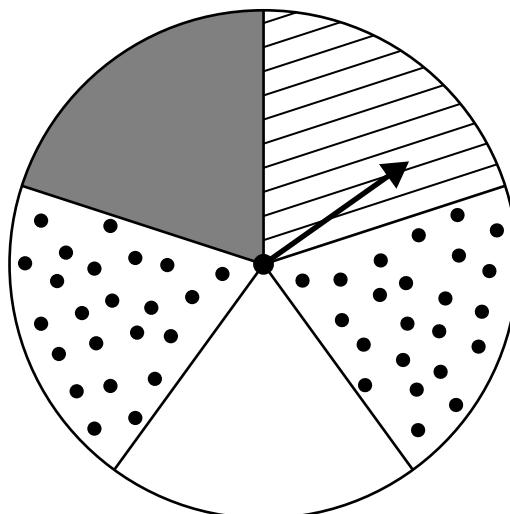
Use the spinner below to answer the questions. Write *true* or *false*. Explain.

- 1.** Is it reasonable to predict that the spinner will land on a shaded section 1 out of 5 times?

- 2.** Is it reasonable to predict that the spinner will land on a dotted section 5 out of 15 times?

- 3.** The probability of landing on a striped section is 2 out of 5.

- 4.** The probability of landing on a red section is 1 out of 5.



- 5.** Is it reasonable to predict that the spinner will land on a section that is *not* shaded 6 out of 30 times?

Explore Making Predictions

Use the spinner for problems 1–6.

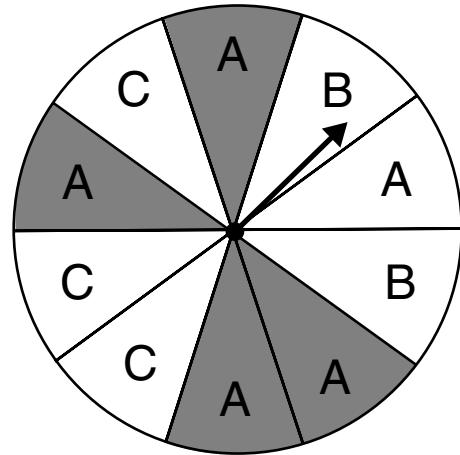
- 1.** If you spin the spinner 100 times, what is the probability you will land on A?
-

- 2.** If you spin the spinner 50 times, what is the probability you will land on B?
-

- 3.** If you spin the spinner 100 times, what is the probability you will land on C?
-

- 4.** If you spin the spinner 100 times, what is the probability you will land on a shaded section?
-

- 5.** If you spin the spinner 50 times, what is the probability you will land on an unshaded section?
-



- 6.** If you spin the spinner 50 times, what is the probability you will land on an A or a B?
-

Use a number cube with the faces labeled 1–6 for problems 7–10.

- 7.** Predict the number of times 3 will come up if you toss the number cube 30 times.
-

- 8.** If you toss the number cube 60 times, how often might 4 come up?
-

- 9.** Is it reasonable to predict that you will toss a 4 on the number cube 2 out of 12 tosses?
-

- 10.** Can you predict exactly how many times 5 will come up when you toss a number cube labeled 1–6?
-

Explore Making Predictions

The letters below have been sent to an advice column called “Could It Happen?”

Write a response to each letter. Include information about probability in your response.

Dear Could It Happen?,

My school is raffling off a computer. Each raffle ticket costs \$3.00. I think that if each student in our class buys a ticket, our class has a great chance of winning the computer. What do you think?

Sincerely,
Mouse Potato

Dear Mouse Potato,

Sincerely,
Could It Happen?

Dear Could It Happen?,

There are 30 people trying out for 15 parts in the school play. I don’t want to try out unless I have a pretty good chance of getting a part. What do you think the chances are that I will get the part?

Regards,
Broadway Bound

Dear Broadway Bound,

Regards,
Could It Happen?

Write your own letter to “Could It Happen?” Ask about the probability of an event happening.

Problem Solving: Reading Math and Science

Chew, Chew, Chew

Dissolve seltzer tablets of various sizes in water. Time how long each tablet takes to dissolve. Record your data in the table below.

Tablet	Time to Dissolve
Whole	
Half	
Quarter	

1. Rank the seltzer tablets in order from fastest to slowest.

2. What happens when you break the seltzer tablet into pieces? Why?

3. Describe a plan to make the seltzer tablet dissolve as fast as possible.

Name _____

Problem Solving: Reading Math and Science

Chew, Chew, Chew

**Math &
Science**
WORKSHEET

- 4.** Did you collect enough data in this activity to make any strong conclusions? Explain your answer.

- 5.** Explain the results of the activity in terms of surface area.

**UNIT
12****Add and Subtract
Fractions****CHAPTER 23 • SUPPORT MATERIALS**

Lesson	Titles	Masters	Use with pages
23-1	Add Fractions with Like Denominators	R23-1, P23-1, E23-1	542–543
23-2	Explore Adding Fractions with Unlike Denominators	R23-2, P23-2, E23-2	544–545
23-3	Add Fractions with Unlike Denominators	R23-3, P23-3, E23-3	546–548
23-4	Problem Solving: Skill Choose an Operation	R23-4, P23-4, E23-4	550–551

CHAPTER 24 • SUPPORT MATERIALS

Lesson	Titles	Masters	Use with pages
24-1	Subtract Fractions with Like Denominators	R24-1, P24-1, E24-1	556–557
24-2	Explore Subtracting Fractions with Unlike Denominators	R24-2, P24-2, E24-2	558–559
24-3	Subtract Fractions with Unlike Denominators	R24-3, P24-3, E24-3	560–562
24-4	Problem Solving: Strategy Solve a Simpler Problem	R24-4, R24-4, P24-4	564–565
24-5	Circle Graphs	R24-5, P24-5, E24-5	566–568
	Problem Solving: Decision Making	Worksheets	572–573

R—Reteach

P—Practice

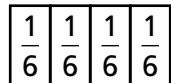
E—Enrich

Name _____

Add Fractions with Like Denominators



You can use fraction pieces to add fractions with like denominators.



$$\frac{2}{6}$$

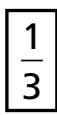
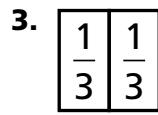
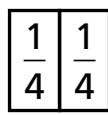
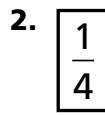
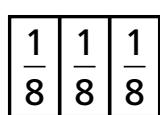
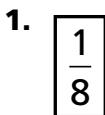
+

$$\frac{2}{6}$$

=

$$\frac{4}{6} = \frac{2}{3}$$

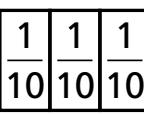
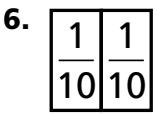
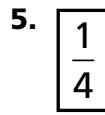
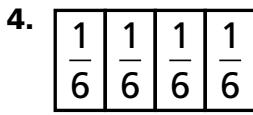
Add. Write each sum in simplest form.



$$\frac{1}{8} + \frac{3}{8} = \underline{\quad}$$

$$\frac{1}{4} + \frac{2}{4} = \underline{\quad}$$

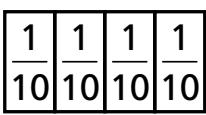
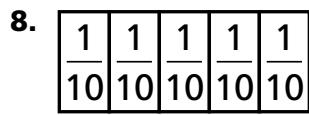
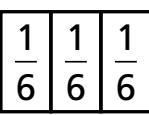
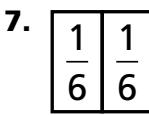
$$\frac{2}{3} + \frac{1}{3} = \underline{\quad}$$



$$\frac{4}{6} + \frac{1}{6} = \underline{\quad}$$

$$\frac{1}{4} + \frac{1}{4} = \underline{\quad}$$

$$\frac{2}{10} + \frac{3}{10} = \underline{\quad}$$



$$\frac{2}{6} + \frac{3}{6} = \underline{\quad}$$

$$\frac{5}{10} + \frac{4}{10} = \underline{\quad}$$

9. $\frac{1}{5} + \frac{2}{5} = \underline{\quad}$

10. $\frac{1}{8} + \frac{4}{8} = \underline{\quad}$

11. $\frac{3}{12} + \frac{4}{12} = \underline{\quad}$

12. $\frac{2}{12} + \frac{5}{12} = \underline{\quad}$

13. $\frac{2}{8} + \frac{4}{8} = \underline{\quad}$

14. $\frac{2}{10} + \frac{6}{10} = \underline{\quad}$

Add Fractions with Like Denominators

Add. Write each sum in simplest form.

1.
$$\begin{array}{r} \frac{1}{3} \\ + \frac{1}{3} \\ \hline \end{array}$$

2.
$$\begin{array}{r} \frac{1}{6} \\ + \frac{2}{6} \\ \hline \end{array}$$

3.
$$\begin{array}{r} \frac{2}{7} \\ + \frac{2}{7} \\ \hline \end{array}$$

4.
$$\begin{array}{r} \frac{2}{12} \\ + \frac{4}{12} \\ \hline \end{array}$$

5.
$$\begin{array}{r} \frac{3}{15} \\ + \frac{3}{15} \\ \hline \end{array}$$

6.
$$\begin{array}{r} \frac{6}{10} \\ + \frac{8}{10} \\ \hline \end{array}$$

7.
$$\begin{array}{r} \frac{3}{9} \\ + \frac{2}{9} \\ \hline \end{array}$$

8.
$$\begin{array}{r} \frac{2}{4} \\ + \frac{2}{4} \\ \hline \end{array}$$

9.
$$\begin{array}{r} \frac{2}{8} \\ + \frac{4}{8} \\ \hline \end{array}$$

10.
$$\begin{array}{r} \frac{3}{5} \\ + \frac{3}{5} \\ \hline \end{array}$$

11.
$$\begin{array}{r} \frac{7}{9} \\ + \frac{6}{9} \\ \hline \end{array}$$

12.
$$\begin{array}{r} \frac{3}{12} \\ + \frac{5}{12} \\ \hline \end{array}$$

13. $\frac{2}{16} + \frac{2}{16} = \underline{\quad}$

14. $\frac{3}{10} + \frac{2}{10} = \underline{\quad}$

15. $\frac{3}{18} + \frac{3}{18} = \underline{\quad}$

16. $\frac{1}{8} + \frac{7}{8} = \underline{\quad}$

17. $\frac{3}{9} + \frac{3}{9} = \underline{\quad}$

18. $\frac{5}{8} + \frac{4}{8} = \underline{\quad}$

19. $\frac{3}{4} + \frac{3}{4} = \underline{\quad}$

20. $\frac{5}{8} + \frac{5}{8} = \underline{\quad}$

21. $\frac{13}{16} + \frac{12}{16} = \underline{\quad}$

22. $\frac{7}{12} + \frac{8}{12} = \underline{\quad}$

23. $\frac{5}{11} + \frac{7}{11} = \underline{\quad}$

24. $\frac{9}{15} + \frac{3}{15} = \underline{\quad}$

Algebra Compare. Write $>$, $<$, or $=$.

25. $\frac{1}{4} + \frac{3}{4} \bigcirc 1$

26. $\frac{6}{7} + \frac{2}{7} \bigcirc 1$

27. $\frac{1}{6} + \frac{3}{6} \bigcirc 1$

28. $\frac{2}{9} + \frac{6}{9} \bigcirc 1$

29. $\frac{2}{10} + \frac{7}{10} \bigcirc 1$

30. $\frac{8}{12} + \frac{5}{12} \bigcirc 1$

Problem Solving

Solve.

- 31.** You need at least $1\frac{1}{4}$ yards of paper for a mural. You tape together 2 pieces of paper that are $\frac{3}{4}$ yard each. Do you have enough paper now? How long is your piece of paper?

- 32.** You want to make some salt ceramic dough. The recipe calls for $\frac{2}{3}$ cup of salt. If you want to double the recipe, how much salt will you need?

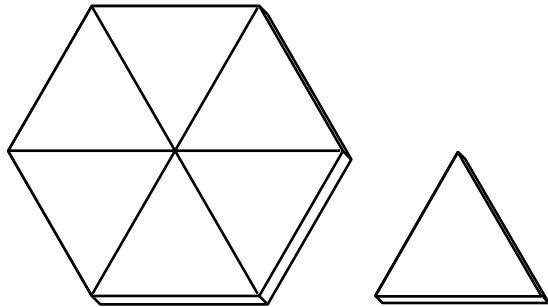
Add Fractions with Like Denominators

Play a game with a partner to form hexagons. You will need two number cubes and pattern blocks in the shape of a triangle and a hexagon.

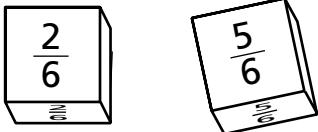
Write one of the following fractions and zero on each face of two number cubes.

$0, \frac{1}{6}, \frac{2}{6}, \frac{3}{6}, \frac{4}{6}, \frac{5}{6}$.

Each triangle pattern block stands for $\frac{1}{6}$ and each hexagon stands for 1.



$$\begin{array}{r} \frac{2}{6} \\ + \quad \frac{5}{6} \\ \hline \end{array} = 1\frac{1}{6}$$



How to Play

- Roll the two number cubes and show each fraction using the triangle pattern blocks.
- Find the sum of the fractions by combining the pattern blocks. Write a number sentence that shows the addition.
- When the triangle blocks form a whole hexagon, score 1 point. Save remainders for the next round.
- Take turns and play 5 rounds. Add remainders and new fractions.

The player with more points wins the game.

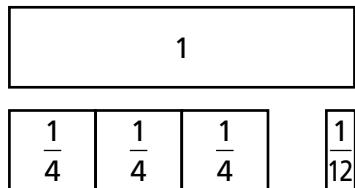
Which fractions would you like to roll each time? Explain.

Explore Adding Fractions with Unlike Denominators

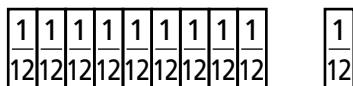
You can use fraction pieces to find equivalent fractions before you add.

Add $\frac{3}{4} + \frac{1}{12}$.

Make a model of each addend.



Use the fraction parts to find a **common denominator**.



$$\frac{3}{4} = \frac{9}{12}$$

Add the twelfths.

$$\frac{9}{12} + \frac{1}{12} = \frac{10}{12}$$

How many pieces do you have in simplest form?



So $\frac{3}{4} + \frac{1}{12} = \frac{5}{6}$

$$\frac{10}{12} = \frac{5}{6}$$

Add. You may use fraction pieces to help you. Write each answer in simplest form.

1. $\frac{3}{5} + \frac{2}{10} = \underline{\quad}$

2. $\frac{1}{6} + \frac{2}{3} = \underline{\quad}$

3. $\frac{1}{6} + \frac{1}{2} = \underline{\quad}$

4. $\frac{3}{12} + \frac{2}{6} = \underline{\quad}$

5. $\frac{2}{12} + \frac{1}{2} = \underline{\quad}$

6. $\frac{1}{4} + \frac{1}{2} = \underline{\quad}$

7. $\frac{3}{4} + \frac{1}{8} = \underline{\quad}$

8. $\frac{4}{10} + \frac{1}{2} = \underline{\quad}$

9. $\frac{1}{2} + \frac{5}{12} = \underline{\quad}$

10. $\frac{2}{9} + \frac{2}{3} = \underline{\quad}$

11. $\frac{3}{8} + \frac{1}{2} = \underline{\quad}$

12. $\frac{1}{10} + \frac{3}{5} = \underline{\quad}$

13. $\frac{1}{6} + \frac{1}{3} = \underline{\quad}$

14. $\frac{5}{8} + \frac{1}{4} = \underline{\quad}$

15. $\frac{2}{3} + \frac{1}{9} = \underline{\quad}$

Explore Adding Fractions with Unlike Denominators

Add. Write each sum in simplest form.

1.

$\frac{1}{2}$
$\frac{1}{4}$

$\frac{1}{4}$
$\frac{1}{4}$

$$\frac{1}{2} + \frac{1}{4} =$$

$$\frac{2}{4} + \frac{1}{4} =$$

2.

$\frac{1}{6}$
$\frac{1}{3}$

$\frac{1}{6}$
$\frac{1}{6}$
$\frac{1}{6}$

$$\frac{1}{6} + \frac{1}{3} =$$

$$\frac{1}{6} + \frac{2}{6} =$$

3.

$\frac{1}{6}$
$\frac{1}{6}$

$\frac{1}{2}$
$\frac{1}{6}$
$\frac{1}{6}$
$\frac{1}{6}$

$$\frac{1}{6} + \frac{1}{2} =$$

$$\frac{1}{6} + \frac{3}{6} =$$

4.

$\frac{1}{2}$
$\frac{1}{2}$

$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$
$\frac{8}{8}$	$\frac{8}{8}$	$\frac{8}{8}$

$$\frac{1}{2} + \frac{3}{8} =$$

$$\frac{4}{8} + \frac{3}{8} =$$

5.

$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$
$\frac{1}{5}$	$\frac{1}{5}$	$\frac{1}{5}$

$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$
$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$

$$\frac{3}{10} + \frac{2}{5} =$$

$$\frac{3}{10} + \frac{4}{10} =$$

6.

$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$
$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$

$\frac{1}{11}$	$\frac{1}{11}$	$\frac{1}{11}$
$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$

$$\frac{3}{4} + \frac{3}{8} =$$

$$\frac{6}{8} + \frac{3}{8} =$$

7. $\frac{3}{12} + \frac{5}{6} =$ _____

8. $\frac{7}{9} + \frac{1}{3} =$ _____

9. $\frac{2}{3} + \frac{2}{9} =$ _____

10. $\frac{5}{12} + \frac{1}{4} =$ _____

11. $\frac{1}{4} + \frac{5}{8} =$ _____

12. $\frac{1}{3} + \frac{1}{12} =$ _____

13. $\frac{1}{5} + \frac{3}{10} =$ _____

14. $\frac{1}{6} + \frac{2}{3} =$ _____

15. $\frac{1}{2} + \frac{1}{8} =$ _____

16. $\frac{2}{3} + \frac{5}{6} =$ _____

17. $\frac{2}{3} + \frac{7}{12} =$ _____

18. $\frac{3}{8} + \frac{1}{4} =$ _____

19. $\frac{2}{3} + \frac{1}{6} =$ _____

20. $\frac{1}{10} + \frac{3}{5} =$ _____

21. $\frac{3}{4} + \frac{7}{8} =$ _____

22. $\frac{3}{5} + \frac{3}{10} + \frac{1}{2} =$ _____

23. $\frac{1}{8} + \frac{1}{4} + \frac{1}{2} =$ _____

24. $\frac{4}{12} + \frac{1}{2} + \frac{1}{4} =$ _____

Explore Adding Fractions with Unlike Denominators

The squares contain hidden addition sentences. Look from left to right and top to bottom to find the hidden addition sentences. Circle each addition sentence you find. Each sum is in simplest form.

1.

$\frac{1}{3}$	$\frac{2}{8}$	$\frac{5}{8}$	$\frac{7}{8}$
$\frac{1}{3}$	$\frac{3}{5}$	$\frac{3}{5}$	$\frac{2}{5}$
$\frac{2}{3}$	$\frac{1}{5}$	$\frac{1}{5}$	$\frac{2}{5}$
$\frac{1}{5}$	$\frac{4}{5}$	$\frac{2}{5}$	$\frac{4}{5}$

2.

$\frac{2}{8}$	$\frac{3}{8}$	$\frac{5}{10}$	$\frac{1}{4}$
$\frac{4}{8}$	$\frac{1}{8}$	$\frac{2}{10}$	$\frac{1}{3}$
$\frac{3}{4}$	$\frac{1}{2}$	$\frac{7}{10}$	$\frac{3}{5}$
$\frac{3}{10}$	$\frac{2}{10}$	$\frac{1}{2}$	$\frac{4}{10}$

3.

$\frac{3}{4}$	$\frac{5}{12}$	$\frac{2}{3}$	$\frac{1}{4}$
$\frac{3}{8}$	$\frac{1}{12}$	$\frac{1}{8}$	$\frac{1}{3}$
$1\frac{1}{8}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{2}{3}$
$\frac{3}{4}$	$\frac{3}{4}$	$1\frac{1}{2}$	1

4.

$\frac{1}{3}$	$\frac{3}{10}$	$\frac{1}{10}$	$\frac{2}{5}$
$\frac{1}{6}$	$\frac{1}{3}$	$\frac{3}{4}$	$\frac{1}{4}$
$\frac{1}{2}$	$\frac{1}{4}$	$\frac{3}{4}$	$\frac{3}{8}$
$\frac{1}{4}$	$\frac{3}{4}$	1	$\frac{5}{8}$

Add Fractions with Unlike Denominators

You can use fraction pieces to help you record the steps when you add unlike fractions.

Add $\frac{2}{3} + \frac{1}{6}$.

Using Fraction Pieces	Using Pencil and Paper
$\begin{array}{ c c } \hline 1 & 1 \\ \hline 3 & 3 \\ \hline \end{array} + \begin{array}{ c } \hline 1 \\ \hline 6 \\ \hline \end{array}$ $\begin{array}{ c c c c } \hline 1 & 1 & 1 & 1 \\ \hline 6 & 6 & 6 & 6 \\ \hline \end{array} + \begin{array}{ c } \hline 1 \\ \hline 6 \\ \hline \end{array} =$ $\frac{2}{3} + \frac{1}{6}$ $\frac{4}{6} + \frac{1}{6} = \frac{5}{6}$	<p>Find equivalent fractions.</p> $\frac{2}{3} = \frac{4}{6}$ $\begin{array}{r} 4 \\ 6 \\ + 1 \\ \hline 5 \end{array}$ <p>Add the numerators. Use the common denominator.</p> <p>Write the answer in simplest form.</p>

Find each equivalent fraction. Then add. Write the sum in simplest form.

You may use fraction pieces to help you add.

1. $\frac{1}{8} = \frac{\square}{8}$
 $\frac{+ 3}{4} = \frac{\square}{8}$

2. $\frac{1}{3} = \frac{\square}{12}$
 $\frac{+ 7}{12} = \frac{\square}{12}$

3. $\frac{4}{5} = \frac{\square}{10}$
 $\frac{+ 2}{10} = \frac{\square}{10}$

4. $\frac{1}{2} = \frac{\square}{6}$
 $\frac{+ 2}{6} = \frac{\square}{6}$

5. $\frac{6}{10} = \frac{\square}{10}$
 $\frac{+ 1}{5} = \frac{\square}{10}$

6. $\frac{3}{4} = \frac{9}{\square}$
 $\frac{+ 2}{12} = \frac{2}{\square}$

7. $\frac{7}{8} = \frac{\square}{\square}$
 $\frac{+ 3}{4} = \frac{\square}{\square}$

8. $\frac{9}{10} = \frac{\square}{\square}$
 $\frac{+ 3}{5} = \frac{\square}{\square}$

9. $\frac{7}{12}$
 $\frac{+ 2}{6}$

10. $\frac{1}{3}$
 $\frac{+ 1}{6}$

11. $\frac{1}{4}$
 $\frac{+ 1}{2}$

12. $\frac{5}{12}$
 $\frac{+ 1}{4}$

Add Fractions with Unlike Denominators

Add. Write each sum in simplest form.

1. $\frac{1}{4}$
 $\underline{+ \frac{1}{8}}$

2. $\frac{2}{3}$
 $\underline{+ \frac{3}{6}}$

3. $\frac{8}{12}$
 $\underline{+ \frac{3}{4}}$

4. $\frac{5}{6}$
 $\underline{+ \frac{1}{3}}$

5. $\frac{1}{5}$
 $\underline{+ \frac{2}{15}}$

6. $\frac{1}{6}$
 $\underline{+ \frac{3}{12}}$

7. $\frac{1}{6}$
 $\underline{+ \frac{2}{3}}$

8. $\frac{1}{3}$
 $\underline{+ \frac{6}{15}}$

9. $\frac{1}{2}$
 $\underline{+ \frac{6}{10}}$

10. $\frac{1}{2}$
 $\underline{+ \frac{5}{6}}$

11. $\frac{1}{2}$
 $\underline{+ \frac{7}{8}}$

12. $\frac{3}{5}$
 $\underline{+ \frac{7}{10}}$

13. $\frac{1}{2} + \frac{1}{4} =$ _____

14. $\frac{3}{10} + \frac{1}{2} =$ _____

15. $\frac{1}{6} + \frac{5}{12} =$ _____

16. $\frac{1}{4} + \frac{3}{8} =$ _____

17. $\frac{3}{12} + \frac{2}{3} =$ _____

18. $\frac{1}{5} + \frac{5}{15} =$ _____

19. $\frac{3}{4} + \frac{3}{8} =$ _____

20. $\frac{7}{9} + \frac{1}{3} =$ _____

21. $\frac{1}{4} + \frac{5}{12} =$ _____

22. $\frac{10}{12} + \frac{3}{4} =$ _____

23. $\frac{1}{2} + \frac{5}{6} + \frac{1}{3} =$ _____

24. $\frac{1}{8} + \frac{1}{2} + \frac{3}{4} =$ _____

Algebra Compare. Write $>$, $<$, or $=$.

25. $\frac{1}{4} + \frac{9}{12} \bigcirc \frac{1}{4} + \frac{2}{3}$

26. $\frac{2}{6} + \frac{1}{6} \bigcirc \frac{1}{2} + \frac{1}{4}$

27. $\frac{2}{12} + \frac{1}{4} \bigcirc \frac{3}{12} + \frac{1}{6}$

28. $\frac{3}{5} + \frac{4}{10} \bigcirc \frac{1}{2} + \frac{2}{10}$

Problem Solving

Solve.

29. Your family ate $\frac{1}{2}$ of a box of cereal one day and $\frac{3}{4}$ the next. Did your family eat more or less than 1 box of cereal? Explain.

30. At 6:00 P.M., $\frac{1}{6}$ of the passengers boarded the plane. At 6:10 P.M., $\frac{2}{3}$ of the passengers boarded. What fraction of the passengers are on the plane?

Add Fractions with Unlike Denominators

In the magic squares, the sum of each row, column, and diagonal is the same. Complete each magic square.

1. The magic sum is $1\frac{4}{11}$.

		$\frac{8}{11}$
$\frac{9}{11}$		
	$\frac{7}{11}$	$\frac{6}{11}$

2. The magic sum is $\frac{15}{16}$.

		$\frac{1}{4}$
$\frac{1}{16}$		
	$\frac{7}{16}$	$\frac{1}{8}$

3. What is the magic sum? —

	$\frac{1}{6}$	
$\frac{1}{3}$	$\frac{7}{18}$	$\frac{1}{9}$

4. What is the magic sum? —

		$\frac{3}{5}$
	$\frac{1}{2}$	
$\frac{2}{5}$		$\frac{1}{5}$

5. How did you find the magic sum in problem 3?

Problem Solving: Skill

Choose an Operation

Nick buys $\frac{3}{4}$ pound of roast beef and $\frac{1}{4}$ pound of ham. How many pounds of meat does Nick buy in all?

Step 1**Read****Be sure you understand the problem.**

What do you know?

- Nick buys $\frac{3}{4}$ pound of roast beef.
- He also buys $\frac{1}{4}$ pound of ham.

What do you need to find?

- How many pounds of meat does Nick buy in all?

Step 2**Plan****Make a plan.**

Choose an operation.

- Since you want to find the total, choose addition.

Step 3**Solve****Carry out your plan.**

$$\frac{3}{4} + \frac{1}{4} = \frac{4}{4} = 1 \text{ pound}$$

Nick buys 1 pound of meat in all.

Step 4**Look Back****Is the solution reasonable?**

Does your answer make sense? Yes

No

Practice

Solve. Tell how you chose the operation.

- 1.** Kirstin cuts a pie into a dozen pieces. Her friends eat 7 pieces. What part of the pie is left?

- 2.** A recipe calls for $\frac{3}{4}$ cup of raisins and $\frac{1}{4}$ cup of nuts. How many cups of raisins and nuts are needed?

Problem Solving: Skill

Choose an Operation

Solve.

1. Max buys $\frac{7}{8}$ pound of apples and $\frac{3}{8}$ pound of grapes. What is the total amount of fruit he buys?
-

3. Chen buys $\frac{5}{8}$ pound of American cheese and $\frac{1}{4}$ pound of Swiss cheese. How much more American cheese than Swiss cheese does he buy?
-

5. Amy buys $\frac{1}{4}$ pound of turkey and $\frac{1}{4}$ pound of honey-roasted ham. How much meat does she buy altogether?
-

7. A recipe for pudding uses $\frac{3}{10}$ cup of milk. A recipe for custard uses $\frac{2}{5}$ cup of milk. How much milk do both recipes use?
-

2. Adela makes 20 cookies. She gives 15 cookies to her friends. What part of the 20 cookies is left?
-

4. Kathryn uses $\frac{3}{4}$ tablespoon of nutmeg and $\frac{3}{4}$ tablespoon of cocoa. How many tablespoons of nutmeg and cocoa does she use altogether?
-

6. Marge cuts a cherry pie into 8 slices. She eats one slice. What part of the pie is left?
-

8. Patrick bought $\frac{3}{4}$ pound of large cookies and $\frac{1}{12}$ pound of small cookies. What is the total weight of the cookies he bought?
-

Mixed Strategy Review

Solve. Use any strategy.

9. Jamal has 30 coins. He has 5 more nickels than dimes and 5 fewer quarters than dimes. How many of each kind of coin does Jamal have?
-

Strategy: _____

10. Caroline needs to arrive at school at 8:45 A.M. It takes her 10 minutes to get dressed, 10 minutes to eat breakfast, and 15 minutes to walk to school. At what time should Caroline get up?
-

Strategy: _____

Problem Solving: Skill

Choose an Operation

The Sandwich Shop makes several different types of sandwiches. Use the chart to solve each problem.

Provolone cheese	\$1.00 per $\frac{1}{4}$ pound
Swiss cheese	\$1.00 per $\frac{1}{3}$ pound
Roast beef	\$1.00 per $\frac{1}{8}$ pound
Ham	\$1.00 per $\frac{1}{5}$ pound

1. The Cheese sandwich has $\frac{1}{2}$ pound of provolone cheese and $\frac{1}{6}$ pound of Swiss cheese. What is the total cost of the cheese in the sandwich?

2. The Cheese and Roast Beef sandwich has $\frac{1}{3}$ pound of Swiss cheese and $\frac{1}{2}$ pound of roast beef. How much more does the roast beef cost than the Swiss cheese?

3. The Ham and Roast Beef sandwich has $\frac{1}{2}$ pound of roast beef and $\frac{2}{5}$ pound of ham. What is the cost of the meat in the sandwich?

4. The Jumbo sandwich has 1 pound of meat. How much more does the roast beef cost in the Jumbo sandwich than in the Ham and Roast Beef sandwich?

5. The Child's sandwich has $\frac{1}{6}$ pound of Swiss cheese. What is the cost of the Swiss cheese in the sandwich?

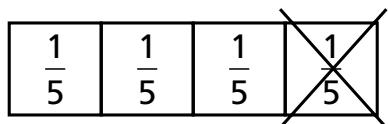
6. The Everything sandwich has $\frac{1}{4}$ pound of provolone cheese, $\frac{2}{3}$ pound of Swiss cheese, $\frac{1}{8}$ pound of roast beef, and $\frac{1}{10}$ pound of ham. How much more does the cheese cost than the meat in the sandwich?

7. Make up a meat-and-cheese sandwich. Tell the weight of the cheese and of the meat in your sandwich. Write and solve a problem about your sandwich.

Subtract Fractions with Like Denominators

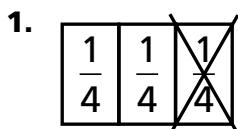


You can use fraction pieces to subtract fractions with like denominators.

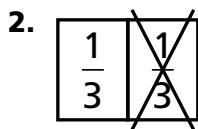


$$\frac{4}{5} - \frac{1}{5} = \frac{3}{5}$$

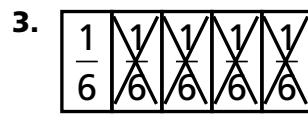
Subtract. Write each difference in simplest form.



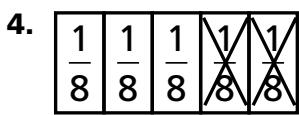
$$\frac{3}{4} - \frac{1}{4} = \underline{\quad}$$



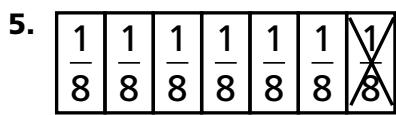
$$\frac{2}{3} - \frac{1}{3} = \underline{\quad}$$



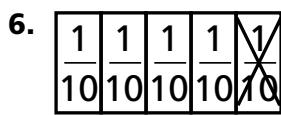
$$\frac{5}{6} - \frac{4}{6} = \underline{\quad}$$



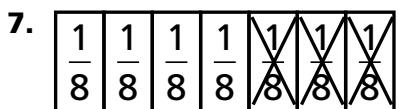
$$\frac{5}{8} - \frac{2}{8} = \underline{\quad}$$



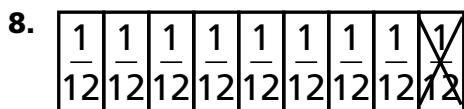
$$\frac{7}{8} - \frac{1}{8} = \underline{\quad}$$



$$\frac{5}{10} - \frac{1}{10} = \underline{\quad}$$



$$\frac{7}{8} - \frac{3}{8} = \underline{\quad}$$



$$\frac{9}{12} - \frac{1}{12} = \underline{\quad}$$

Subtract. Write each difference in simplest form.

$$9. \frac{3}{4} - \frac{1}{4} = \underline{\quad}$$

$$10. \frac{3}{3} - \frac{2}{3} = \underline{\quad}$$

$$11. \frac{5}{5} - \frac{3}{5} = \underline{\quad}$$

$$12. \frac{7}{12} - \frac{1}{12} = \underline{\quad}$$

$$13. \frac{7}{16} - \frac{3}{16} = \underline{\quad}$$

$$14. \frac{8}{10} - \frac{5}{10} = \underline{\quad}$$

Name _____

Subtract Fractions with Like Denominators



Subtract. Write each difference in simplest form.

$$\begin{array}{r} \frac{4}{5} \\ - \frac{2}{5} \\ \hline \end{array}$$

$$\begin{array}{r} \frac{5}{7} \\ - \frac{3}{7} \\ \hline \end{array}$$

$$\begin{array}{r} \frac{5}{8} \\ - \frac{1}{8} \\ \hline \end{array}$$

$$\begin{array}{r} \frac{8}{9} \\ - \frac{2}{9} \\ \hline \end{array}$$

$$\begin{array}{r} \frac{5}{6} \\ - \frac{1}{6} \\ \hline \end{array}$$

$$\begin{array}{r} \frac{4}{9} \\ - \frac{1}{9} \\ \hline \end{array}$$

$$\begin{array}{r} \frac{7}{10} \\ - \frac{2}{10} \\ \hline \end{array}$$

$$\begin{array}{r} \frac{6}{10} \\ - \frac{4}{10} \\ \hline \end{array}$$

$$\begin{array}{r} \frac{7}{12} \\ - \frac{1}{12} \\ \hline \end{array}$$

$$\begin{array}{r} \frac{4}{15} \\ - \frac{1}{15} \\ \hline \end{array}$$

$$\begin{array}{r} \frac{8}{11} \\ - \frac{4}{11} \\ \hline \end{array}$$

$$\begin{array}{r} \frac{11}{12} \\ - \frac{8}{12} \\ \hline \end{array}$$

$$13. \frac{7}{9} - \frac{2}{9} = \underline{\quad}$$

$$14. \frac{5}{16} - \frac{1}{16} = \underline{\quad}$$

$$15. \frac{7}{8} - \frac{3}{8} = \underline{\quad}$$

$$16. \frac{5}{7} - \frac{4}{7} = \underline{\quad}$$

$$17. \frac{8}{9} - \frac{1}{9} = \underline{\quad}$$

$$18. \frac{4}{5} - \frac{3}{5} = \underline{\quad}$$

$$19. \frac{7}{12} - \frac{5}{12} = \underline{\quad}$$

$$20. \frac{7}{12} - \frac{4}{12} = \underline{\quad}$$

$$21. \frac{10}{11} - \frac{5}{11} = \underline{\quad}$$

$$22. \frac{11}{12} - \frac{8}{12} = \underline{\quad}$$

$$23. \frac{9}{10} - \frac{5}{10} = \underline{\quad}$$

$$24. \frac{7}{8} - \frac{3}{8} = \underline{\quad}$$

$$25. \frac{2}{3} - \frac{2}{3} = \underline{\quad}$$

$$26. \frac{8}{9} - \frac{2}{9} = \underline{\quad}$$

$$27. \frac{9}{11} - \frac{8}{11} = \underline{\quad}$$

Algebra Compare. Write $>$, $<$, or $=$.

$$28. \frac{5}{9} - \frac{2}{9} \bigcirc \frac{6}{9} - \frac{3}{9}$$

$$29. \frac{7}{10} - \frac{3}{10} \bigcirc \frac{8}{10} - \frac{2}{10}$$

$$30. \frac{5}{12} - \frac{1}{12} \bigcirc \frac{7}{12} - \frac{5}{12}$$

$$31. \frac{11}{15} - \frac{10}{15} \bigcirc \frac{14}{15} - \frac{13}{15}$$

$$32. \frac{7}{11} - \frac{6}{11} \bigcirc \frac{7}{11} - \frac{5}{11}$$

$$33. \frac{12}{13} - \frac{5}{13} \bigcirc \frac{9}{13} - \frac{2}{13}$$

Problem Solving

Solve.

34. At lunch you cut a sandwich into 4 parts and eat 3 of the parts. What fraction of the sandwich is left?

35. For breakfast and lunch you drink $\frac{2}{3}$ of a quart of milk. How much of the quart is left?

Subtract Fractions with Like Denominators



Riddle: When is it bad luck to have a black cat follow you?

Subtract. Write each difference in simplest form. To solve the riddle, find the letter that goes with each difference. Write the letters on the lines below.

A $\frac{5}{8} - \frac{2}{8}$	E $\frac{5}{16} - \frac{4}{16}$	R $\frac{9}{10} - \frac{5}{10}$	O $\frac{23}{24} - \frac{2}{24}$
Y $\frac{7}{10} - \frac{4}{10}$	U $\frac{15}{16} - \frac{3}{16}$	E $\frac{7}{16} - \frac{5}{16}$	W $\frac{6}{10} - \frac{5}{10}$
E $\frac{11}{16} - \frac{7}{16}$	H $\frac{7}{8} - \frac{2}{8}$	S $\frac{13}{24} - \frac{1}{24}$	M $\frac{18}{20} - \frac{2}{20}$
N $\frac{7}{12} - \frac{3}{12}$	O $\frac{13}{16} - \frac{4}{16}$	A $\frac{13}{15} - \frac{4}{15}$	U $\frac{11}{12} - \frac{6}{12}$

Explore Subtracting Fractions with Unlike Denominators

You can use fraction pieces to find equivalent fractions before you subtract fractions with unlike denominators.

Subtract $\frac{1}{4} - \frac{1}{8}$.



Compare fourths to eighths.

$\frac{2}{8}$ is equivalent to $\frac{1}{4}$.



Subtract the eighths.

$$\frac{2}{8} - \frac{1}{8} = \frac{1}{8}$$



$$\text{So, } \frac{1}{4} - \frac{1}{8} = \frac{1}{8}.$$

Subtract. You may use fraction pieces to help you.

Write each difference in simplest form.

1. $\frac{1}{2} - \frac{2}{12} = \underline{\quad}$

2. $\frac{1}{5} - \frac{1}{10} = \underline{\quad}$

3. $\frac{3}{4} - \frac{1}{2} = \underline{\quad}$

4. $\frac{7}{12} - \frac{1}{3} = \underline{\quad}$

5. $\frac{5}{10} - \frac{1}{2} = \underline{\quad}$

6. $\frac{5}{6} - \frac{1}{3} = \underline{\quad}$

7. $\frac{1}{2} - \frac{3}{10} = \underline{\quad}$

8. $\frac{5}{6} - \frac{5}{12} = \underline{\quad}$

9. $\frac{1}{2} - \frac{3}{8} = \underline{\quad}$

10. $\frac{2}{3} - \frac{1}{6} = \underline{\quad}$

11. $\frac{4}{5} - \frac{1}{10} = \underline{\quad}$

12. $\frac{7}{9} - \frac{1}{3} = \underline{\quad}$

13. $\frac{3}{4} - \frac{5}{8} = \underline{\quad}$

14. $\frac{4}{5} - \frac{3}{10} = \underline{\quad}$

15. $\frac{11}{12} - \frac{5}{6} = \underline{\quad}$

16. $\frac{7}{10} - \frac{3}{5} = \underline{\quad}$

17. $\frac{2}{3} - \frac{1}{6} = \underline{\quad}$

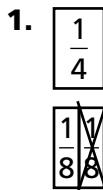
18. $\frac{5}{6} - \frac{5}{12} = \underline{\quad}$

Name _____

Explore Subtracting Fractions with Unlike Denominators

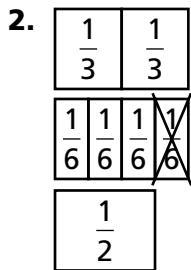


Subtract. Write each difference in simplest form.



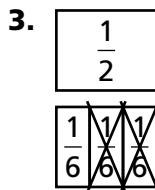
$$\frac{1}{4} - \frac{1}{8} =$$

$$\frac{2}{8} - \frac{1}{8} =$$



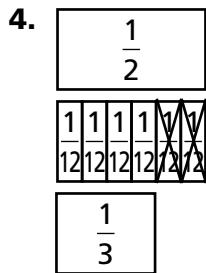
$$\frac{2}{3} - \frac{1}{6} =$$

$$\frac{4}{6} - \frac{1}{6} =$$



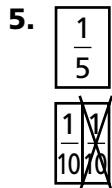
$$\frac{1}{2} - \frac{1}{3} =$$

$$\frac{3}{6} - \frac{2}{6} =$$



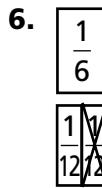
$$\frac{1}{2} - \frac{2}{12} =$$

$$\frac{6}{12} - \frac{2}{12} =$$



$$\frac{1}{5} - \frac{1}{10} =$$

$$\frac{2}{10} - \frac{1}{10} =$$



$$\frac{1}{6} - \frac{1}{12} =$$

$$\frac{2}{12} - \frac{1}{12} =$$

7. $\frac{3}{12} - \frac{1}{6} =$ _____

8. $\frac{1}{2} - \frac{2}{10} =$ _____

9. $\frac{1}{4} - \frac{1}{12} =$ _____

10. $\frac{7}{12} - \frac{1}{3} =$ _____

11. $\frac{7}{9} - \frac{2}{3} =$ _____

12. $\frac{5}{12} - \frac{1}{4} =$ _____

13. $\frac{5}{6} - \frac{1}{3} =$ _____

14. $\frac{3}{4} - \frac{4}{12} =$ _____

15. $\frac{1}{2} - \frac{1}{12} =$ _____

16. $\frac{1}{2} - \frac{3}{10} =$ _____

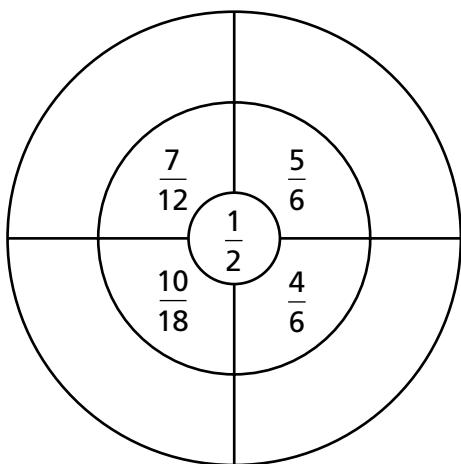
17. $\frac{5}{6} - \frac{1}{12} =$ _____

18. $\frac{1}{2} - \frac{3}{8} =$ _____

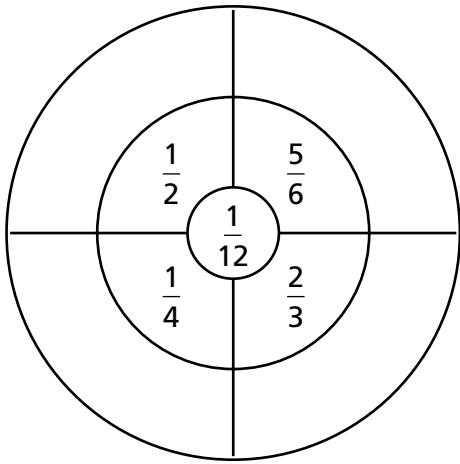
Explore Subtracting Fractions with Unlike Denominators

Subtract the fraction in the center from each fraction in the inner circle. Write the difference in simplest form in the outer circle.

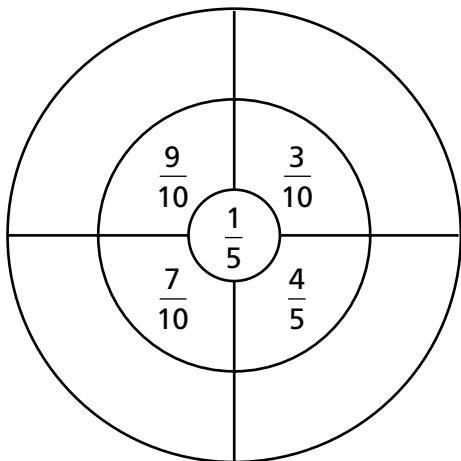
1.



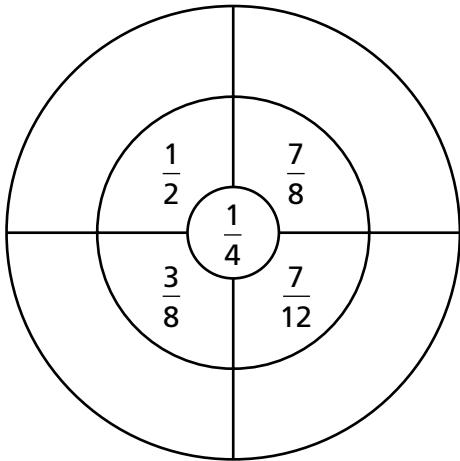
2.



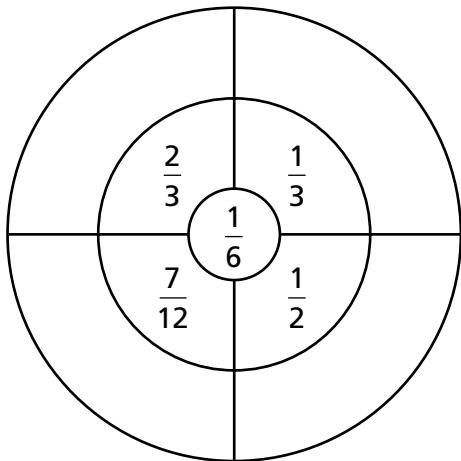
3.



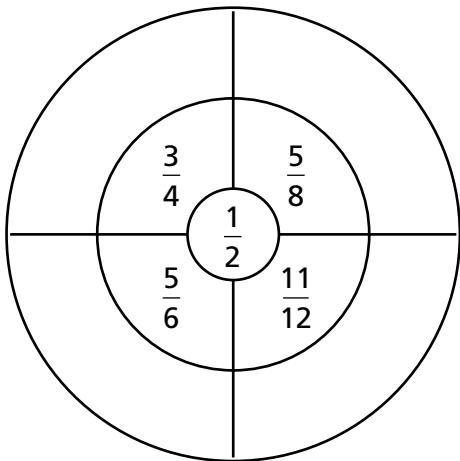
4.



5.



6.



Subtract Fractions with Unlike Denominators

R 24-3
RETEACH

You can use fraction pieces to help you record the steps when you subtract unlike fractions.

Subtract $\frac{7}{10} - \frac{2}{5}$.

Use Fraction Pieces

$$\begin{array}{c|ccccccccc} 1 & 1 & 1 & 1 & 1 & 1 & 1 \\ \hline 10 & 10 & 10 & 10 & 10 & 10 & 10 \end{array} - \begin{array}{cc} \frac{1}{5} & \frac{1}{5} \end{array}$$

$$\begin{array}{cc} \frac{1}{5} & \frac{1}{5} \end{array} = \begin{array}{c|ccccccccc} 1 & 1 & 1 & 1 & 1 & 1 \\ \hline 10 & 10 & 10 & 10 & 10 & 10 \end{array}$$

$$\begin{array}{c|ccccccccc} 1 & 1 & 1 & \cancel{1} & \cancel{1} & \cancel{1} & \cancel{1} \\ \hline 10 & 10 & 10 & \cancel{10} & \cancel{10} & \cancel{10} & \cancel{10} \end{array}$$

$$\frac{7}{10} - \frac{2}{5}$$

$$\frac{7}{10} - \frac{4}{10} = \frac{3}{10}$$

Use Pencil and Paper

Find equivalent fractions.

$$\frac{7}{10} = \frac{7}{10}$$

$$\frac{2}{5} = \frac{4}{10}$$

Subtract the numerators.
Use the common denominator.

$$\begin{array}{r} \frac{7}{10} \\ - \frac{4}{10} \\ \hline \frac{3}{10} \end{array}$$

Write the answer in simplest form if necessary.

Find each equivalent fraction. Then subtract. Write the difference in simplest form.
You may use fraction pieces to help you subtract.

$$\begin{array}{r} 1. \quad \frac{7}{8} = \frac{\square}{8} \\ - \frac{3}{4} = \frac{\square}{8} \\ \hline \end{array}$$

$$\begin{array}{r} 2. \quad \frac{7}{12} = \frac{\square}{12} \\ - \frac{2}{6} = \frac{\square}{12} \\ \hline \end{array}$$

$$\begin{array}{r} 3. \quad \frac{1}{2} = \frac{\square}{8} \\ - \frac{1}{8} = \frac{\square}{8} \\ \hline \end{array}$$

$$\begin{array}{r} 4. \quad \frac{2}{3} = \frac{\square}{6} \\ - \frac{1}{6} = \frac{\square}{6} \\ \hline \end{array}$$

$$\begin{array}{r} 5. \quad \frac{4}{5} = \frac{\square}{10} \\ - \frac{3}{10} = \frac{\square}{10} \\ \hline \end{array}$$

$$\begin{array}{r} 6. \quad \frac{9}{12} = \frac{9}{\square} \\ - \frac{1}{6} = \frac{2}{\square} \\ \hline \end{array}$$

$$\begin{array}{r} 7. \quad \frac{7}{9} = \frac{\square}{\square} \\ - \frac{1}{3} = \frac{\square}{\square} \\ \hline \end{array}$$

$$\begin{array}{r} 8. \quad \frac{2}{3} = \frac{\square}{\square} \\ - \frac{4}{12} = \frac{\square}{\square} \\ \hline \end{array}$$

$$\begin{array}{r} 9. \quad \frac{5}{10} \\ - \frac{1}{5} \\ \hline \end{array}$$

$$\begin{array}{r} 10. \quad \frac{1}{2} \\ - \frac{2}{6} \\ \hline \end{array}$$

$$\begin{array}{r} 11. \quad \frac{6}{10} \\ - \frac{1}{5} \\ \hline \end{array}$$

$$\begin{array}{r} 12. \quad \frac{8}{10} \\ - \frac{1}{2} \\ \hline \end{array}$$

Name _____

Subtract Fractions with Unlike Denominators



24-3

PRACTICE

Subtract. Write each difference in simplest form.

$$\begin{array}{r} \frac{1}{3} \\ - \frac{1}{12} \\ \hline \end{array}$$

$$\begin{array}{r} \frac{3}{4} \\ - \frac{5}{12} \\ \hline \end{array}$$

$$\begin{array}{r} \frac{1}{5} \\ - \frac{2}{15} \\ \hline \end{array}$$

$$\begin{array}{r} \frac{7}{10} \\ - \frac{1}{5} \\ \hline \end{array}$$

$$\begin{array}{r} \frac{11}{12} \\ - \frac{5}{6} \\ \hline \end{array}$$

$$\begin{array}{r} \frac{5}{6} \\ - \frac{2}{3} \\ \hline \end{array}$$

$$\begin{array}{r} \frac{9}{10} \\ - \frac{3}{5} \\ \hline \end{array}$$

$$\begin{array}{r} \frac{3}{4} \\ - \frac{1}{2} \\ \hline \end{array}$$

$$\begin{array}{r} \frac{3}{5} \\ - \frac{3}{10} \\ \hline \end{array}$$

$$\begin{array}{r} \frac{5}{9} \\ - \frac{1}{3} \\ \hline \end{array}$$

$$\begin{array}{r} \frac{2}{3} \\ - \frac{2}{9} \\ \hline \end{array}$$

$$\begin{array}{r} \frac{3}{4} \\ - \frac{1}{8} \\ \hline \end{array}$$

$$13. \frac{5}{8} - \frac{1}{4} = \underline{\quad}$$

$$14. \frac{2}{3} - \frac{1}{6} = \underline{\quad}$$

$$15. \frac{1}{4} - \frac{1}{12} = \underline{\quad}$$

$$16. \frac{4}{5} - \frac{7}{10} = \underline{\quad}$$

$$17. \frac{4}{9} - \frac{1}{3} = \underline{\quad}$$

$$18. \frac{4}{5} - \frac{3}{10} = \underline{\quad}$$

$$19. \frac{1}{2} - \frac{1}{6} = \underline{\quad}$$

$$20. \frac{3}{8} - \frac{1}{4} = \underline{\quad}$$

$$21. \frac{7}{9} - \frac{1}{3} = \underline{\quad}$$

$$22. \frac{7}{12} - \frac{1}{6} = \underline{\quad}$$

$$23. \frac{1}{2} - \frac{1}{4} = \underline{\quad}$$

$$24. \frac{2}{3} - \frac{5}{12} = \underline{\quad}$$

$$25. \frac{7}{12} - \frac{1}{2} = \underline{\quad}$$

$$26. \frac{7}{10} - \frac{2}{5} = \underline{\quad}$$

$$27. \frac{1}{2} - \frac{2}{10} = \underline{\quad}$$

Algebra Find each missing number.

$$28. \frac{7}{8} - \frac{1}{2} = \frac{\square}{8}$$

$$29. \frac{5}{6} - \frac{1}{\square} = \frac{2}{3}$$

$$30. \frac{3}{4} - \frac{\square}{12} = \frac{2}{3}$$

$$31. \frac{3}{6} - \frac{1}{\square} = \frac{1}{3}$$

$$32. \frac{2}{3} - \frac{1}{6} = \frac{\square}{2}$$

$$33. \frac{5}{9} - \frac{1}{\square} = \frac{2}{9}$$

Problem Solving

Solve.

34. Pam has $\frac{7}{8}$ yard of ribbon. She uses $\frac{1}{2}$ yard. How much ribbon does Pam have left?

35. Joe has $\frac{5}{6}$ yard of fabric. He uses $\frac{2}{3}$ yard to make a kite. How much fabric does Joe have left?

Subtract Fractions with Unlike Denominators

E 24-3
ENRICH

How good is your memory?

Play this memory game with a partner.

Take turns.

You will need to make 12 subtraction expressions.

Use fractions with unlike denominators, like the sample below.

Write each expression on a separate index card.

Write each difference, in simplest form, on a separate index card.

You should have 24 cards.

 $\frac{3}{4} - \frac{1}{8}$ **Subtraction Expression** $\frac{5}{8}$ **Difference**

How to Play

- Place the 24 cards face down. Mix them up. Arrange the cards in 4 rows of 6 cards each.
- Take turns turning over two cards. If a player turns over a subtraction expression and its matching difference, then he or she keeps the cards and takes another turn. If there is no match, the player replaces both cards. The other player takes a turn.
- Continue taking turns until all the cards have been matched. The player with more pairs of cards wins.

Problem Solving: Strategy

Solve a Simpler Problem

Page 565, Problem 3

Josh buys a 5-pound watermelon for \$0.49 per pound and 2 pounds of grapes for \$1.29 per pound. Sabrina buys an 8-pound watermelon for \$0.29 per pound and 3 pounds of grapes for \$0.99 per pound. Who spends more money? How much more?

Step 1
Read

Be sure you understand the problem.

Read carefully.

What do you know?

- Josh buys _____ pounds of watermelon for _____ per pound.
He also buys _____ pounds of grapes for _____ per pound.
- Sabrina buys _____ pounds of watermelon for _____ per pound.
She also buys _____ pounds of grapes for _____ per pound.

What do you need to find?

- You need to find _____

Step 2
Plan

Make a plan.

Choose a strategy.

Use simpler numbers to make up a problem similar to the one you need to solve. Then solve the real problem the same way.

- Logical Reasoning
- Draw a Picture or Diagram
- Make a Graph
- Act It Out
- Make a Table or List
- Find a Pattern
- Guess and Check
- Write an Equation
- Work Backward
- Solve a Simpler Problem

Problem Solving: Strategy

Solve a Simpler Problem

Step 3**Solve** →**Carry out your plan.**

Create a simpler problem.

Josh: watermelon: \$0.50 per lb grapes: \$1.30 per lb

$$\begin{array}{rcl} 5 \times \$0.50 = \$2.50 & & 2 \times \$1.30 = \$2.60 \\ \$2.50 + \$2.60 = \$5.10 & & \end{array}$$

Sabrina: watermelon: \$0.30 per lb grapes: \$1.00 per lb

$$\begin{array}{rcl} 8 \times \$0.30 = \$2.40 & & 3 \times \$1.00 = \$3.00 \\ \$2.40 + \$3.00 = \$5.40 & & \end{array}$$

Solve the problem using the real numbers.

Josh: $5 \text{ lb} \times \$0.49 = \2.45 $2 \text{ lb} \times \$1.29 = \2.58

$$\$2.45 + \$2.58 = \$5.03$$

Sabrina: $8 \text{ lb} \times \$0.29 = \2.32 $3 \text{ lb} \times \$0.99 = \2.97

$$\$2.32 + \$2.97 = \$5.29$$

 $\$5.29 - \$5.03 = \$0.26$ Sabrina spends \$0.26 more.
Step 4**Look Back** →**Is the solution reasonable?**

Reread the problem.

Does your answer make sense? Explain. _____

Practice

- 1.** Robert buys 4 pounds of apples for \$0.89 per pound and 3 pounds of grapes for \$1.09 per pound. Which fruit does he spend more on? How much more?

- 2.** Kostas buys $\frac{7}{8}$ pound of cashew nuts, $\frac{5}{8}$ pound of walnuts, and $\frac{1}{2}$ pound of peanuts. Jane buys $\frac{3}{8}$ pound of cashew nuts, $\frac{1}{2}$ pound of walnuts, and $\frac{3}{8}$ pound of peanuts. Who buys more nuts? How much more?

Problem Solving: Strategy

Solve a Simpler Problem

Solve using a simpler problem.

- 1.** Sandwiches cost \$4.95. Drinks cost \$0.99. How much does it cost to buy 2 sandwiches and 3 drinks?

-
- 3.** Recipe A uses $\frac{1}{2}$ cup of chicken broth and $\frac{1}{4}$ cup of water. Recipe B uses $\frac{1}{3}$ cup of chicken broth and $\frac{1}{3}$ cup of water. Which recipe uses more liquid?
-

- 2.** A customer pays \$3.95 for 5 pounds of apples. What is the price for 1 pound of apples?

-
- 4.** Tracy buys $\frac{3}{4}$ pound of roast beef, $\frac{1}{2}$ pound of turkey, and $\frac{3}{8}$ pound of ham. Ken buys $\frac{1}{4}$ pound of roast beef, $\frac{1}{2}$ pound of turkey, and $\frac{3}{8}$ pound of ham. Who buys more meat? How much more does that person buy?
-

Mixed Strategy Review

Solve. Use any strategy.

- 5.** There are 24 plants in a garden. There are 4 more tomato plants than red pepper plants. There are twice as many red pepper plants as green pepper plants. How many of each kind of plant is in the garden?
-
-

Strategy: _____

- 7. Health** An ounce of cheddar cheese has 114 calories. An ounce of Brie cheese has 95 calories. How many more calories does an ounce of cheddar cheese have than an ounce of Brie cheese?
-
-

Strategy: _____

- 6.** The Yogurt Cart has the following 3 flavors: chocolate, vanilla, and strawberry. Yogurt comes in a cup or a cone. You can have no sprinkles, chocolate sprinkles, or rainbow sprinkles. How many different choices are there?
-

Strategy: _____

- 8. Write a problem** that you will use a simpler problem to solve. Share it with others.
-
-

Circle Graphs

Len took a survey among his classmates to find which type of movie they liked best. He surveyed 24 students. He showed his results on a circle graph. How many students chose mystery as their favorite type of movie?

Interpret a Circle Graph

A circle graph shows data as part of a circle.

You can interpret the circle graph to solve the problem.

Step 1 What part of this whole chose mystery?

What does the circle graph show?

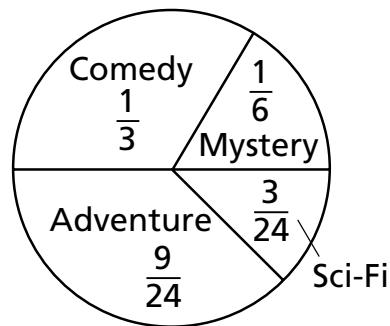
The part for Mystery is marked $\frac{1}{6}$.

Step 2 Find the part of 24 students that chose mystery. Rename $\frac{1}{6}$ as a fraction with a denominator of 24.

$$\frac{1}{6} \times \frac{4}{4} = \frac{4}{24}$$

The survey shows that 4 out of 24 students chose mystery.

Favorite Movie



Practice

Use the graph to answer these questions.

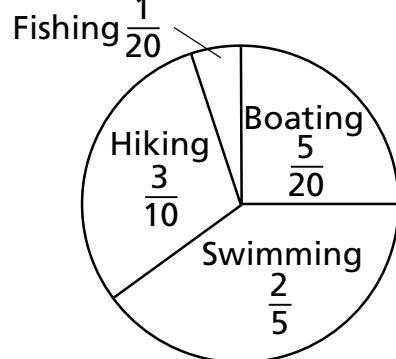
1. If 20 campers were surveyed about their favorite camp activity, how many chose swimming?

2. How many chose boating? _____

3. How many chose hiking? _____

4. **Write About It** Suppose you did not know the number of campers surveyed about their favorite activity. Would you be able to order the activities from most to least favorite? Tell why or why not.

Favorite Camp Activity

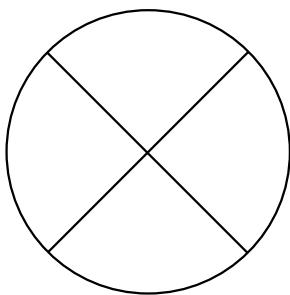


Name _____

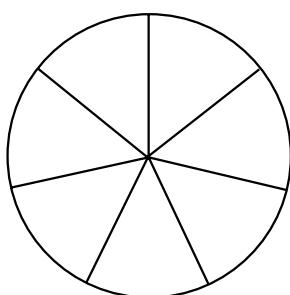
Circle Graphs

What does one section in each circle graph shown below represent?

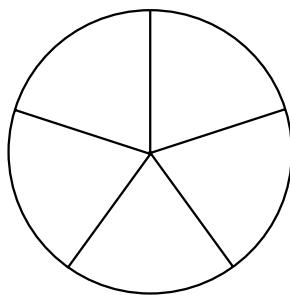
1.



2.



3.



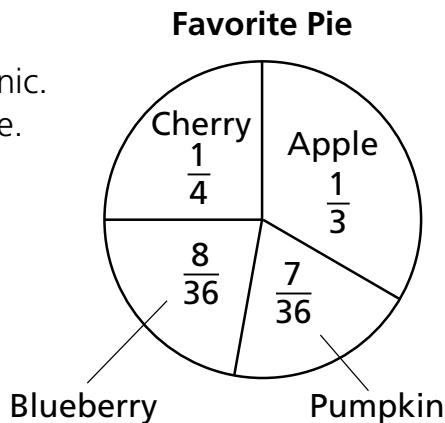
Use the circle graph. Solve the problems.

Lana surveyed 36 people who were going to a picnic. She asked them to choose their favorite type of pie. She made a circle graph of the data.

4. How many people chose cherry?

5. List the choices from most to least popular.

6. Which type of pie did 12 people choose?

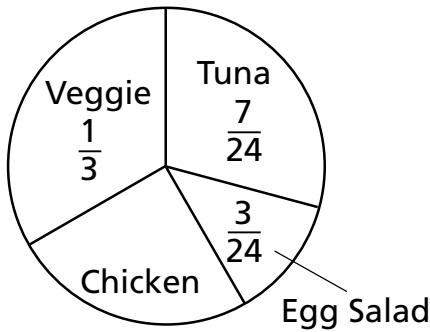


Sam sold 24 sandwiches at the school fair. He made a circle graph to show the sales.

7. Complete the circle graph to find the number of chicken sandwiches sold.

8. How many egg salad sandwiches were sold?

Favorite Sandwich



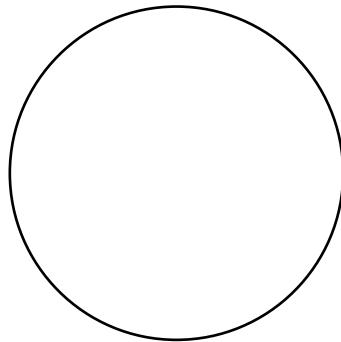
Circle Graphs

Greg surveyed 32 of his friends to find out their favorite color. He wrote his results in the chart below.

Color	Blue	Red	Green	Purple
Number of Votes	8	12	4	8

Use the data to make a circle graph. Follow the steps below.

Favorite Color



- 1.** For each color find the fraction each number represents.

Blue _____ Red _____ Green _____ Purple _____

- 2.** Simplify each fraction.

Blue _____ Red _____ Green _____ Purple _____

- 3.** Mark the fractions for each section. Label them.

- 4.** How can you tell just from looking at the circle graph which color is the most popular?
-

- 5.** Which color is the most popular? _____

- 6.** Which color is the least popular? _____

Name _____

Problem Solving: Decision Making

**Decision
Making**
WORKSHEET

Make a plan of a model city. Then figure the sizes and costs of the items you want to include. Record your data.

	Name of Item	Number Bought	Total Cost
Business District			
Residential Area			

Your Decision

What models should Fatima and Lindsey buy for the area where people live? What models should they buy for the business district? Explain.

**UNIT
13****Fractions and Decimals****CHAPTER 25 • SUPPORT MATERIALS**

Lesson	Titles	Masters	Use with pages
25-1	Explore Fractions and Decimals	R25-1, P25-1, E25-1	584–585
25-2	Tenths and Hundredths	R25-2, P25-2, E25-2	586–588
25-3	Problem Solving: Skill Choose a Representation	R25-3, P25-3, E25-3	590–591
25-4	Thousandths	R25-4, P25-4, E25-4	592–593

CHAPTER 26 • SUPPORT MATERIALS

Lesson	Titles	Masters	Use with pages
26-1	Decimals Greater Than 1	R26-1, P26-1, E26-1	598–599
26-2	Compare and Order Decimals	R26-2, P26-2, E26-2	600–602
26-3	Problem Solving: Strategy Draw a Diagram	R26-3, R26-3, P26-3	604–605
26-4	Round Decimals	R26-4, P26-4, E26-4	606–608
	Problem Solving: Applying Math and Science	Worksheets	612–613

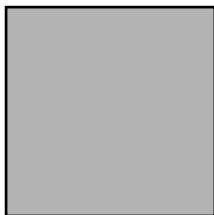
R—Reteach

P—Practice

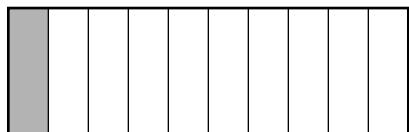
E—Enrich

Explore Fractions and Decimals

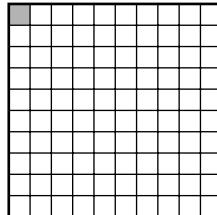
You can use models to show decimals.



This model shows 1.



This model shows 1 divided into 10 equal parts. You can shade the model to show $\frac{1}{10}$. You can write $\frac{1}{10}$ as a decimal: 0.1.

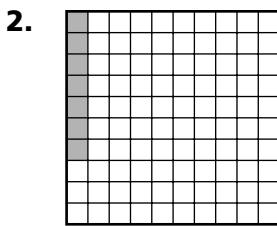


This model shows 1 divided into 100 equal parts. You can shade the model to show $\frac{1}{100}$. You can write $\frac{1}{100}$ as a decimal: 0.01.

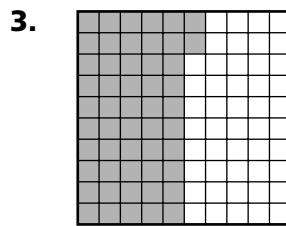
Look at each model. Circle the fraction and the decimal for the shaded part.



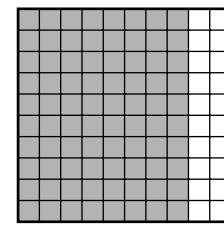
$$\frac{4}{10} \quad \frac{4}{100} \quad 0.4 \quad 0.04$$



$$\frac{7}{10} \quad \frac{7}{100} \quad 0.7 \quad 0.07$$

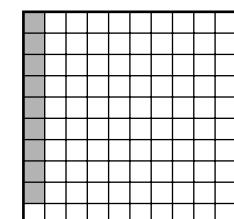
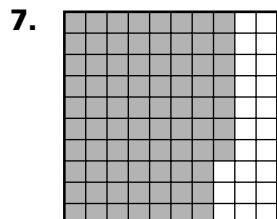
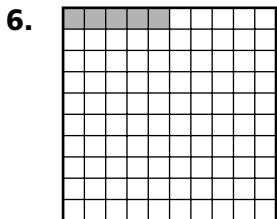
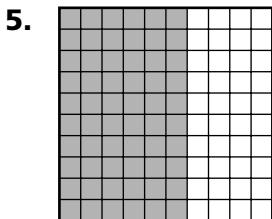


$$\frac{52}{100} \quad \frac{5}{10} \quad 0.5 \quad 0.52$$



$$\frac{8}{10} \quad \frac{8}{100} \quad 0.8 \quad 0.08$$

Look at each model. Write a decimal for each shaded part.



Name _____

Explore Fractions and Decimals

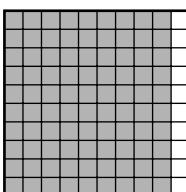


Write a fraction and a decimal for each shaded part. Then write the fraction in simplest form.

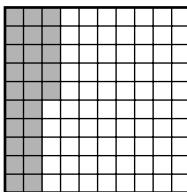
1.



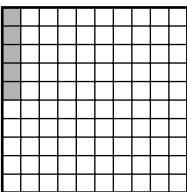
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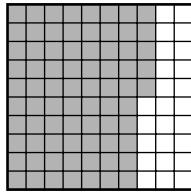
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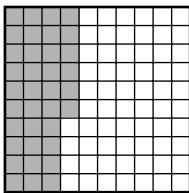
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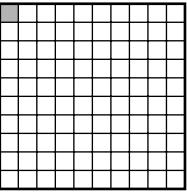
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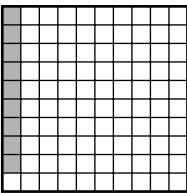
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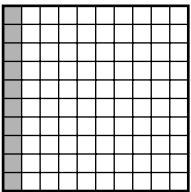
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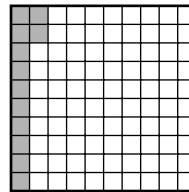
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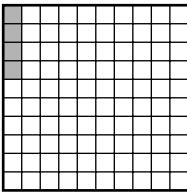
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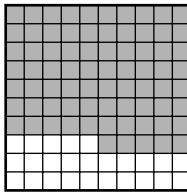
10.



11.



12.



Write each fraction as a decimal.

13. $\frac{70}{100}$ _____

14. $\frac{78}{100}$ _____

15. $\frac{13}{100}$ _____

16. $\frac{27}{100}$ _____

17. $\frac{8}{10}$ _____

18. $\frac{5}{10}$ _____

19. $\frac{1}{100}$ _____

20. $\frac{4}{100}$ _____

21. $\frac{3}{10}$ _____

22. $\frac{66}{100}$ _____

23. $\frac{7}{10}$ _____

24. $\frac{90}{100}$ _____

25. $\frac{4}{10}$ _____

26. $\frac{1}{2}$ _____

27. $\frac{10}{25}$ _____

28. $\frac{5}{20}$ _____

29. $\frac{4}{5}$ _____

30. $\frac{10}{50}$ _____

31. $\frac{3}{4}$ _____

32. $\frac{2}{5}$ _____

Explore Fractions and Decimals

Solve a riddle. Match each of the ten fractions and decimals below with its word name at the right. Write the number of the exercise on the blank.

- | | |
|---------------------|--------------------------------|
| 1. $\frac{7}{10}$ | _____ C three hundredths |
| 2. 0.5 | _____ A eleven hundredths |
| 3. $\frac{63}{100}$ | _____ O ninety-nine hundredths |
| 4. $\frac{90}{100}$ | _____ I five tenths |
| 5. $\frac{2}{10}$ | _____ A twenty-two hundredths |
| 6. 0.89 | _____ T eight tenths |
| 7. $\frac{11}{100}$ | _____ P sixty-three hundredths |
| 8. 0.03 | _____ T eighty-nine hundredths |
| 9. 0.22 | _____ N ninety hundredths |
| 10. 0.99 | _____ O seven tenths |
| 11. 0.17 | _____ F two tenths |
| 12. 0.8 | _____ A seventeen hundredths |

To solve the riddle below, write the letters above the numbers.
The first one is done for you.

What kind of coat can be put on only when wet?

A _____
 7 8 1 9 6 10 5 3 11 2 4 12

13. Write the decimals in the left-hand column above as fractions.
-

14. Write the fractions in the left-hand column above as decimals.
-

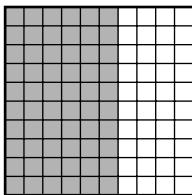
Tenths and Hundredths

You can use a model and a place-value chart to read and write decimals. A model and a place-value chart can also help you write a fraction for a decimal.

Using Models



Think: $\frac{5}{10} = \frac{1}{2}$



Think: $\frac{60}{100} = \frac{6}{10} = \frac{3}{5}$

Using a Place-Value Chart

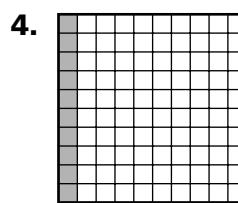
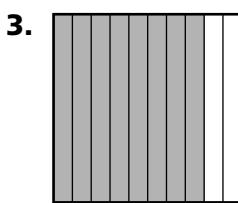
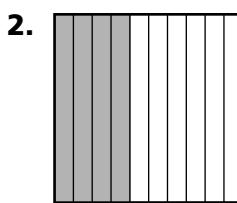
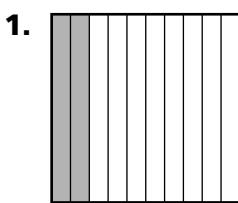
Ones	.	Tenths	Hundredths
0		5	

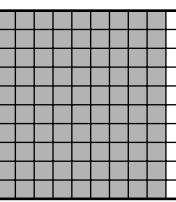
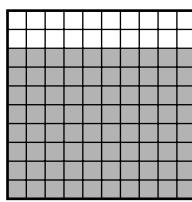
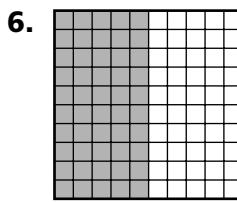
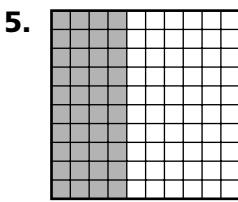
Think: $0.5 = \frac{5}{10} = \frac{1}{2}$

Ones	.	Tenths	Hundredths
0		6	0

Think: $0.60 = \frac{60}{100} = \frac{6}{10} = \frac{3}{5}$

Write a fraction and a decimal for each shaded part. Then write the fraction in simplest form.



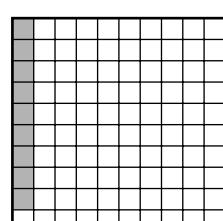
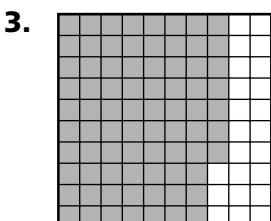
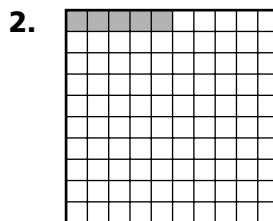
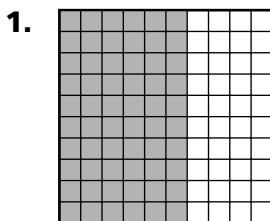


Name _____

Tenths and Hundredths



Write a fraction and a decimal for each part that is shaded. Then write the fraction in simple form.



Write each as a decimal.

5. $\frac{2}{5}$ _____

6. $\frac{7}{10}$ _____

7. $\frac{1}{4}$ _____

8. $\frac{7}{100}$ _____

9. $\frac{1}{2}$ _____

10. $\frac{1}{10}$ _____

11. $\frac{2}{100}$ _____

12. $\frac{96}{100}$ _____

13. two tenths _____

14. fifteen hundredths _____

15. six hundredths _____

16. three tenths _____

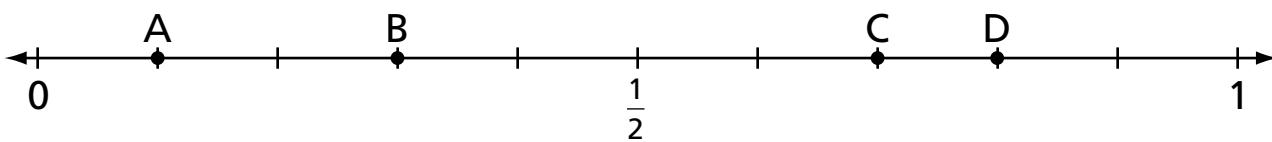
17. five tenths _____

18. seventeen hundredths _____

19. ninety-nine hundredths _____

20. two tenths _____

Write a fraction and a decimal for each point. Tell if it is closer to 0, $\frac{1}{2}$, or 1.



21. A _____

22. B _____

23. C _____

24. D _____

Problem Solving

Solve.

25. Peter's house is 0.78 mile from school.
Write the number in words.

26. Lora walks for five tenths of an hour.
Write the number as a decimal.

Tenths and Hundredths

Other symbols for decimals were used in England and Europe before the eighteenth century. Here are some examples of different ways to show 0.45.

A. 0.4' .5"

(1) (2)

C. 0.4 .5

B. 0|45

D. 0,45

Write the decimals using each of the notations shown above.

	A	B	C	D
1. 0.6	_____	_____	(1)	_____
2. 0.4	_____	_____	(1)	_____
3. 0.9	_____	_____	(1)	_____
4. 0.5	_____	_____	(1)	_____
5. 0.61	_____	_____	(1) (2)	_____
6. 0.95	_____	_____	(1) (2)	_____
7. 0.78	_____	_____	(1) (2)	_____
8. 0.67	_____	_____	(1) (2)	_____

- 9.** Which notation is most like the one we use today? Which notation did you find the most difficult to use? Explain.

Problem Solving: Skill

Choose a Representation

Sometimes a problem uses part of a whole as a fraction and as a decimal. In order to compare, you should use the same form.

Ashley takes the subway to work $\frac{4}{5}$ of the time. Lauren takes the subway to work 0.7 of the time. Who takes the subway to work the greater part of the time?

Compare $\frac{4}{5}$ and 0.7 to solve.

Use Fractions	Use Decimals
$0.7 = \frac{7}{10}$	$\frac{4}{5} = 0.8$
$\frac{4}{5} = \frac{8}{10}$	$0.8 > 0.7$
$\frac{8}{10} > \frac{7}{10}$	So, $\frac{4}{5} > 0.7$
$\text{So, } \frac{4}{5} > 0.7$	
Ashley takes the subway to work the greater part of the time.	

Circle the word *fraction* or *decimal* to tell how you will represent the numbers in the problem. Write both numbers in that form. Then compare the data to solve the problem.

1. A survey question asked people how they got to work most often. Of those who answered, 0.3 said bus and $\frac{4}{10}$ said subway. Do more riders take the bus or the subway?

fraction decimal

$$\underline{\hspace{2cm}} = 0.3$$

$$\frac{4}{10} = \underline{\hspace{2cm}}$$

Answer: _____

2. A survey question asked bus riders how often they take the bus. Of those who answered, $\frac{1}{4}$ said 5 or more times per week and 0.75 said fewer than 5 times per week. Which answer got the greater number of responses?

fraction decimal

$$\frac{1}{4} = \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} = 0.75$$

Answer: _____

Problem Solving: Skill

Choose a Representation

Choose a representation and solve.

1. George walks to work 6 out of 10 days. Janice walks to work 0.7 of 10 days. Who walks to work a greater part of the time?

3. In a survey, 0.5 of the people who answer say that they are very satisfied with subway service. Four tenths of the people say that they are somewhat satisfied. Are more people very satisfied or somewhat satisfied?

5. Alfredo walks to work 12 out of 20 days. He says he walks to work 0.9 of those days. Is his statement reasonable?

2. Train Q is on time or early $\frac{1}{2}$ of the time. Train Y is on time or early $\frac{1}{2}$ of the time. Which train is on time or early a lesser part of time?

4. Colleen takes the bus $\frac{7}{10}$ of the days in June. Rita takes the bus $\frac{7}{10}$ of the days in June. Who takes the bus more days? [HINT: June has 30 days.]

6. The express bus is late 0.2 of the time. A reporter says that the express bus is late $\frac{2}{10}$ of the time. Is the reporter's statement reasonable?

Mixed Strategy Review

Solve. Use any strategy.

7. Tamara collected shells. On Monday she collected 3 shells. On Tuesday she collected 6 shells, on Wednesday 12 shells, and on Thursday 24 shells. How many shells did Tamara collect on Sunday?

Strategy: _____

8. Richard has a red shirt, a yellow shirt, and a white shirt. He has black pants, brown pants, and blue pants. What are all the possible outfits Richard can make?

Strategy: _____

Problem Solving: Skill

Choose a Representation

Work your way through the maze from START to FINISH. Each number you connect must be greater than the last. Connect the numbers by moving either across or down, not diagonally.

START 0.02	$\frac{3}{100}$	0.35	$\frac{3}{10}$	0.55	$\frac{1}{25}$	0.8
0.01	0.02	$\frac{2}{5}$	0.37	$\frac{7}{100}$	0.82	$\frac{4}{5}$
$\frac{1}{10}$	$\frac{1}{5}$	0.49	$\frac{1}{2}$	0.55	$\frac{3}{5}$	0.46
$\frac{3}{100}$	0.19	$\frac{1}{4}$	0.21	$\frac{1}{2}$	0.72	$\frac{71}{100}$
0.08	$\frac{1}{20}$	0.83	$\frac{3}{10}$	0.75	$\frac{79}{100}$	0.6
$\frac{1}{50}$	0.06	$\frac{1}{5}$	0.66	$\frac{11}{25}$	$\frac{4}{5}$	0.88
0.16	$\frac{2}{25}$	0.91	$\frac{71}{100}$	0.91	$\frac{93}{100}$	$\frac{9}{10}$
5/100	0.59	$\frac{9}{10}$	0.88	$\frac{83}{100}$	$\frac{49}{50}$	0.99 FINISH

Thousands

You can use fractions and a place-value chart to read and write decimals.

Using a Place Value Chart

Think: $\frac{7}{1,000}$ = seven thousandths

Ones	.	Tenths	Hundredths	Thousands
0		0	0	7

So: $\frac{7}{1,000} = 0.007$

Think: $\frac{513}{1,000}$ = five hundred thirteen thousandths

Ones	.	Tenths	Hundredths	Thousands
0		5	1	3

So: $\frac{513}{1,000} = 0.513$

Write each fraction as a decimal. Use the place value chart.

1. $\frac{1}{1,000}$

Ones	.	Tenths	Hundredths	Thousands

2. $\frac{8}{1,000}$

Ones	.	Tenths	Hundredths	Thousands

3. $\frac{35}{1,000}$

Ones	.	Tenths	Hundredths	Thousands

4. $\frac{234}{1,000}$

Ones	.	Tenths	Hundredths	Thousands

Write each as a decimal.

5. $\frac{14}{1,000} =$ _____

6. $\frac{407}{1,000} =$ _____

7. $\frac{931}{1,000} =$ _____

8. $\frac{999}{1,000} =$ _____

9. four thousandths _____

10. thirty-one thousandths _____

Name _____

Thousands



Write each as a decimal.

1. $\frac{123}{1,000}$

2. $\frac{370}{1,000}$

3. $\frac{25}{1,000}$

4. $\frac{4}{1,000}$

5. $\frac{17}{1,000}$

6. $\frac{225}{1,000}$

7. $\frac{36}{1,000}$

8. $\frac{1}{1,000}$

9. $\frac{6}{1,000}$

10. $\frac{24}{1,000}$

11. $\frac{3}{1,000}$

12. $\frac{12}{1,000}$

13. $\frac{120}{1,000}$

14. $\frac{999}{1,000}$

15. $\frac{9}{1,000}$

16. $\frac{60}{1,000}$

17. sixteen thousandths _____

18. twenty-five thousandths _____

19. nine thousandths _____

20. three hundred twenty-nine thousandths _____

21. five hundred thousandths _____

22. six hundred ninety thousandths _____

23. ninety-five thousandths _____

24. two thousandths _____

25. eleven thousandths _____

26. four thousandths _____

27. seventy-two thousandths _____

28. one hundred ninety-nine thousandths _____

Algebra Complete.

29.	meters	decimeters	centimeters	millimeters
	_____	0.06	0.6	6
	0.009	_____	_____	_____
	_____	_____	_____	14

Problem Solving

Solve.

30. Joe weighs 0.625 g of rice. Write this amount in words.

31. Jaime bats three hundred one thousandths for the season. Write this as a decimal.

Thousands

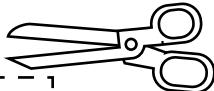
Play this memory game with a partner.

You will need to cut out the cards below. Mix them up and place them facedown in six rows of six.

How to Play

- The first player turns over two cards. If the cards show an equivalent fraction and decimal, the player keeps the cards. If the cards do not match, the cards are turned over again and left in the same position.
- Try to remember which fractions and decimals have been turned over.
- Players take turns until all the cards have been matched.

The player with more cards wins.



0.5	0.3	0.2	0.7	0.8	0.9
$\frac{1}{2}$	$\frac{3}{10}$	$\frac{1}{5}$	$\frac{7}{10}$	$\frac{4}{5}$	$\frac{9}{10}$
0.35	0.85	0.25	0.75	0.40	0.50
$\frac{35}{100}$	$\frac{85}{100}$	$\frac{1}{4}$	$\frac{3}{4}$	$\frac{2}{5}$	$\frac{1}{2}$
$\frac{5}{1,000}$	$\frac{255}{1,000}$	$\frac{10}{1,000}$	$\frac{600}{1,000}$	$\frac{345}{1,000}$	$\frac{850}{1,000}$
0.005	0.255	0.01	0.600	0.345	0.850

Name _____

Decimals Greater Than 1

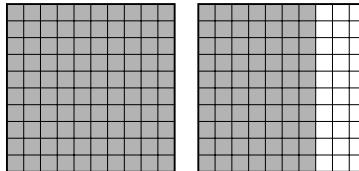


A mixed number is made up of a whole and a part of a whole.
You can use models to help you write mixed numbers as decimals.

Mixed number: $1\frac{7}{10}$

Decimal: 1.7

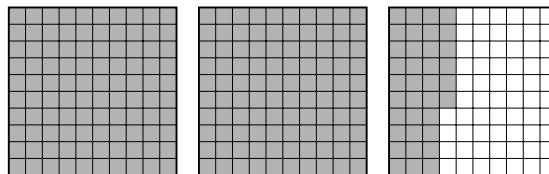
Read: one and seven tenths



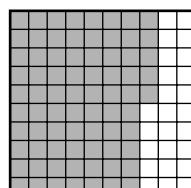
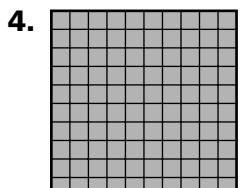
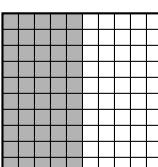
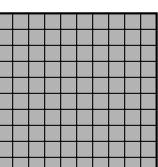
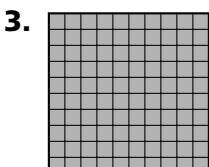
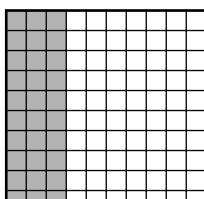
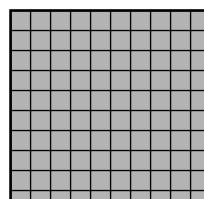
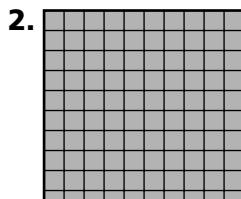
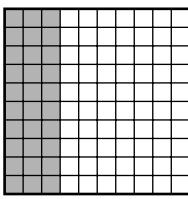
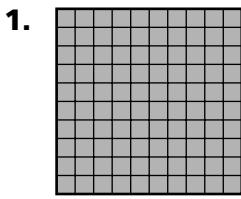
Mixed number: $2\frac{36}{100}$

Decimal: 2.36

Read: two and thirty-six
hundredths



Look at each model. Write a mixed number and a decimal to tell
how much is shaded.



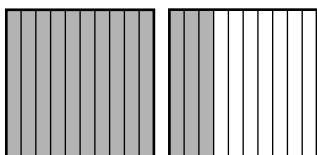
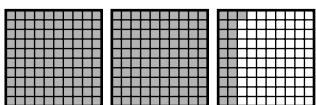
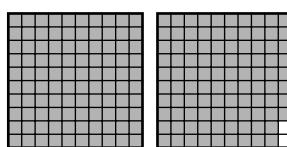
Write a decimal and the word name.

5. $1\frac{9}{10}$

6. $3\frac{5}{100}$

Decimals Greater Than 1

Write as a mixed number in simplest form and a decimal to tell how much is shaded.

1.**2.****3.**

Write the fraction as a decimal.

4. $7\frac{3}{10}$

5. $1\frac{25}{100}$

6. $9\frac{5}{100}$

7. $8\frac{125}{1,000}$

8. $6\frac{2}{100}$

9. $17\frac{7}{10}$

10. $8\frac{5}{1,000}$

11. $3\frac{37}{1,000}$

12. $9\frac{1}{10}$

13. $2\frac{9}{10}$

14. $27\frac{21}{100}$

15. $25\frac{16}{1,000}$

16. $18\frac{98}{100}$

17. $13\frac{5}{1,000}$

18. $10\frac{12}{1,000}$

19. $11\frac{3}{100}$

20. $6\frac{6}{100}$

21. $19\frac{375}{1,000}$

22. $23\frac{8}{10}$

23. $76\frac{60}{1,000}$

24. $24\frac{4}{100}$

25. $11\frac{1}{100}$

26. $9\frac{19}{100}$

27. $6\frac{26}{100}$

28. eight and three tenths

29. seven and seventy hundredths

Problem Solving

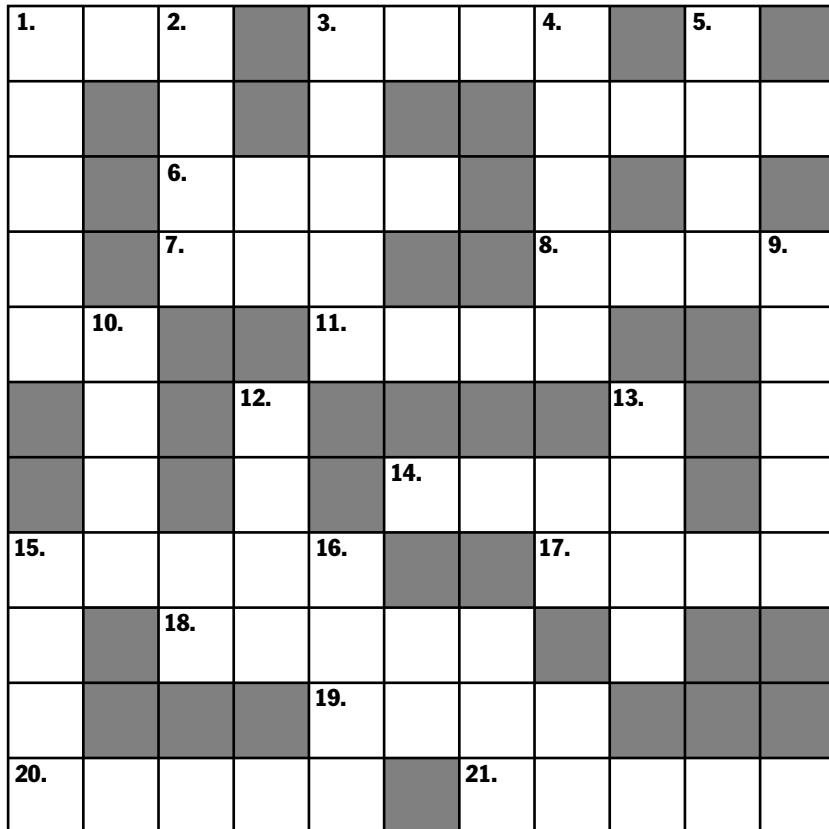
Solve.

- 30.** Out of 100 pairs of shoes in a sporting goods store, 53 pairs are running shoes. What decimal shows the number of pairs of running shoes?

- 31.** Out of 1,000 backpacks, 25 are red and the rest are green. What decimal shows the number of red backpacks?

Decimals Greater Than 1

Complete the decimal crossword puzzle. Write the decimal for the fraction or word name given in the ACROSS and DOWN clues below. Each decimal point has a space of its own.

**Across**

1. $5\frac{6}{10}$
3. $37\frac{8}{10}$
6. $44\frac{9}{10}$
7. $3\frac{5}{10}$
8. $3\frac{5}{100}$
11. $12\frac{7}{10}$
14. $6\frac{75}{100}$
15. $38\frac{37}{100}$
17. $3\frac{28}{100}$
18. thirty-five and twenty-one hundredths
19. eleven and six tenths
20. seventy-eight and seventy-nine hundredths
21. ninety-nine and sixty-three hundredths

Down

1. $53\frac{48}{100}$
2. $6\frac{43}{100}$
3. $34\frac{51}{100}$
4. $80\frac{37}{100}$
5. 27
9. $57\frac{28}{100}$
10. $36\frac{8}{10}$
12. two and thirty-five hundredths
13. fifteen and eight tenths
15. thirty-three and seven tenths
16. seven and nineteen hundredths

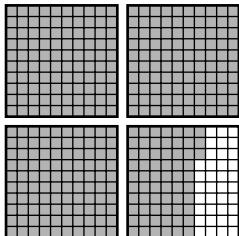
Name _____

Compare and Order Decimals • Algebra

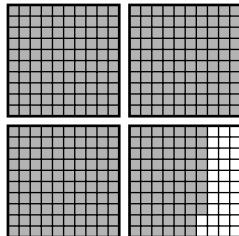


You can use models to compare and order decimals.

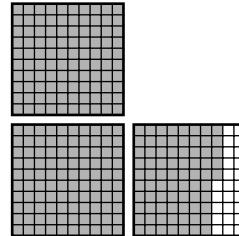
Order the numbers from least to greatest.



3.63



3.68



2.75

Compare the decimals.

Since $2 < 3$, $2.75 < 3.63$ and 3.68 .

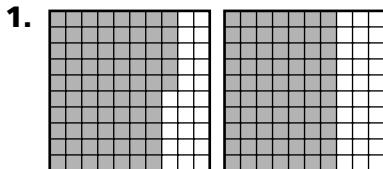
Since $\frac{63}{100} < \frac{68}{100}$, $3.63 < 3.68$.

Order the decimals.

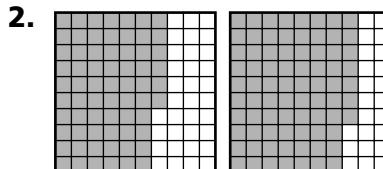
Think: $2.75 < 3.63 < 3.68$.

The order from least to greatest is
 $2.75 < 3.63 < 3.68$.

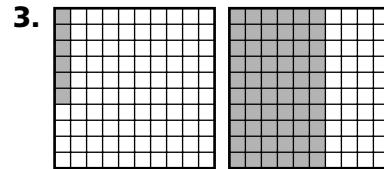
Compare. Write $>$, $<$, or $=$.



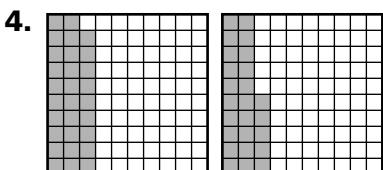
0.75 ○ 0.7



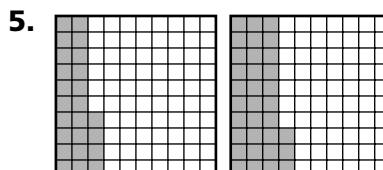
0.66 ○ 0.77



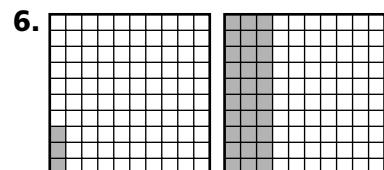
0.06 ○ 0.60



0.29 ○ 0.25



0.24 ○ 0.33



0.03 ○ 0.30

Write the decimals in order from least to greatest.

7. 0.75, 0.66, 0.7 _____

8. 0.06, 0.77, 0.60 _____

9. 0.29, 0.25, 0.24 _____

10. 0.33, 0.03, 0.30 _____

Compare and Order Decimals • AlgebraCompare. Write $>$, $<$, or $=$.

1. 0.2 ○ 0.02 2. 0.7 ○ 0.70 3. 1.78 ○ 1.87 4. 12.16 ○ 12.160
 5. 0.106 ○ 0.160 6. 5.117 ○ 5.107 7. 11.99 ○ 12.1 8. 11.1 ○ 10.1
 9. 9.06 ○ 9.16 10. 6.5 ○ 5.9 11. 2.1 ○ 0.2 12. 10.3 ○ 10.300
 13. 16.75 ○ 16.57 14. 14.44 ○ 14.54 15. 18.01 ○ 18.11 16. 9.1 ○ 9.09
 17. 21.12 ○ 22.13 18. 16.06 ○ 16.6 19. 1.1 ○ 1.11 20. 9.9 ○ 10.0
 21. 9.01 ○ 9.10 22. 14.03 ○ 13.99 23. 2.22 ○ 2.11 24. 19.99 ○ 18.99

Write in order from greatest to least.

25. 1.78, 1.08, 1.87 26. 0.88, 0.08, 0.98 27. 1.11, 1.21, 0.22
-
-
-

28. 10.02, 9.9, 10.12 29. 7.7, 8.8, 7.07 30. 1.001, 1.011, 1.111
-
-
-

Write in order from least to greatest.

31. 0.01, 0.1, 0.001 32. 2.22, 2.02, 2.12 33. 6.07, 5.99, 6.17
-
-
-

34. 1.06, 1.16, 0.99 35. 11.17, 10.99, 9.99 36. 16.6, 16.61, 16.1
-
-
-

Problem Solving

Solve.

37. On Monday Ken ran 100 meters in 11.2 seconds. On Tuesday he ran 100 meters in 10.9 seconds. On which day did Ken run faster?
-

38. Jadwin Bridge is 1.6 km long. Seely Bridge is 1.06 km long. Which bridge is longer?
-

Compare and Order Decimals • Algebra

Choose the decimal from the box that solves each puzzle. Use a decimal only once.

10.79	8.08	0.84	8.01	0.89	10.25	8.43	10.33	10.8
--------------	-------------	-------------	-------------	-------------	--------------	-------------	--------------	-------------

Puzzle 1

The decimal is greater than 0.
It is less than 0.85.

Puzzle 2

The decimal is less than 10.8. It is greater than 10.75.

Puzzle 3

The decimal is greater than 8.02.
It is less than 8.1.

Puzzle 4

The decimal is less than 10.30.
It is greater than 10.

Puzzle 5

The decimal is greater than 0.85.
It is less than 0.9.

Puzzle 6

The decimal is greater than 10.
It is less than 10.85.

Puzzle 7

The decimal is greater than 8.
It is less than 8.07.

Puzzle 8

The decimal is less than 10.4.
It is greater than 10.25.

Puzzle 9

The decimal is greater than 8.35.
It is less than 8.5.

1. Arrange the decimals in the box in order from least to greatest.
-

2. Explain how you found the answer to Puzzle 3.
-
-
-

Problem Solving: Strategy

Draw a Diagram

Page 605, Problem 2

Kendra wants to find a mall close to her town. Loews Mall is 3.9 miles east of her town. Bergen Mall is 1.8 miles west of Loews Mall. King's Mall is 2.9 miles east of Bergen Mall. Which mall is the closest to Kendra's town? The farthest from her town?

Step 1
Read
Be sure you understand the problem.

Read carefully.

What do you know?

- Loews Mall is _____ miles east of Kendra's town.
- Bergen Mall is _____ miles west of the Loews Mall.
- King's Mall is _____ miles east of Bergen Mall.

What do you need to find?

- You need to find _____
-
-

Step 2
Plan

- Logical Reasoning
- Draw a Picture or Diagram
- Make a Graph
- Act It Out
- Make a Table or List
- Find a Pattern
- Guess and Check
- Write an Equation
- Work Backward
- Solve Simpler Problem

Make a plan.

Choose a strategy.

Drawing a diagram can help you see the solution to a problem.

Draw a line segment to show the distance between Kendra's town and Loews Mall.

Along that line, show the distance between Bergen Mall and Loews Mall. Then show the distance between Bergen Mall and King's Mall. Extend the line in either direction if you need to.

Use your drawing to solve the problem.

Problem Solving: Strategy

Draw a Diagram

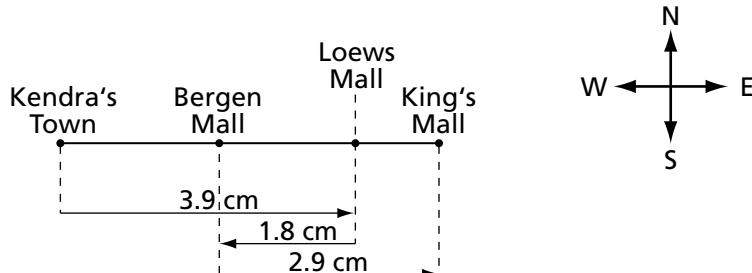
Step 3**Solve****Carry out your plan.**

Draw a diagram. Use 1 cm to show 1 mile.

Loews Mall 3.9 miles = 3.9 cm

Bergen Mall 1.8 miles = 1.8 cm

King's Mall 2.9 miles = 2.9 cm



_____ Mall is closest to Kendra's town.

_____ Mall is farthest from her town.

Step 4**Look Back****Is the solution reasonable?**

Reread the problem.

Does your answer make sense? Did you check your answer?
_____**Practice**

1. Allison lives 2.6 miles west of the beach. Jerry lives 1.2 miles east of Allison. Phil lives 1.7 miles west of Jerry. Who is farthest from the beach?
- _____

2. Norma goes up 4 floors from her office to her manager's office. She then goes down 7 floors to the copy room. Randi is in the copy room. Randi goes up 1 floor to her office. How many floors away is Randi's office from Norma's?
- _____

Problem Solving: Strategy

Draw a Diagram

Draw a diagram to solve.

- 1.** CD World is 1.8 miles east of the school. William lives 1.4 miles west of the school. Sound City is 2.9 miles east of William. Is William closer to CD World or to Sound City?
-

- 3.** Ed walks up 2 floors from his office to the storeroom. He walks down 6 floors to the cafeteria. How many floors away is the cafeteria from Ed's office?
-

- 2.** Silver Hills is 3.9 miles north of Bay Edge. East Ridge is 1.3 miles south of Silver Hills. East Ridge is 2.8 miles north of Hightown. How far is Bay Edge from Hightown?
-

- 4.** A cab driver leaves his garage. He goes north 9 blocks, south 6 blocks, and north 8 blocks. How many blocks is he from his garage?
-

Mixed Strategy Review

Solve. Use any strategy.

- 5.** The City Sports Center offers season tickets, 20-game tickets, or single game tickets. Seats are available for the lower deck, middle deck, or upper deck. You can buy an individual seat or a pair of seats. How many choices do you have?
-

Strategy: _____

- 7.** There are 48 people at a dinner at City Hall. You want to use small tables that seat 5 people and large tables that seat 8 people. To have full tables, which tables should be used? How many of these tables will be needed?
-

Strategy: _____

- 6. Social Studies** In 1996, Abilene, Texas, had a population of 122,130. Amarillo, Texas, had a population that was 83,885 greater than the population of Abilene. What was the population of Amarillo?
-

Strategy: _____

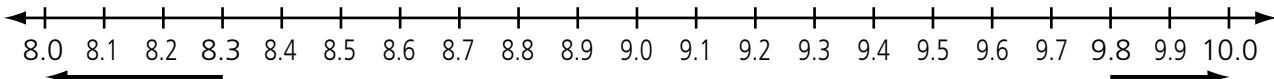
- 8. Write a problem** which you could solve by drawing a diagram. Share it with others.
-
-
-

Round Decimals



You can use a number line to help you round decimals.

To round a decimal to the nearest whole number, look at the digit in the tenths place. If the tenths digit is 5 or greater, round up to the nearest one. If the tenths digit is less than 5, round down to the nearest one.



Round 8.3 to the nearest whole number.

Think: 8.3 is closer to 8 than 9.

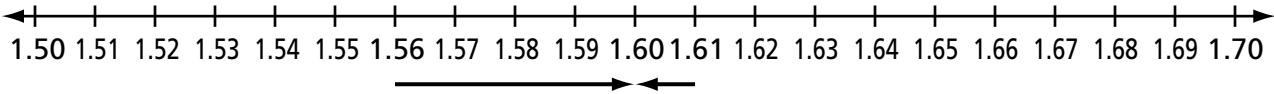
So, 8.3 rounds down to 8.

Round 9.8 to the nearest whole number.

Think: 9.8 is closer to 10 than 9.

So, 9.8 rounds up to 10.

To round to the nearest tenth, look at the digit in the hundredths place. If the hundredths digit is 5 or greater, round up to the nearest tenth. If the hundredths digit is less than 5, round down to the nearest tenth.



Think: 1.56 is closer to 1.6 than 1.5.

So, 1.56 rounds up to 1.6.

Think: 1.61 is closer to 1.6 than 1.7.

So, 1.61 rounds down to 1.6.

Round each decimal to the nearest whole number. Use the number line above to help you.

1. 8.6 _____

2. 9.1 _____

3. 8.2 _____

4. 9.3 _____

5. 9.8 _____

6. 8.4 _____

7. 9.5 _____

8. 8.7 _____

Round to the nearest tenth. Use the number line above to help you.

9. 1.52 _____

10. 1.64 _____

11. 1.59 _____

12. 1.63 _____

13. 1.55 _____

14. 1.68 _____

15. 1.51 _____

16. 1.66 _____

Round Decimals

Round to the nearest whole number.

1. 9.47 _____

2. 2.8 _____

3. 6.01 _____

4. 9.09 _____

5. 1.1 _____

6. 3.51 _____

7. 4.62 _____

8. 1.5 _____

9. 13.61 _____

10. 25.09 _____

11. 37.8 _____

12. 52.4 _____

13. 93.56 _____

14. 88.48 _____

15. 19.71 _____

16. 63.44 _____

Round to the nearest tenth.

17. 7.24 _____

18. 9.43 _____

19. 6.58 _____

20. 8.89 _____

21. 3.25 _____

22. 1.27 _____

23. 3.98 _____

24. 7.24 _____

25. 31.26 _____

26. 71.64 _____

27. 12.55 _____

28. 64.93 _____

29. 47.96 _____

30. 87.54 _____

31. 29.69 _____

32. 36.97 _____

33. 53.84 _____

34. 19.46 _____

35. 61.07 _____

36. 78.85 _____

Round to the nearest hundredth.

37. 8.236 _____

38. 4.186 _____

39. 9.275 _____

40. 1.123 _____

41. 6.008 _____

42. 2.055 _____

43. 7.266 _____

44. 3.199 _____

45. 17.246 _____

46. 26.981 _____

47. 78.006 _____

48. 91.115 _____

49. 53.102 _____

50. 66.666 _____

51. 32.333 _____

52. 45.999 _____

53. 13.462 _____

54. 51.277 _____

55. 90.409 _____

56. 45.555 _____

Problem Solving

Solve.

57. A vitamin pill weighs 2.346 g. What is its mass to the nearest hundredth of a gram?

58. Jason weighs 152.6 lb. What is his weight to the nearest pound?

Round Decimals

Use the clues to solve each riddle. Circle the mystery number.

1. Round me to the nearest whole number. You get 5.
Round me to the nearest tenth. You get 5.3.
Round me to the nearest hundredth. You get 5.32.
What number am I? 5.316 5.295 5.334

2. Round me to the nearest whole number. You get 12.
Round me to the nearest tenth. You get 12.5.
Round me to the nearest hundredth. You get 12.48.
What number am I? 12.557 12.479 12.486

3. Round me to the nearest whole number. You get 17.
Round me to the nearest tenth. You get 16.9.
Round me to the nearest hundredth. You get 16.94.
What number am I? 16.937 16.899 16.934

4. Round me to the nearest whole number. You get 28.
Round me to the nearest tenth. You get 28.0.
Round me to the nearest hundredth. You get 28.00.
What number am I? 27.959 28.002 28.008

5. Round me to the nearest whole number. You get 124.
Round me to the nearest tenth. You get 124.4.
Round me to the nearest hundredth. You get 124.45.
What number am I? 124.456 124.444 124.446

6. Round me to the nearest whole number. You get 203.
Round me to the nearest tenth. You get 203.5.
The sum of my digits is 20.
What number am I? 203.456 203.458 203.566

7. Create your own mystery number puzzle.
Exchange your puzzle with a friend to solve.

Name _____

Problem Solving: Applying Math and Science

How Many Strikes Can You Throw?

Math & Science
WORKSHEET

In ten tries, how many strikes do you think you will throw from 1.5 meters away? From 3.5 meters away?

Experiment throwing from various distances from the target.

Record your data.

Distance	Attempts	Strikes	Strikes Thrown (as a decimal)
1.5 m	10		
2.5 m	10		
3.0 m	10		
3.5 m	10		

1. At which distance was it easiest to make strikes? Explain your answer.

Name _____

Problem Solving: Applying Math and Science

How Many Strikes Can You Throw?

Math &
Science
WORKSHEET

- 2.** Order the decimals in your table from least to greatest. If you made a lot of strikes, was the decimal bigger or smaller than the other numbers?

- 3.** What fraction of all throws are strikes? Write the fraction as a decimal.

- 4.** Use your answer in number 3 to compare your ability to throw strikes with the ability of Major League Baseball pitchers.

- 5.** How did the results compare to what you thought the results would be?

**UNIT
14****Add and Subtract Decimals****CHAPTER 27 • SUPPORT MATERIALS**

Lesson	Titles	Masters	Use with pages
27-1	Explore Adding Decimals	R27-1, P27-1, E27-1	624–625
27-2	Add Decimals	R27-2, P27-2, E27-2	626–628
27-3	Problem Solving: Skill Choose an Operation	R27-3, P27-3, E27-3	630–631
27-4	Estimate Sums	R27-4, P27-4, E27-4	632–633
27-5	Choose a Computation Method	R27-5, P27-5, E27-5	634–635

CHAPTER 28 • SUPPORT MATERIALS

Lesson	Titles	Masters	Use with pages
28-1	Explore Subtracting Decimals	R28-1, P28-1, E28-1	640–641
28-2	Subtract Decimals	R28-2, P28-2, E28-2	642–644
28-3	Problem Solving: Strategy Act It Out	R28-3, R28-3, P28-3	646–647
28-4	Estimate Differences	R28-4, P28-4, E28-4	648–649
28-5	Choose a Computation Method	R28-5, P28-5, E28-5	650–652
	Problem Solving: Decision Making	Worksheet	656–657

R—Reteach

P—Practice

E—Enrich

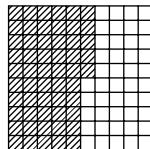
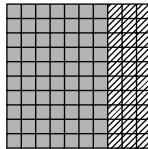
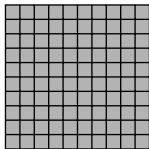
Name _____

Explore Adding Decimals



You can use models to help you add decimals.

Add $1.7 + 0.85$.



Write a decimal to show
the total number of
shaded squares.

2.55

Color 1.7 dark gray.

Color 0.85 with stripes.

So $1.7 + 0.85 = 2.55$.

Add. Draw 10-by-10 grids to help you.

1. $0.65 + 0.34 = \underline{\hspace{2cm}}$ 2. $1.3 + 1.5 = \underline{\hspace{2cm}}$ 3. $2.4 + 1.36 = \underline{\hspace{2cm}}$

4. $1.52 + 0.31 = \underline{\hspace{2cm}}$ 5. $0.77 + 0.24 = \underline{\hspace{2cm}}$ 6. $0.84 + 0.39 = \underline{\hspace{2cm}}$

7. $1.8 + 0.5 = \underline{\hspace{2cm}}$ 8. $2.5 + 0.62 = \underline{\hspace{2cm}}$ 9. $2.75 + 0.45 = \underline{\hspace{2cm}}$

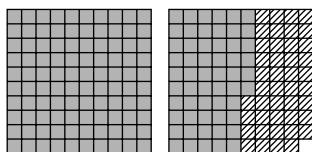
Name _____

Explore Adding Decimals

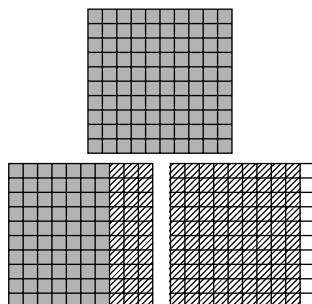


Use the models to find each sum.

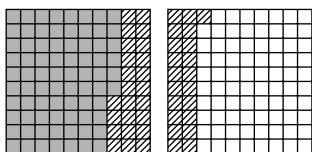
1.



2.



3.



$1.56 + 0.43 = \underline{\hspace{2cm}}$

$1.7 + 1.2 = \underline{\hspace{2cm}}$

$0.76 + 0.45 = \underline{\hspace{2cm}}$

Find each sum.

$$\begin{array}{r} 0.3 \\ + 0.4 \\ \hline \end{array}$$

$$\begin{array}{r} 0.5 \\ + 0.4 \\ \hline \end{array}$$

$$\begin{array}{r} 0.6 \\ + 0.7 \\ \hline \end{array}$$

$$\begin{array}{r} 0.8 \\ + 0.9 \\ \hline \end{array}$$

$$\begin{array}{r} 0.4 \\ + 0.6 \\ \hline \end{array}$$

$$\begin{array}{r} 0.99 \\ + 0.88 \\ \hline \end{array}$$

$$\begin{array}{r} 0.62 \\ + 0.53 \\ \hline \end{array}$$

$$\begin{array}{r} 0.71 \\ + 0.59 \\ \hline \end{array}$$

$$\begin{array}{r} 0.44 \\ + 0.79 \\ \hline \end{array}$$

$$\begin{array}{r} 0.86 \\ + 0.13 \\ \hline \end{array}$$

$$\begin{array}{r} 2.7 \\ + 3.8 \\ \hline \end{array}$$

$$\begin{array}{r} 0.5 \\ + 1.9 \\ \hline \end{array}$$

$$\begin{array}{r} 2.6 \\ + 1.8 \\ \hline \end{array}$$

$$\begin{array}{r} 1.7 \\ + 2.8 \\ \hline \end{array}$$

$$\begin{array}{r} 0.4 \\ + 0.9 \\ \hline \end{array}$$

$19. 0.85 + 2.17 = \underline{\hspace{2cm}} \quad 20. 2.76 + 1.32 = \underline{\hspace{2cm}} \quad 21. 3.46 + 1.78 = \underline{\hspace{2cm}}$

$22. 2.96 + 2.23 = \underline{\hspace{2cm}} \quad 23. 0.67 + 2.98 = \underline{\hspace{2cm}} \quad 24. 0.12 + 2.2 = \underline{\hspace{2cm}}$

$25. 1.5 + 2.49 = \underline{\hspace{2cm}} \quad 26. 2.14 + 1.9 = \underline{\hspace{2cm}} \quad 27. 2.3 + 1.92 = \underline{\hspace{2cm}}$

Problem Solving

Solve.

28. Two strips of paper, 3.6 cm long and 2.8 cm long, are taped together. How long is the entire strip of paper?

29. One apple has a mass of 0.26 kg. Another apple has a mass of 0.87 kg. What is the mass of both apples?

Explore Adding Decimals

Fill in the boxes so that each row, column, and diagonal adds up to the same sum.

1.

		0.9
0.6	0.8	
0.7		

2.

1.0		0.8
	0.7	
		0.4

3.

	0.5	1.0
0.7	0.9	
	1.3	

4.

0.1			
1.2	0.6		
		1.1	0.5
1.3	0.3		1.6

Move through the maze from start to finish by adding numbers that will give you the finish number. You may move across, down, up, or diagonally.

Start

5.

2.3	3.1	0.6
0.7	4.1	1.2
2.8	1.7	8.2

↑
Finish

Start

6.

0.9	1.4	1.2
2.4	0.3	2.1
7.9	0.6	3.2

↑
Finish

Name _____

Add Decimals



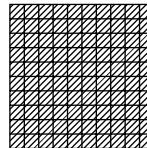
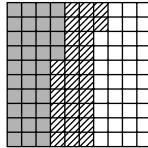
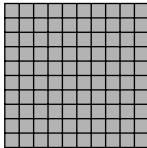
You can use models to help you add decimals.

Add $1.34 + 1.28$.

Using Models

Color 1.34 dark gray. Color 1.28 with stripes.

Count the number of squares you shaded.



Using Paper and Pencil

Add each place.

Regroup if needed.

$$\begin{array}{r} & ^1 \\ & 1.34 \\ + & 1.28 \\ \hline & 2.62 \end{array}$$

Find each sum. Draw 10-by-10 grids to help you.

1. $1.7 + 1.4 =$ _____ 2. $0.5 + 0.8 =$ _____ 3. $2.25 + 1.03 =$ _____

4. $0.9 + 0.8 =$ _____ 5. $0.85 + 0.15 =$ _____ 6. $1.24 + 0.38 =$ _____

7. $1.5 + 1.35 =$ _____ 8. $1.52 + 0.35 =$ _____ 9. $0.6 + 1.85 =$ _____

Add Decimals

Add.

1.
$$\begin{array}{r} 0.36 \\ + 0.25 \\ \hline \end{array}$$

2.
$$\begin{array}{r} 0.29 \\ + 0.44 \\ \hline \end{array}$$

3.
$$\begin{array}{r} 0.60 \\ + 0.70 \\ \hline \end{array}$$

4.
$$\begin{array}{r} 1.67 \\ + 1.45 \\ \hline \end{array}$$

5.
$$\begin{array}{r} 2.67 \\ + 1.38 \\ \hline \end{array}$$

6.
$$\begin{array}{r} 4.2 \\ + 6.4 \\ \hline \end{array}$$

7.
$$\begin{array}{r} 1.2 \\ + 8.3 \\ \hline \end{array}$$

8.
$$\begin{array}{r} 0.697 \\ + 9.262 \\ \hline \end{array}$$

9.
$$\begin{array}{r} 23.604 \\ + 5.408 \\ \hline \end{array}$$

10.
$$\begin{array}{r} 32.75 \\ + 12.30 \\ \hline \end{array}$$

11.
$$\begin{array}{r} 25.97 \\ + 0.12 \\ \hline \end{array}$$

12.
$$\begin{array}{r} 12.32 \\ + 1.74 \\ \hline \end{array}$$

13.
$$\begin{array}{r} 13.407 \\ + 26.708 \\ \hline \end{array}$$

14.
$$\begin{array}{r} 21.151 \\ + 4.774 \\ \hline \end{array}$$

15.
$$\begin{array}{r} 6.373 \\ + 5.602 \\ \hline \end{array}$$

16.
$$\begin{array}{r} 2.874 \\ + 8.129 \\ \hline \end{array}$$

17.
$$\begin{array}{r} 36.215 \\ + 9.759 \\ \hline \end{array}$$

18.
$$\begin{array}{r} 12.948 \\ + 7.267 \\ \hline \end{array}$$

19.
$$\begin{array}{r} 0.254 \\ + 12.259 \\ \hline \end{array}$$

20.
$$\begin{array}{r} 3.187 \\ + 6.975 \\ \hline \end{array}$$

21.
$$\begin{array}{r} 11.3 \\ 6.7 \\ + 21.6 \\ \hline \end{array}$$

22.
$$\begin{array}{r} 8.25 \\ 4.30 \\ + 9.20 \\ \hline \end{array}$$

23.
$$\begin{array}{r} 4.142 \\ 8.167 \\ + 2.94 \\ \hline \end{array}$$

24.
$$\begin{array}{r} 4.567 \\ 13.621 \\ + 21.984 \\ \hline \end{array}$$

25.
$$\begin{array}{r} 7.0 \\ 9.288 \\ + 12.6 \\ \hline \end{array}$$

26. $12.5 + 11.35 = \underline{\hspace{2cm}}$ 27. $2.7 + 2.73 = \underline{\hspace{2cm}}$ 28. $3.36 + 5.031 = \underline{\hspace{2cm}}$

29. $3.869 + 9.3 + 7.76 = \underline{\hspace{2cm}}$ 30. $7.35 + 8.2 + 17.314 = \underline{\hspace{2cm}}$

31. $12.42 + 7.687 + 19.3 = \underline{\hspace{2cm}}$ 32. $8.0 + 4.343 + 10.5 = \underline{\hspace{2cm}}$

Algebra Find the number you need to add to complete the pattern. Then complete.

33. $1.3, 1.9, 2.5, \underline{\hspace{2cm}}, \underline{\hspace{2cm}}, \underline{\hspace{2cm}}$ Add $\underline{\hspace{2cm}}$

34. $4.12, 4.125, \underline{\hspace{2cm}}, 4.135, \underline{\hspace{2cm}}, \underline{\hspace{2cm}}$ Add $\underline{\hspace{2cm}}$

Problem Solving

Solve.

35. Lora spends \$2.64 on stamps and \$1.39 on envelopes. How much does she spend?

36. Ben buys packing tape for \$2.97 and boxes for \$6.99. How much does he spend?

Add Decimals

Find the missing digits.

1. $\begin{array}{r} \boxed{}.2\ 6 \\ + 1.4\ \boxed{} \\ \hline 5.\boxed{}9 \end{array}$

2. $\begin{array}{r} \boxed{}.2\ 2 \\ + 1.\boxed{}5 \\ \hline 9.\ 6\ \boxed{} \end{array}$

3. $\begin{array}{r} 4.6\ \boxed{} \\ + \boxed{}.3\ 3 \\ \hline 6.\boxed{}8 \end{array}$

4. $\begin{array}{r} \$6\ 2.7\ \boxed{} \\ + 1\ \boxed{}.1\ 3 \\ \hline \$\boxed{}9.\ \boxed{}4 \end{array}$

5. $\begin{array}{r} 4\ \boxed{}.7 \\ + 1\ 3.9\ \boxed{} \\ \hline \boxed{}3.6\ 4 \end{array}$

6. $\begin{array}{r} \$\boxed{}4.7\ \boxed{} \\ + 8. \\ \hline \$6.2.\boxed{}8 \end{array}$

7. $\begin{array}{r} \$8\ \boxed{}.5\ \boxed{} \\ + 1.9\ 9 \\ \hline \$\boxed{}1.\ \boxed{}6 \end{array}$

8. $\begin{array}{r} 2.\ \boxed{}5 \\ + 1\ \boxed{}.3\ 7 \\ \hline 1.8.\ 4\ \boxed{} \end{array}$

9. $\begin{array}{r} \boxed{}9.2 \\ + 7.\ \boxed{} \\ \hline 10\ \boxed{}.1 \end{array}$

10. $\begin{array}{r} 8.\ \boxed{}3 \\ + \boxed{}.0\ \boxed{} \\ \hline 14.9\ 5 \end{array}$

11. $\begin{array}{r} 77.\ \boxed{}5 \\ + 2\ \boxed{}.\ 4 \\ \hline \boxed{}7.8\ 5 \end{array}$

12. $\begin{array}{r} 6.\ \boxed{}7 \\ + \boxed{}.5 \\ \hline 15.8\ 7 \end{array}$

13. $\begin{array}{r} 59.\ \boxed{} \\ + \boxed{}.6\ 7 \\ \hline 69.\ 2\ \boxed{} \end{array}$

14. $\begin{array}{r} \$76.2\ \boxed{} \\ + 31.\ \boxed{}2 \\ \hline \$10\ \boxed{}.1\ 6 \end{array}$

15. $\begin{array}{r} \boxed{}3.8\ 6 \\ + 3.3\ \boxed{} \\ \hline 77.\ \boxed{}1 \end{array}$

16. $\begin{array}{r} 2\ \boxed{}.3\ 2 \\ + \boxed{}4.\ \boxed{}4 \\ \hline 37.7\ \boxed{} \end{array}$

17. $\begin{array}{r} 69.\ \boxed{} \\ 1\ \boxed{}.9 \\ + 22.\ 1\ \boxed{} \\ \hline \boxed{}10.\ 3\ 7 \end{array}$

18. $\begin{array}{r} \boxed{}6.\ 6\ \boxed{} \\ 3.\ \boxed{}1 \\ + 2. \\ \hline 3\ \boxed{}.4\ 3 \end{array}$

19. $\begin{array}{r} \$2.1\ 4 \\ 43.\ \boxed{}6 \\ + 3\ \boxed{}.4\ \boxed{} \\ \hline \$\boxed{}0.4\ 2 \end{array}$

20. $\begin{array}{r} 6.\ 2 \\ 7.\ \boxed{}8 \\ + \boxed{}3.\ 2\ \boxed{} \\ \hline 6\ \boxed{}.9\ 9 \end{array}$

21. $\begin{array}{r} \boxed{}1. \\ 1.\ \boxed{} \\ + 6.\ 5\ \boxed{} \\ \hline \boxed{}\boxed{}.3\ \boxed{} \end{array}$

22. $\begin{array}{r} \boxed{}.1\ 8 \\ 2.\ 9\ \boxed{} \\ + 8.\ \boxed{}6 \\ \hline \boxed{}1.\ 2\ 1 \end{array}$

23. $\begin{array}{r} 4\ 7 \\ 1\ \boxed{}.0\ \boxed{} \\ + \boxed{}3.\ 4 \\ \hline 86.\ \boxed{}3 \end{array}$

24. $\begin{array}{r} 0.\ \boxed{}3 \\ 4\ \boxed{}.\ 1 \\ + 8 \\ \hline \boxed{}6.\ 8\ \boxed{} \end{array}$

Problem Solving: Skill

Choose an Operation

You can figure out which operation to use by deciding what the problem asks you to do.

Find the Total

Problem Mikio rode his bike 1.2 miles yesterday and 1.4 miles today. How many miles did Mikio ride his bike on both days?

Add the two distances to find the total distance biked.

$$1.2 + 1.4 = 2.6 \text{ miles}$$

Add on to a Given Amount

Problem Sue rode her bike 2.3 miles on Saturday. She rode 1.8 more miles on Sunday than she did on Saturday. How many miles did Sue ride her bike on Sunday?

Add on to the known distance to find the new distance.

$$2.3 + 1.8 = 4.1 \text{ miles}$$

It is 5.6 miles from Sarah's house to the museum. She has completed 1.75 miles of the trip so far. How many miles does Sarah have left?

- 1.** What do you have to do to solve this problem?

- A** Add to find the total amount of miles that Sarah travels to the museum.
- B** Subtract to find the number of miles Sarah has left.
- C** Add to find the total number of miles in the round trip.

- 2.** How many miles does Sarah have left?

- F** 11.2 miles
- G** 7.35 miles
- H** 3.85 miles

Michael takes the train for 8.4 miles. Then he walks 0.6 miles. How many miles does Michael travel?

- 3.** Which could you use to solve the problem?

- A** $8.4 + 0.6$
- B** $8.4 - 0.6$
- C** $8.4 + 8.4$

- 4.** How many miles does Michael travel?

- F** 16.8 miles
- G** 9 miles
- H** 8.4 miles

Problem Solving: Skill

Choose an Operation

Solve.

1. The train trip from Springfield to Morris Hill is 6.2 miles. The next stop, Peapack, is 3.2 miles from Morris Hills. How long is the train trip from Springfield to Peapack?
-

3. Daniel biked 6.24 miles last week. This week he biked 1.65 miles less than last week. How far did he bike this week?
-

5. Eddie rode 1.9 miles more today than he did yesterday. He rode 5.75 miles yesterday. How far did Eddie ride today?
-

2. The train trip from Point Dume to Snug Harbor is 8.31 miles. The road from Point Dume to Snug Harbor is 9.6 miles. How much longer is the road trip than the train?
-

4. Myra bikes 3.25 miles from home to the record store. Then she bikes 1.1 miles to the movie theater. How many miles does she bike altogether?
-

6. Shore Road is 6.3 miles long. Nicole has biked 2.2 miles along Shore Road so far. How many miles does she have left?
-

Mixed Strategy Review

Solve. Use any strategy.

7. Maritza has a penny and a number cube with faces numbered in multiples of 10 from 10–60. What are all the possible outcomes of tossing the number cube and flipping the penny?
-
-
-

8. Bill, Jack, and Marla are fourth graders. Bill is older than Marla and Jack. Jack is younger than Marla. What is the order of the fourth graders from oldest to youngest?
-
-

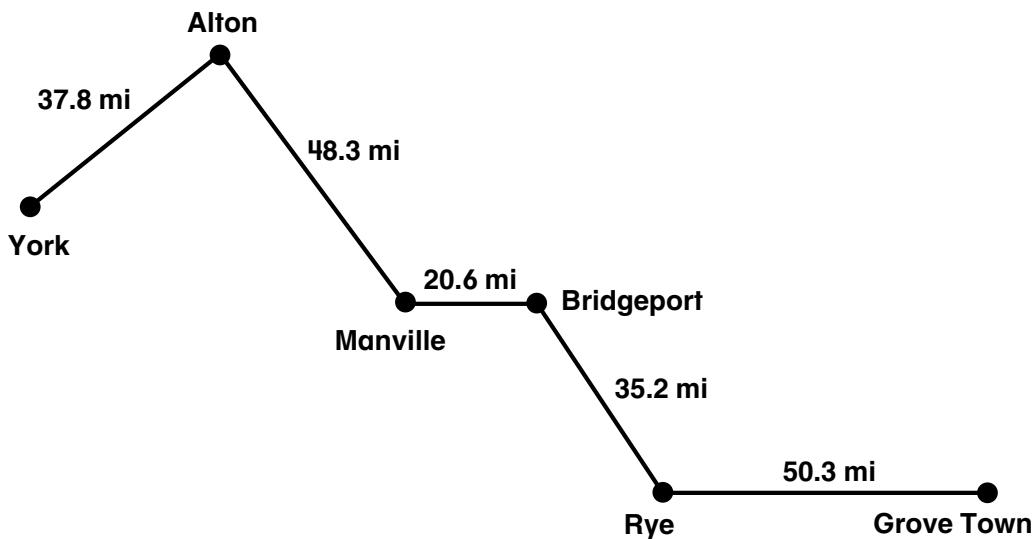
Strategy: _____

Strategy: _____

Problem Solving: Skill

Choose an Operation

Arnie and Ed are going on a walking vacation. Use the map to help them plan their trip.



1. Arnie and Ed live in York. They want to walk from York to Grove Town. If they walk about 10 miles per day, about how many days will it take them to get from York to Alton?
-

2. Arnie says that the distance from Alton to Bridgeport is less than 70 miles. Ed says that it is more. Who is correct? Explain.
-

3. How many miles will Arnie and Ed walk from Manville to Rye by way of Bridgeport?
-

4. Arnie and Ed want to walk from Manville to Bridgeport in 2 days. They want to walk the same number of miles both days. How many miles will they walk each day?
-

5. Which is the longer distance to walk, from Alton to Bridgeport by way of Manville, or from York to Manville by way of Alton?
-

6. What is the total distance Arnie and Ed will walk from York to Grove Town?
-

Estimate Sums

To estimate the sums of decimals, round each decimal to the nearest whole number. Then add the rounded numbers.

Estimate $22.52 + 4.49$.
 ↓ ↓
 Round each number 23 + 4
 to the nearest whole
 number.

Add. $23 + 4 = 27$

So $22.52 + 4.49$ is about 27.

Estimate $\$7.95 + \9.25
 ↓ ↓
 Round each number $\$8.00 + \9.00
 to the nearest dollar.

Add. $\$8.00 + \$9.00 = \$17.00$

So $\$7.95 + \9.25 is about $\$17.00$.

Circle the digits in the place to which you will round each number.

Estimate each sum. Show how you rounded.

1. $\$5.89 + \4.29

2. $17.3 + 5.67$

3. $8.48 + 3.07$

4. $6.7 + 3.2$

5. $\$15.95 + \2.59

6. $25.7 + 8.9$

7. $15.75 + 12.34$

8. $9.97 + 8.4$

9. $5.63 + 18.47$

10. $\$6.52 + \1.75

11. $4.47 + 6.74$

12. $\$8.50 + \24.38

Estimate Sums

Estimate. Round to the nearest whole number.

1. $5.1 + 9.4$ _____ 2. $6.7 + 8.4$ _____ 3. $1.9 + 3.8$ _____
 4. $\$6.35 + \5.95 _____ 5. $7.45 + 8.56$ _____ 6. $4.32 + 7.59$ _____
 7. $9.3 + 2.6$ _____ 8. $22.63 + 3.46$ _____ 9. $31.06 + 9.98$ _____
 10. $45.92 + 4.18$ _____ 11. $\$33.19 + \9.50 _____ 12. $6.67 + 21.15$ _____

Add. Estimate to check for reasonableness.

13. $19.76 + 9.55 =$ _____ 14. $\$10.25 + \$3.25 =$ _____
 15. $19.67 + 9.94 =$ _____ 16. $3.7 + 5.2 + 4.6 =$ _____
 17. $4.1 + 9.6 + 1.9 =$ _____ 18. $2.9 + 6.7 + 7.3 =$ _____
 19. $\$3.75 + \$9.90 + \$8.75 =$ _____ 20. $4.76 + 9.15 + 8.95 =$ _____
 21. $8.12 + 4.79 + 7.15 =$ _____ 22. $\$6.30 + \$7.95 + \$8.10 =$ _____
 23. $7.75 + 8.90 + 9.90 =$ _____ 24. $2.178 + 6.472 + 8.015 =$ _____

Algebra Compare. Write $>$ or $<$.

25. $3.7 + 2.5$ ○ $1.9 + 4.2$ 26. $4.9 + 1.6$ ○ $5.1 + 3.1$ 27. $6.9 + 7.1$ ○ $3.8 + 8.3$
 28. $9.2 + 3.6$ ○ $2.6 + 9.1$ 29. $5.5 + 6.3$ ○ $8.2 + 5.2$ 30. $9.4 + 2.7$ ○ $6.8 + 6.1$
 31. $1.6 + 2.9$ ○ $3.1 + 1.1$ 32. $7.7 + 7.2$ ○ $8.1 + 9.1$ 33. $8.7 + 9.6$ ○ $9.1 + 8.6$

Problem Solving

Solve.

34. The odometer on a new car shows 17.7 miles. Sean drives the car 12.9 miles. About how many miles does the odometer show now?
-

35. Lenny buys one CD for \$12.75 and another CD for \$18.90. About how much does Lenny pay for the two CDs?
-

Estimate Sums

Use estimation to try to choose four numbers that will have a sum close to 16.

- Player 1 chooses a number from below and writes it in the first box for that round. He or she crosses out the number below.
- Player 2 chooses any number that is not crossed out and follows the same steps.
- Players take turns until each player has four numbers.
- Add the numbers. Then find the difference between each sum and 16. You may check your results with a calculator.

The player with the sum closer to 16 wins that round.

Round	Players	Numbers				Sum	How Close to 16?
1	Player 1						
	Player 2						
2	Player 1						
	Player 2						
3	Player 1						
	Player 2						
4	Player 1						
	Player 2						
5	Player 1						
	Player 2						

3.38	3.56	1.08	4.5	6.75	2.03	2.58	4.61	3.23	4.89
2.47	4.19	8.48	3.96	4.91	5.57	7.59	2.19	2.64	1.18
1.77	2.63	5.72	5.63	4.24	3.27	5.13	3.76	2.30	4.55
3.69	3.31	4.16	6.89	7.81	7.35	8.74	0.99	3.49	3.98

Choose a Computation Method

Find $14.7 + 23.9$.

Mental Math

First, add the whole numbers.

$$14 + 23 = 37$$

Next, add the fractional decimal amounts.

$$0.7 + 0.9 = 1.6$$

Finally, add the two partial sums.

$$37 + 1.6 = 38.6$$

Paper and Pencil

Add as you would whole numbers. Line up the decimal points. Remember to write the decimal point in the answer.

$$\begin{array}{r} 14.7 \\ + 23.9 \\ \hline \end{array}$$

Calculator

Press the keys in order, starting on the left of the problem. Then press the ENTER = key.

Press

1 4 . 7 + 2 3 . 9 Enter

Read the display. The number beneath the equal sign is the sum.

$$14.7 + 23.9 = 38.6$$

Add. Tell which method you used. Write *mental math*, *paper and pencil* or *calculator*.

1. 10.8
 $\underline{+ 5.7}$

2. $\$25.98$
 $\underline{+ 11.33}$

3. 236.8
 $\underline{+ 25.6}$

Method: _____

Method: _____

Method: _____

4. 371.9
 $\underline{+ 245.6}$

5. $4,732.2$
 $\underline{+ 1,388.9}$

6. $\$255.74$
 $\underline{+ 461.39}$

Method: _____

Method: _____

Method: _____

7. $237.8 + 45.9 =$ _____

8. $\$62.20 + \$45.70 =$ _____

Method: _____

Method: _____

9. $\$39.85 + \$17.35 =$ _____

10. $500.36 + 50.92 =$ _____

Method: _____

Method: _____

11. $245.84 + 1,266.45 =$ _____

12. $3,487.6 + 2890.8 =$ _____

Method: _____

Method: _____

Name _____

Choose a Computation Method



Add. Tell which method you used.

1. 20.9
+ 7.4

2. $\$47.53$
+ 26.87

3. 377.91
+ 45.66

Method: _____

Method: _____

Method: _____

4. $7,135.9$
+ $1,255.3$

5. 245.066
+ 327.814

6. $\$295.88$
+ 407.67

Method: _____

Method: _____

Method: _____

7. $37.8 + 1,245.9 =$ _____

Method: _____

8. $\$639.75 + \$59.05 =$ _____

Method: _____

9. $4,275.84 + 1,362.45 =$ _____

Method: _____

Algebra Choose two addends from the box to complete each number sentence.

10. _____ + _____ = $\$43.77$

$\$24.66$ $\$25.03$

11. _____ + _____ = $\$45.89$

$\$20.86$ $\$19.11$

Problem Solving

Solve.

12. Arnie has a large hamburger, a soft drink, and a piece of pie for lunch every day. The hamburger costs \$3.75, the drink costs \$0.85, and the piece of pie costs \$1.95. How much does Arnie pay for 5 lunches?

13. The cook where Arnie eats lunch uses 110.5 grams of ground beef in each small hamburger and 124.8 grams in each large hamburger. What is the total mass of beef used in 2 small and 1 large hamburger?

Name _____

Choose a Computation Method



Write one word problem where it is easier to find the sum by using mental math, one where it is easier to find the sum by using a calculator, and one where it is easier to find the sum by using paper and pencil. Use decimals in your problems.

Find each solution and tell which method you used. Then explain why you chose the method you did.

1. Word Problem _____

Solution _____

Method Used _____

Explanation _____

2. Word Problem _____

Solution _____

Method Used _____

Explanation _____

3. Word Problem _____

Solution _____

Method Used _____

Explanation _____

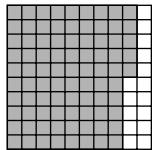
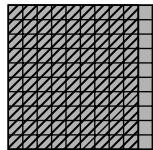
Name _____

Explore Subtracting Decimals



You can use models to help you subtract decimals.

Subtract $1.85 - 0.9$.



Write a decimal to show
how many squares are
not crossed out.

0.95

Shade 1.85.

Cross out 0.9.

So $1.85 - 0.9 = 0.95$.

Subtract. Draw 10-by-10 grids to help you.

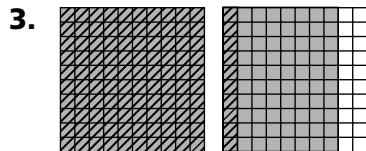
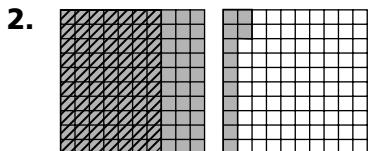
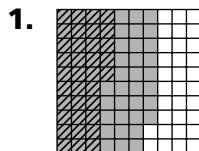
1. $1.6 - 1.3 = \underline{\hspace{2cm}}$ 2. $0.8 - 0.3 = \underline{\hspace{2cm}}$ 3. $1.22 - 0.55 = \underline{\hspace{2cm}}$

4. $1.9 - 0.56 = \underline{\hspace{2cm}}$ 5. $0.80 - 0.57 = \underline{\hspace{2cm}}$ 6. $1.35 - 1.07 = \underline{\hspace{2cm}}$

7. $0.8 - 0.09 = \underline{\hspace{2cm}}$ 8. $1.85 - 1.49 = \underline{\hspace{2cm}}$ 9. $1.7 - 0.45 = \underline{\hspace{2cm}}$

Explore Subtracting Decimals

Use the models to find each difference.



$0.68 - 0.35 = \underline{\hspace{2cm}}$

$1.12 - 0.7 = \underline{\hspace{2cm}}$

$1.8 - 1.1 = \underline{\hspace{2cm}}$

Find each difference.

$$\begin{array}{r} 0.9 \\ - 0.3 \\ \hline \end{array}$$

$$\begin{array}{r} 1.2 \\ - 0.6 \\ \hline \end{array}$$

$$\begin{array}{r} 2.7 \\ - 0.9 \\ \hline \end{array}$$

$$\begin{array}{r} 2.5 \\ - 1.6 \\ \hline \end{array}$$

$$\begin{array}{r} 2.1 \\ - 1.7 \\ \hline \end{array}$$

$$\begin{array}{r} 1.67 \\ - 0.48 \\ \hline \end{array}$$

$$\begin{array}{r} 1.6 \\ - 1.48 \\ \hline \end{array}$$

$$\begin{array}{r} 3.11 \\ - 1.12 \\ \hline \end{array}$$

$$\begin{array}{r} 3.7 \\ - 2.91 \\ \hline \end{array}$$

$$\begin{array}{r} 1.2 \\ - 1.13 \\ \hline \end{array}$$

$$\begin{array}{r} 3.6 \\ - 1.47 \\ \hline \end{array}$$

$$\begin{array}{r} 2.02 \\ - 1.79 \\ \hline \end{array}$$

$$\begin{array}{r} 0.95 \\ - 0.67 \\ \hline \end{array}$$

$$\begin{array}{r} 0.8 \\ - 0.25 \\ \hline \end{array}$$

$$\begin{array}{r} 0.74 \\ - 0.59 \\ \hline \end{array}$$

$$\begin{array}{r} 1.7 \\ - 0.35 \\ \hline \end{array}$$

$$\begin{array}{r} 2.04 \\ - 1.69 \\ \hline \end{array}$$

$$\begin{array}{r} 1.03 \\ - 0.6 \\ \hline \end{array}$$

$$\begin{array}{r} 0.80 \\ - 0.54 \\ \hline \end{array}$$

$$\begin{array}{r} 2.0 \\ - 1.06 \\ \hline \end{array}$$

$24. 2.7 - 1.6 = \underline{\hspace{2cm}} \quad 25. 0.8 - 0.5 = \underline{\hspace{2cm}} \quad 26. 7.66 - 2.34 = \underline{\hspace{2cm}}$

$27. 1.52 - 0.57 = \underline{\hspace{2cm}} \quad 28. 0.73 - 0.57 = \underline{\hspace{2cm}} \quad 29. 0.70 - 0.34 = \underline{\hspace{2cm}}$

$30. 0.8 - 0.07 = \underline{\hspace{2cm}} \quad 31. 0.4 - 0.14 = \underline{\hspace{2cm}} \quad 32. 3.7 - 0.16 = \underline{\hspace{2cm}}$

Problem Solving

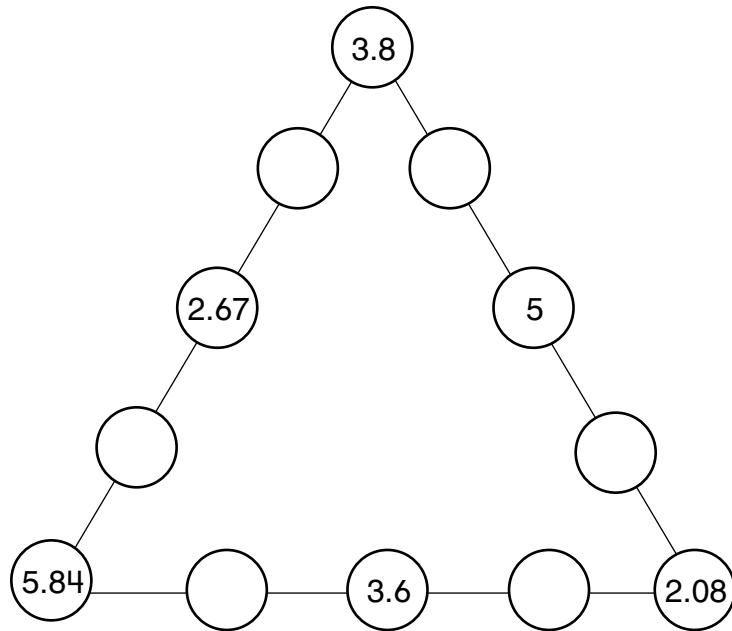
Solve.

33. A board is 2.12 m long. A piece 1.55 m long is cut from it. How much of the board is left?

34. A piece of wire is 2.6 cm long. A piece 1.9 cm long is cut from it. How much of the wire is left?

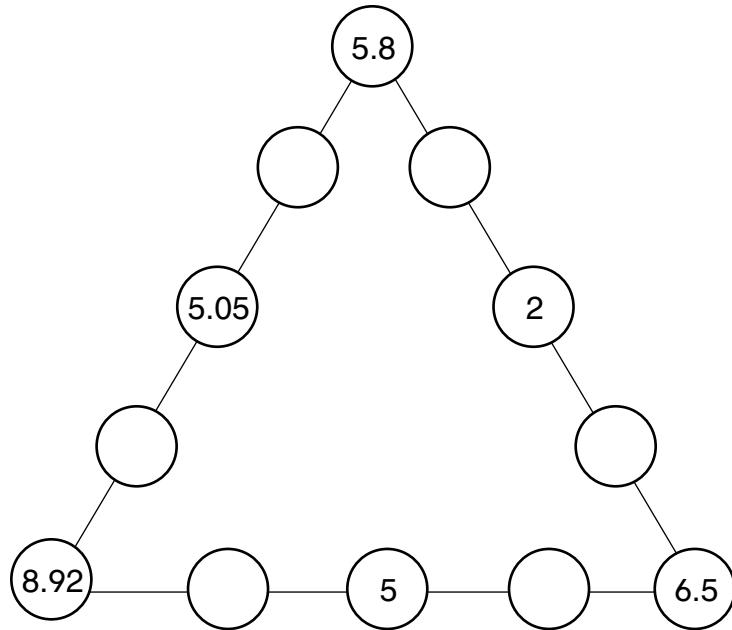
Explore Subtracting Decimals

In a magic triangle, each side of the triangle has the same sum. Choose numbers from the box so each side of the triangle has a sum of 22.4.



4	4.3
4.9	6.88
7.22	5.19

Choose numbers from the box so each side of the triangle has a sum of 24.5.



0.73	1.6
2.48	4
4.85	5.35

Subtract Decimals

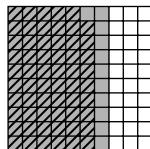
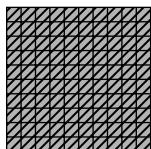
You can use models to help you subtract decimals.

Subtract $1.7 - 1.59$.

Using Models

Color 1.7. Cross out 1.59.

Count the number of squares not crossed out.



Using Paper and Pencil

Subtract each place.

Regroup if necessary.

$$\begin{array}{r}
 & ^{6\ 10} & \text{Write zero as a} \\
 & 1.70 & \leftarrow \text{place holder.} \\
 - & 1.59 & \\
 \hline
 & 0.11 &
 \end{array}$$

Find each difference. Draw 10-by-10 grids to help you.

1. $1.8 - 1.2 =$ _____ **2.** $0.9 - 0.5 =$ _____ **3.** $1.25 - 0.18 =$ _____

4. $0.8 - 0.25 =$ _____ **5.** $1.35 - 1.08 =$ _____ **6.** $1.7 - 0.48 =$ _____

7. $0.5 - 0.05 =$ _____ **8.** $1.65 - 1.3 =$ _____ **9.** $1.06 - 0.88 =$ _____

Name _____

Subtract Decimals



Subtract. Check each answer.

$$\begin{array}{r} 0.7 \\ - 0.4 \\ \hline \end{array}$$

$$\begin{array}{r} 6.3 \\ - 0.7 \\ \hline \end{array}$$

$$\begin{array}{r} 9.1 \\ - 2.3 \\ \hline \end{array}$$

$$\begin{array}{r} 4.5 \\ - 2.7 \\ \hline \end{array}$$

$$\begin{array}{r} 1.2 \\ - 0.7 \\ \hline \end{array}$$

$$\begin{array}{r} 0.43 \\ - 0.26 \\ \hline \end{array}$$

$$\begin{array}{r} 0.44 \\ - 0.22 \\ \hline \end{array}$$

$$\begin{array}{r} 7.04 \\ - 3.66 \\ \hline \end{array}$$

$$\begin{array}{r} 15.03 \\ - 3.12 \\ \hline \end{array}$$

$$\begin{array}{r} 4.12 \\ - 1.27 \\ \hline \end{array}$$

$$\begin{array}{r} 9.00 \\ - 0.09 \\ \hline \end{array}$$

$$\begin{array}{r} 7.17 \\ - 2.70 \\ \hline \end{array}$$

$$\begin{array}{r} 9.04 \\ - 7.50 \\ \hline \end{array}$$

$$\begin{array}{r} 6.00 \\ - 4.70 \\ \hline \end{array}$$

$$\begin{array}{r} 8.20 \\ - 4.96 \\ \hline \end{array}$$

$$\begin{array}{r} 5.34 \\ - 4.67 \\ \hline \end{array}$$

$$\begin{array}{r} 1.67 \\ - 0.50 \\ \hline \end{array}$$

$$\begin{array}{r} 19.83 \\ - 3.60 \\ \hline \end{array}$$

$$\begin{array}{r} 8.154 \\ - 2.075 \\ \hline \end{array}$$

$$\begin{array}{r} 17.076 \\ - 0.027 \\ \hline \end{array}$$

$$\begin{array}{r} 5.258 \\ - 3.129 \\ \hline \end{array}$$

$$\begin{array}{r} 8.000 \\ - 2.974 \\ \hline \end{array}$$

$$\begin{array}{r} 1.755 \\ - 0.896 \\ \hline \end{array}$$

$$\begin{array}{r} 6.024 \\ - 2.402 \\ \hline \end{array}$$

$$25. 6.7 - 2.4 = \underline{\hspace{2cm}}$$

$$26. 7.6 - 2.07 = \underline{\hspace{2cm}}$$

$$27. 8.5 - 3.08 = \underline{\hspace{2cm}}$$

$$28. 9.03 - 3.775 = \underline{\hspace{2cm}}$$

$$29. 7.44 - 3.867 = \underline{\hspace{2cm}}$$

$$30. 4.627 - 2.88 = \underline{\hspace{2cm}}$$

$$31. 3.6 - 2.79 = \underline{\hspace{2cm}}$$

$$32. 8.36 - 3.248 = \underline{\hspace{2cm}}$$

$$33. 4.556 - 0.93 = \underline{\hspace{2cm}}$$

$$34. 34.0 - 2.097 = \underline{\hspace{2cm}}$$

Algebra Find each missing number.

$$35. 7.97 - n = 0.52 \quad \underline{\hspace{2cm}}$$

$$36. h - 4.64 = 2.31 \quad \underline{\hspace{2cm}}$$

$$37. 5.25 + b = 10.46 \quad \underline{\hspace{2cm}}$$

$$38. a + 7.08 = 18.5 \quad \underline{\hspace{2cm}}$$

Problem Solving

39. Christine buys a pair of socks for \$8.35. What is her change from a \$10 bill?

40. Matt buys a pencil for \$0.35, a pen for \$2.75, and a ruler for \$4.36. What is his change from a \$20 bill?

Subtract Decimals

Cut out the number cards at the bottom of the page. Mix them up and place them face down on the table top.

Turn over 8 number cards and place them randomly on the squares below. Then solve.

Record your work.

Repeat several times.

A.

	•	
	•	
-		

B.

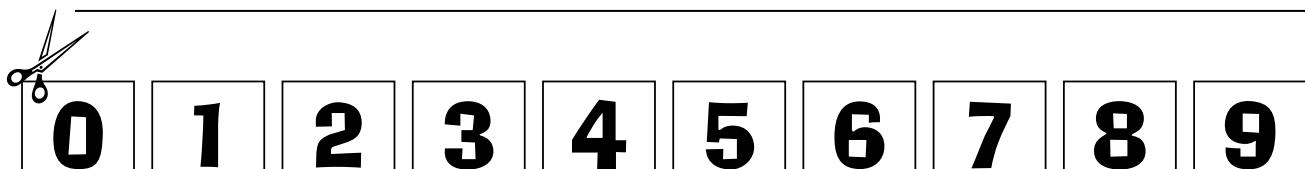
	•	
	•	
+		

Use the cards to answer the questions.

1. Turn over all the cards. What is the greatest possible sum you can make?
-

2. What is the greatest possible difference you can make without using the zeros?
-

3. What method did you use to find the answer in problem 2?
-



Problem Solving: Strategy

Act It Out

Page 647, Problem 3

A monorail conductor earns \$18.45 an hour. A ticket checker earns \$12.95 an hour. How much do the workers earn in an 8-hour day all together?

Step 1
Read
Be sure you understand the problem.

Read carefully.

What do you know?

- A monorail conductor works _____ hours for _____ an hour.
- A ticket checker works _____ hours for _____ an hour.

What do you need to find?

- You need to find how much
-

Step 2
Plan

- Logical Reasoning
- Draw a Picture or Diagram
- Make a Graph
- Act It Out
- Make a Table or List
- Find a Pattern
- Guess and Check
- Write an Equation
- Work Backward
- Solve a Simpler Problem

Make a plan.

Choose a strategy.

You can act out the problem. Play the roles of the monorail conductor and the ticket checker. Use play money to show the earnings.

Problem Solving: Strategy**Act It Out****Step 3****Solve** →**Solve the problem.**

Act out the problem.

- A conductor works 8 hours at _____ an hour.

The conductor earns $8 \times$ _____ or _____ per day.

- A ticket checker works 8 hours at _____ an hour.

The ticket checker earns $8 \times$ _____ or _____ per day.

The total _____

+ _____

_____ per day

Step 4**Look Back** →**Is the solution reasonable?**

Reread the problem.

Does your answer make sense? Yes No

Did you answer the question? Yes No

What other strategies could you use to solve the problem?
_____**Practice**

1. The Sheppards buy 2 adult tickets for \$8.70 each and 3 children's tickets for \$4.35 each. How much money do they spend?

2. Gina buys 3 model planes for \$14.95 each and 4 model trains for \$7.29 each. How much money does Gina spend?

Problem Solving: Strategy

Act It Out

Act it out to solve.

1. The tennis team travels to a statewide contest. They buy 8 student bus tickets at \$6.95 each and 2 adult bus tickets at \$9.50 each. How much does the team spend for tickets?

3. A bus driver earns \$16.40 per hour for the first 7 hours of work each day. She earns \$24.60 per hour for each hour over 7 hours. How much does she earn in a 9-hour day?

2. A bus ticket costs \$8.75. A train ticket for the same ride costs \$12.50. Suppose you buy 4 tickets. How much money would you save by taking the bus instead of the train?

4. The Silver Eagle Express has a dining car. Sandwiches cost \$5.95. Drinks cost \$1.49. How much does a family pay for 3 sandwiches and 4 drinks?

Mixed Strategy Review

Solve. Use any strategy.

5. Sam spends \$18.40 on a train ticket, \$5.90 on a cab, and \$11.20 on dinner. He has \$30 left. How much money did Sam have when he started?

7. Teri has 17 model trains. She has a long shelf that can hold 7 trains. She also has 2 smaller shelves. How can she arrange the trains on shelves so that each smaller shelf has an equal number of trains?

Strategy: _____

6. **Science** The first steam-powered railroad engine was built in England in 1804. Thomas Edison tested an electric-powered railroad engine 76 years later. When did Edison test his engine?

Strategy: _____

8. **Create a problem** which you could act out to help you find the answer. Share it with others.

Strategy: _____

Estimate Differences

To estimate differences of decimals, round each decimal to the nearest whole number. Then subtract the rounded numbers.

Estimate $12.25 - 5.79$.
 ↓ ↓
 Round each number 12 - 6
 to the nearest
 whole number.

Subtract. $12 - 6 = 6$

So $12.25 - 5.79$ is about 6.

Estimate $\$6.25 - \4.79 .
 ↓ ↓
 Round each number \$6.00 - \$5.00
 to the nearest dollar.

Subtract. $\$6.00 - \$5.00 = \$1.00$

So $\$6.25 - \4.79 is about \$1.00.

Circle the digits in the place to which you will round each number.

Estimate each difference. Show how you rounded.

1. $\$7.24 - \3.69

2. $27.3 - 15.76$

3. $12.4 - 3.7$

4. $12.7 - 4.8$

5. $\$25.75 - \7.80

6. $25.87 - 7.2$

7. $14.25 - 7.84$

8. $10.97 - 7.4$

9. $3.62 - 1.87$

10. $\$10.25 - \3.45

11. $\$10.54 - \7.81

12. $43.7 - 20.48$

Name _____

Estimate Differences



Estimate. Round to the nearest whole number.

1. $6.3 - 2.6$ _____ 2. $7.1 - 4.8$ _____ 3. $8.7 - 5.2$ _____
4. $9.0 - 3.9$ _____ 5. $4.6 - 1.5$ _____ 6. $7.34 - 5.78$ _____
7. $8.57 - 3.52$ _____ 8. $17.26 - 13.78$ _____ 9. $26.14 - 12.95$ _____
10. $\$34.95 - \12.20 _____ 11. $25.60 - 11.55$ _____ 12. $47.15 - 17.11$ _____

Subtract. Estimate to check for reasonableness.

13. $7.1 - 2.70 =$ _____ 14. $9.8 - 4.6 =$ _____ 15. $8.5 - 6.3 =$ _____
16. $5.6 - 1.75 =$ _____ 17. $36.62 - 23.13 =$ _____ 18. $24.35 - 10.4 =$ _____
19. $77.36 - 15.93 =$ _____ 20. $\$16.12 - \$12.80 =$ _____
21. $94.32 - 22.80 =$ _____ 22. $\$54.10 - \$34.89 =$ _____
23. $13.4 - 6.79 =$ _____ 24. $47.65 - 17.93 =$ _____
25. $\$14.75 - \$6.90 =$ _____ 26. $63.5 - 18.27 =$ _____

Algebra Compare. Write $>$ or $<$.

27. $7.2 - 3.5$ ○ $8.8 - 5.4$ 28. $9.9 - 4.8$ ○ $6.4 - 1.7$ 29. $7.6 - 2.2$ ○ $5.6 - 1.3$
30. $8.3 - 6.6$ ○ $4.2 - 2.3$ 31. $9.1 - 8.7$ ○ $2.1 - 1.1$ 32. $7.2 - 4.5$ ○ $6.8 - 5.8$
33. $5.2 - 2.3$ ○ $9.7 - 7.9$ 34. $9.3 - 3.8$ ○ $9.9 - 3.1$ 35. $8.1 - 4.6$ ○ $7.2 - 5.1$

Problem Solving

Solve.

36. Jake has \$25.75. He spends \$13.15 on magazines. About how much money does Jake have left?

37. Nancy ran a total of 5.7 miles today. She ran 3.2 miles this morning. About how many miles did Nancy run this afternoon?

Estimate Differences

Complete. Estimate to find the difference between Groups A and B.

FOR SALE					
scissors	\$7.49	T-Shirt	\$8.98	ruler	\$0.99
markers	\$2.89	sweatshirt	\$12.98	glue	\$1.59
notebook	\$3.29	backpack	\$11.99	pencils	\$1.29
jeans	\$14.95	sneakers	\$29.99	clock	\$5.98
paper	\$0.89	radio	\$14.98	pen	\$1.19

Estimate to add the items in Group A and in Group B. Subtract the sums to find the difference.

Group A	Group B	Difference
1. notebook and ruler	paper and glue	_____
2. sweatshirt and jeans	T-Shirt and jeans	_____
3. backpack and pencils	clock and pen	_____
4. markers and sneakers	radio and scissors	_____
5. clothing and shoes	everything else	_____

Estimate to solve.

6. Andy buys a box of markers. He gives the clerk \$20. He receives \$18.11 in change. Is the amount of change reasonable? Explain.
7. Heidi buys a clock. She gives the clerk \$10. She receives \$4.02 in change. Is the amount of change reasonable? Explain.

Choose a Computation Method

Find $5.8 - 2.63$.

Mental Math

First separate whole numbers and decimals.
 Whole numbers: 5, 2
 Decimals: 0.8, 0.63

Subtract each separately.

$$5 - 2 = 3$$

$$0.8 - 0.63 = 0.17$$

Combine the partial differences.

$$3 + 0.17 = 3.17$$

Paper and Pencil

Subtract as you would whole numbers. Line up the decimal points. Write a zero where needed. Remember to write the decimal point in the answer.

$$\begin{array}{r} 7\ 10 \\ 5.80 \\ - 2.63 \\ \hline \end{array}$$

Calculator

Press the keys in order, starting on the left of the problem. Then press the ENTER = key.

Press:

5 . 8 - 2 . 6 3 Enter

Read the display. The number beneath the equal sign is the sum.

$$5.8 - 2.63 = 3.17$$

Solve. Tell which method you used. Write *mental math*, *paper and pencil* or *calculator*.

1. 16.8
 $\underline{- 5.7}$

2. $\$35.94$
 $\underline{- 11.33}$

3. 132.8
 $\underline{- 15.9}$

Method: _____

Method: _____

Method: _____

4. 0.67
 $\underline{- 0.39}$

5. 7.95
 $\underline{- 5.43}$

6. $\$87.50$
 $\underline{- 80.25}$

Method: _____

Method: _____

Method: _____

7. $237.8 - 104.25 =$ _____

8. $24.3 - 12.1 =$ _____

Method: _____

Method: _____

9. $\$96.31 - \$4.67 =$ _____

10. $403.1 - 383.2 =$ _____

Method: _____

Method: _____

11. $45.84 - 23.45 =$ _____

12. $\$60.18 - \$9.87 =$ _____

Method: _____

Method: _____

Name _____

Choose a Computation Method



Solve. Tell which method you used.

1. 21.9
—
 7.45

2. $\$48.13$
—
 26.87

3. 307.61
—
 45.96

Method: _____

Method: _____

Method: _____

4. 35.92
—
 15.31

5. 0.81
—
 0.52

6. $\$95.38$
—
 47.67

Method: _____

Method: _____

Method: _____

7. $37.8 - 25\frac{3}{10} =$ _____

8. $71.4 - 33.7 =$ _____

Method: _____

Method: _____

9. $\$63.75 - \$59.55 =$ _____

10. $5\frac{3}{10} - 2.1 =$ _____

Method: _____

Method: _____

11. $16\frac{7}{10} - 10.5 =$ _____

12. $\$82.30 - 47.14 =$ _____

Method: _____

Method: _____

Algebra Choose a number from the box to complete each number sentence.

13. $53.75 -$ _____ $= \$25.14$

\$28.14

14. $50.81 -$ _____ $= \$22.67$

\$28.61

Problem Solving

Solve.

15. Sue lives 27.21 kilometers from Ramon. She lives 36.8 kilometers from Zack. How much further from Zack than Ramon does Sue live?

16. Bob's computer is 32.1 centimeters long. Juanita's computer is 31.6 centimeters long. How much longer is Bob's computer than Juanita's computer?

Name _____

Choose a Computation Method

E 28-5
ENRICH

Find the next three numbers in the pattern. State the rule.

1. 1, 1.5, 2, 2.5, 3, _____, _____, _____

Rule: _____

2. 16.59, 16.37, 16.15, _____, _____, _____

Rule: _____

3. 27.11, 28.22, 29.33, _____, _____, _____

Rule: _____

4. \$21.10, \$42.20, \$84.40, _____, _____, _____

Rule: _____

5. 145.9, 143.87, 141.84, _____, _____, _____

Rule: _____

6. 1, 6.55, 12.1, _____, _____, _____

Rule: _____

Write a number pattern for the given rule.

7. Rule: Subtract 0.27.

_____, _____, _____, _____, _____, _____

8. Rule: Add 1.23.

_____, _____, _____, _____, _____, _____

9. Rule: Subtract \$0.35.

_____, _____, _____, _____, _____, _____

10. Rule: Add 26.26.

_____, _____, _____, _____, _____, _____

Name _____

Problem Solving: Decision Making

Decision
Making
WORKSHEET

Consider different routes, depending on the stops the Lopez family may wish to make.

Record your data and notes.

Route (List all stops and highways used.)	Miles Traveled	Costs	Other Notes

Your Decision

What is your recommendation for the Lopez family? Explain.

Teaching Tools

Number	Tool	Number	Tool
A	Think-Solve-Explain Graphic Organizer	25	Centimeter Graph Paper
1	Grid Paper, Sheet 1	26	Graph Paper, Sheet 1
2	Grid Paper, Sheet 2	27	Inch Graph Paper, Sheet 2
3	Grid Paper, Sheet 3	28	Number Lines
4	Grid Paper, Sheet 4	29	Centimeter Dot Paper
5	Grid Paper, Sheet 5	30	Large Dot Paper
6	Place-Value Charts, Sheet 1	31	Multiplication Mat
7	Place-Value Charts, Sheet 2	32	Dot Cards 1–5
8	Place-Value Charts, Sheet 3	33	Dot Cards 6–10
9	Place-Value Charts, Sheet 4	34	Multiplication Fact Table
10	Two-Color Counters	35	Blank Multiplication Fact Table
11	Place-Value Models	36	2-Dimensional Shapes, Sheet 2
12	Number Cards 0–9	37	2-Dimensional Shapes, Sheet 3
13	Coins	38	Metric Measuring Tape (100 cm)
14	Bills	39	Metric Measuring Tape (1 Meter)
15	Thermometers; Celsius, Fahrenheit	40	Cube Nets
16	Inch Ruler	41	3-Dimensional Figure Nets, Sheet 1
17	Centimeter Rulers	42	3-Dimensional Figure Nets, Sheet 2
18	Customary Measuring Tape (1 Yard)	43	3-Dimensional Figure Nets, Sheet 3
19	12-Inch Ruler/ Protractor	44	Fraction Models
20	Spinner Blanks, Sheet 1	45	Pattern Blocks, Sheet 1
21	Spinner Blanks, Sheet 2	46	Pattern Blocks, Sheet 2
22	Number Cube Patterns	47	Thousands Cube
23	Analog Clock Face, Sheet 1	48	Whole-Number Grid
24	Analog Clock Face, Sheet 2	49	Decimal and Money Grid

✓Self-Check: Explanatory Writing

Think:

Did I use what I know to solve the problem?

Solve:

Did I show my work correctly?

Did I organize my steps in the correct order?

Explain:

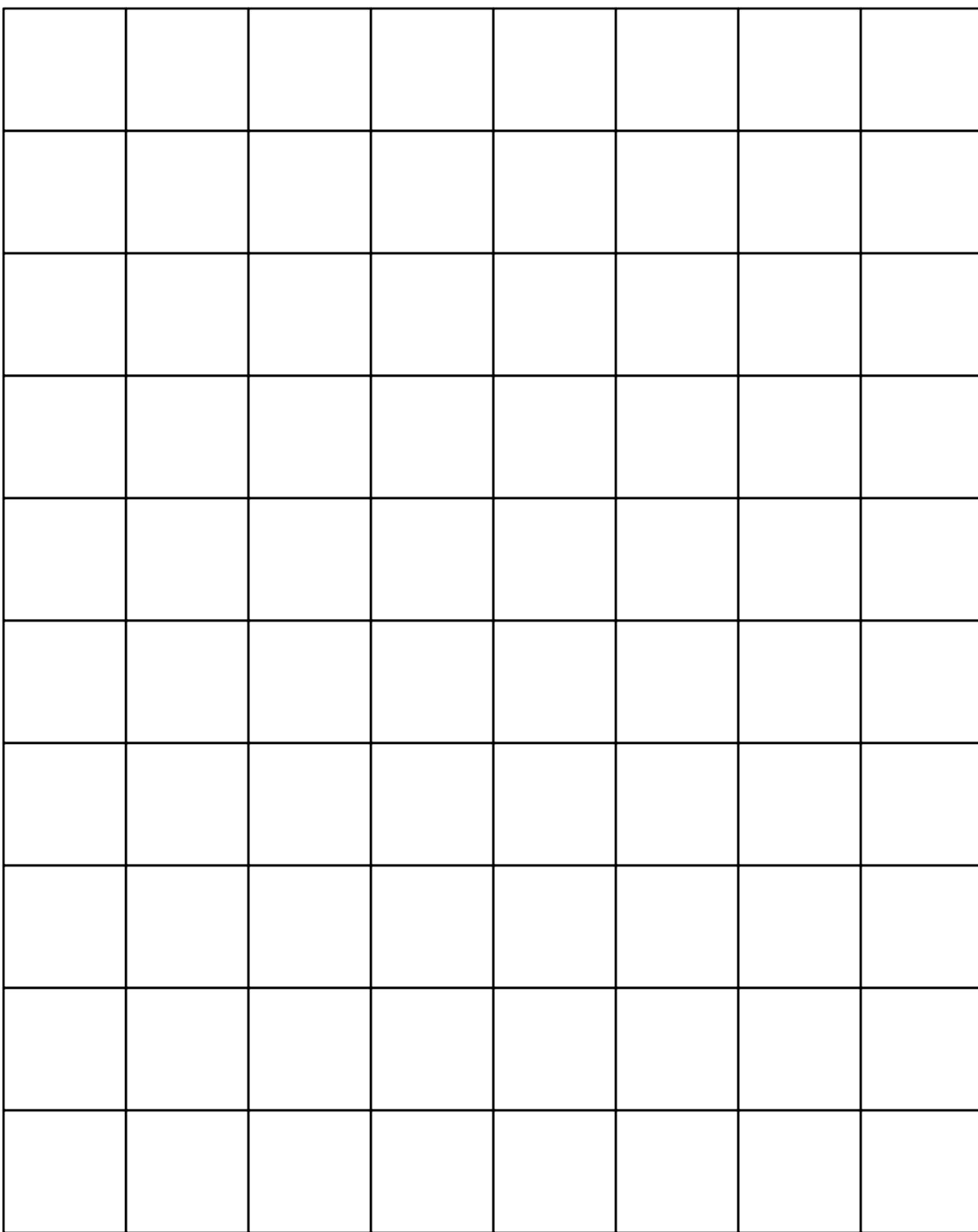
Did I use correct math vocabulary?

Did I check my answer?

Did I explain why my answer makes sense?

Name _____

Grid Paper, Sheet 1



Name _____

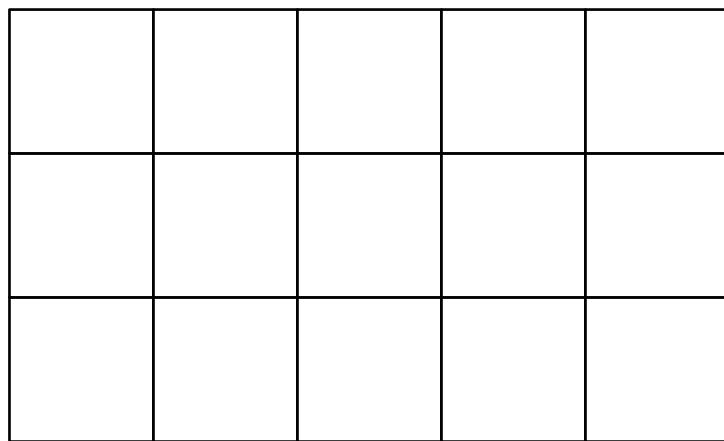
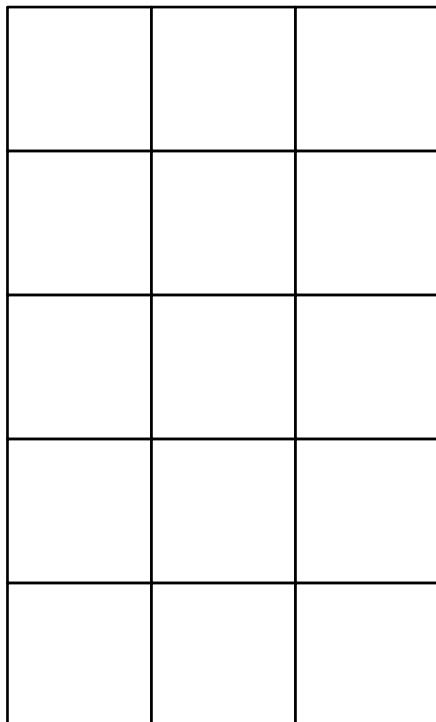
Grid Paper, Sheet 2

Teacher
Tools
2

Name _____

Grid Paper, Sheet 3

Teacher
Tools
3



Name

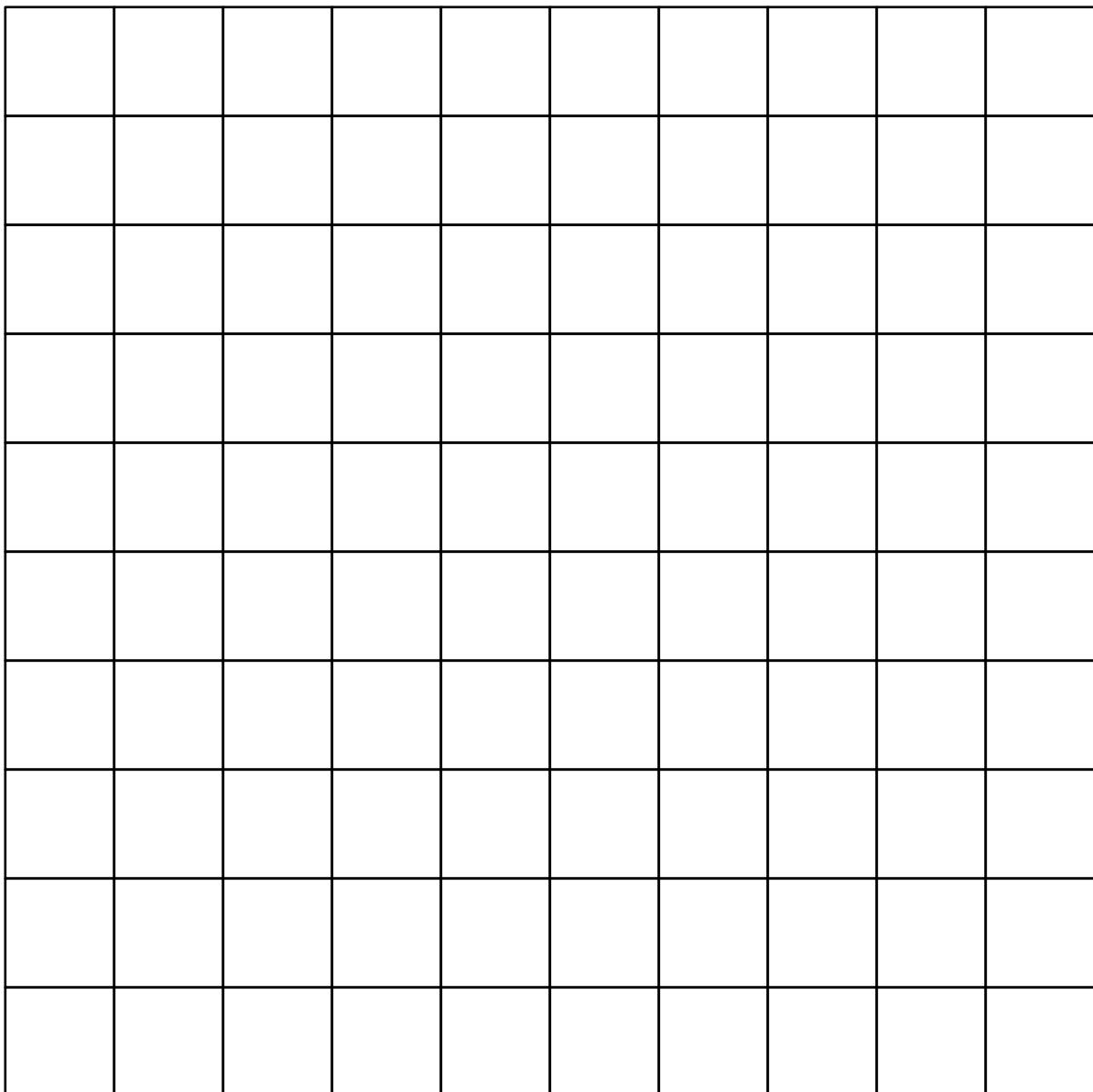
Grid Paper, Sheet 4

**Teacher
Tools**

Name _____

Grid Paper, Sheet 5

Teacher
Tools
5



Name _____

Place-Value Charts, Sheet 1

tens	ones

tens	ones

tens	ones

tens	ones

tens	ones

tens	ones

hundreds	tens	ones

hundreds	tens	ones

hundreds	tens	ones

hundreds	tens	ones

Name _____

Place-Value Charts, Sheet 2

THOUSANDS			ONES		
Hundreds	Tens	Ones	Hundreds	Tens	Ones

Decimal Place-Value Chart

Hundreds	Tens	Ones	Tenths	Hundredths

Place-Value Charts, Sheet 3

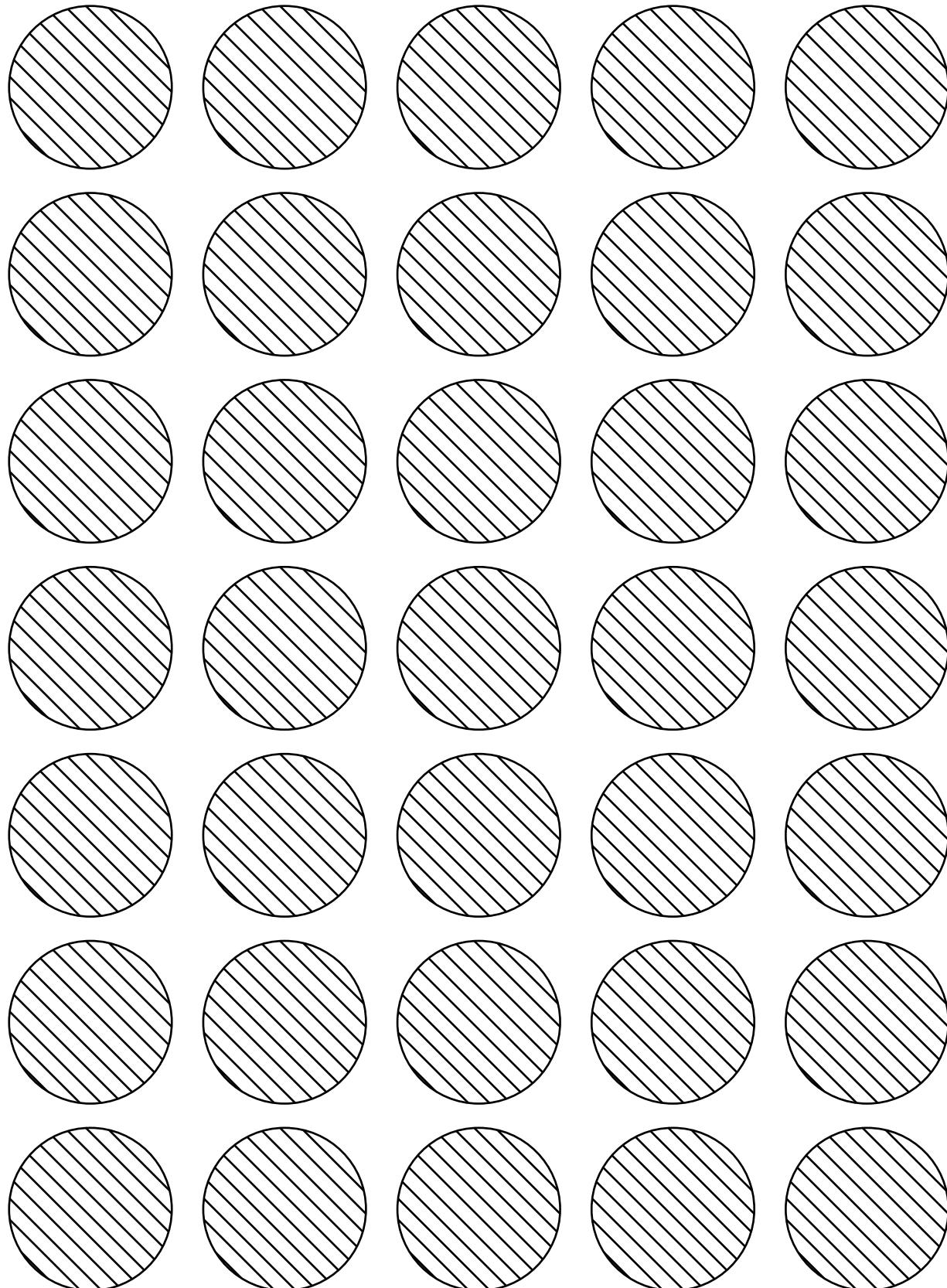
Place-Value Charts, Sheet 4

Whole Numbers		Ones Period		
		ones	tens	hundreds
Billions Period	Thousands Period	ones	tens	hundreds
	Ones	ones	tens	hundreds
	Tens	ones	tens	hundreds

Decimals		Ones Period		
		ones	tens	hundreds
Thousands Period	Tenths	ones	tens	hundreds
	thousandths	ten-	hundredths	thousandths
	thousandths	thousandths	thousandths	thousandths

Name _____

Two-Color Counters



Name _____

Place-Value Models

Ones

1

1

1

1

1

1

1

1

1

1

Tens

ANSWER

Hundreds

A blank 10x10 grid for drawing or plotting. The grid consists of 100 equal-sized squares arranged in a single column and ten rows.

ANSWER

A blank 10x10 grid for drawing or plotting. The grid consists of 100 equal-sized squares arranged in a single column and ten rows.

Name _____

Digit Deck (Number Cards 0–9)

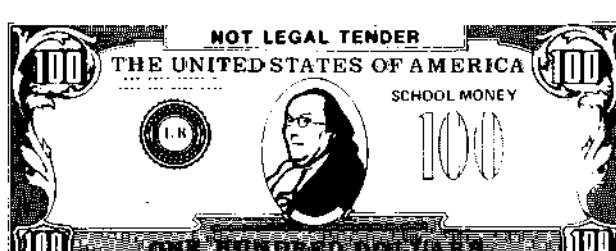
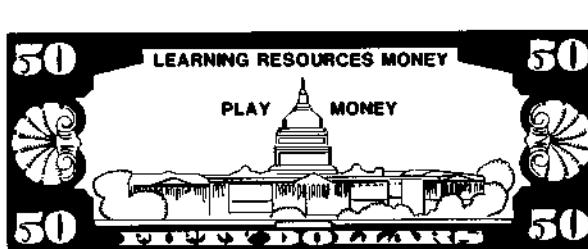
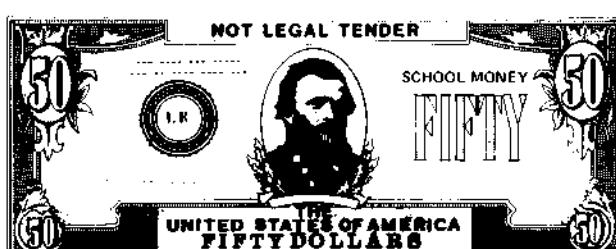
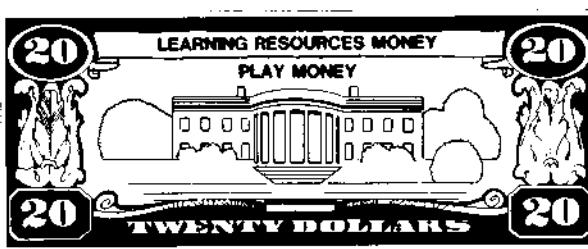
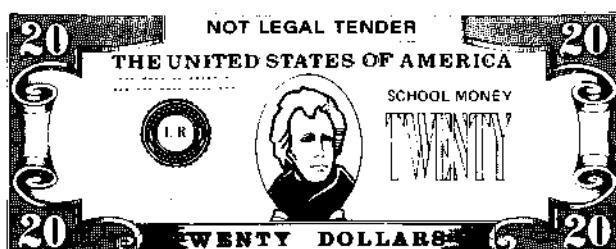
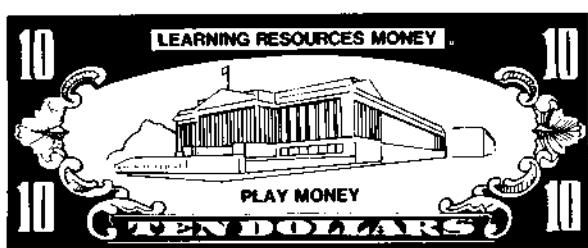
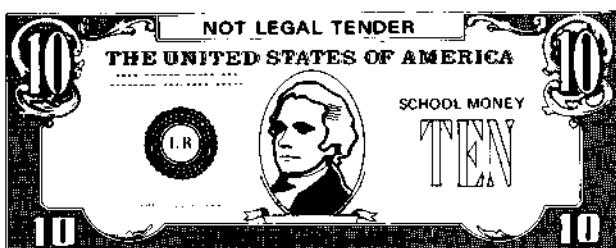
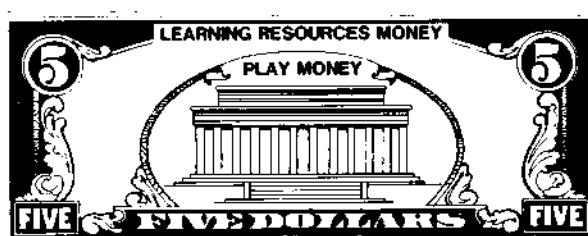
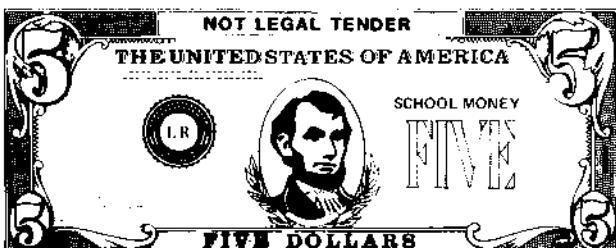
Teacher
Tools
12



Name _____

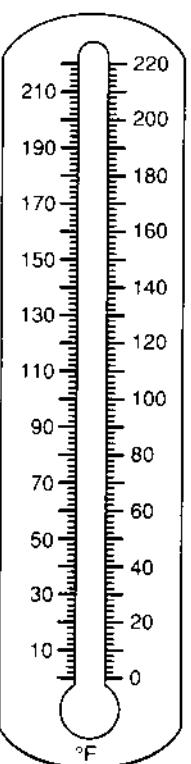
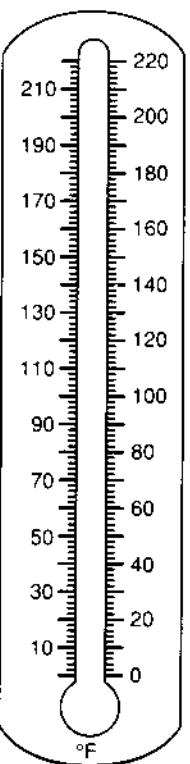
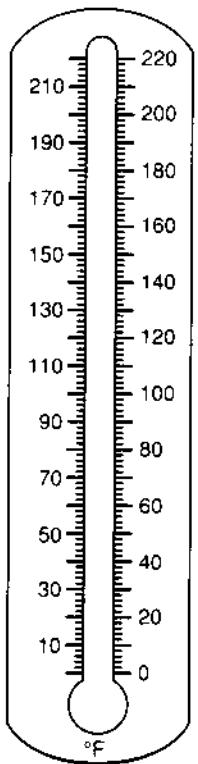
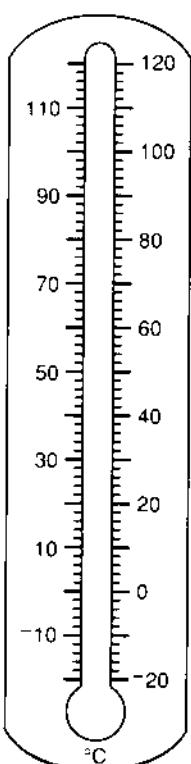
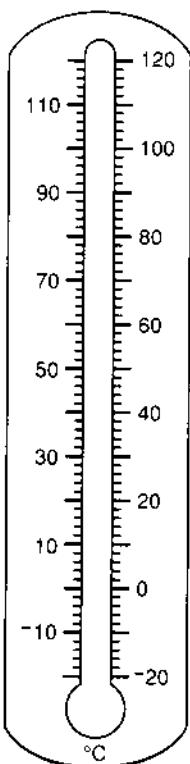
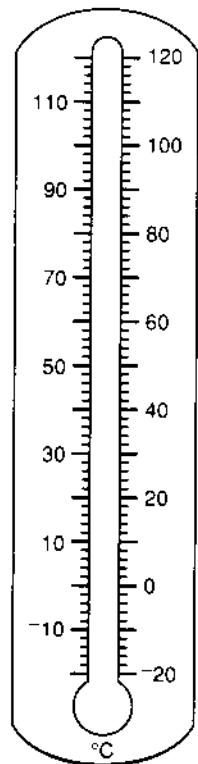
Bills

Teacher Tools
14



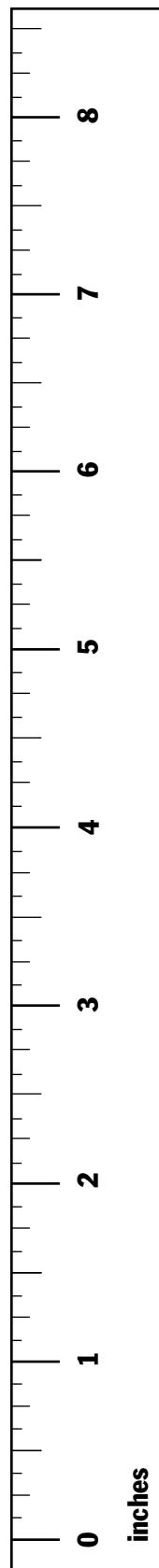
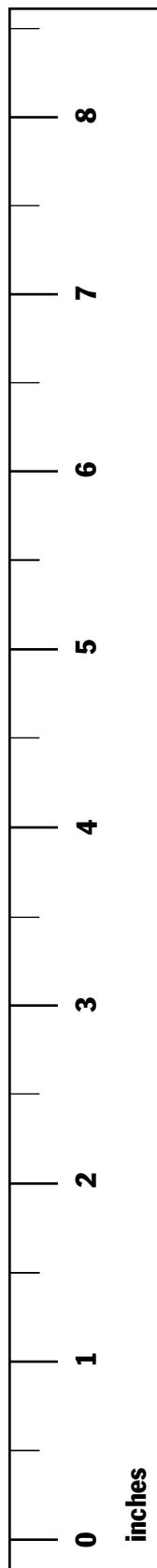
Name _____

Thermometers: Celsius, Fahrenheit



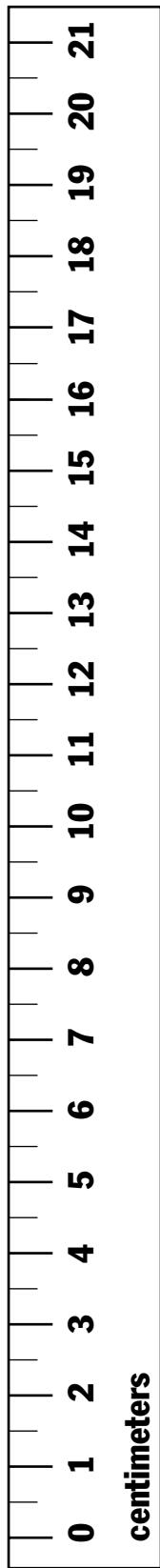
Name _____

Inch Rulers

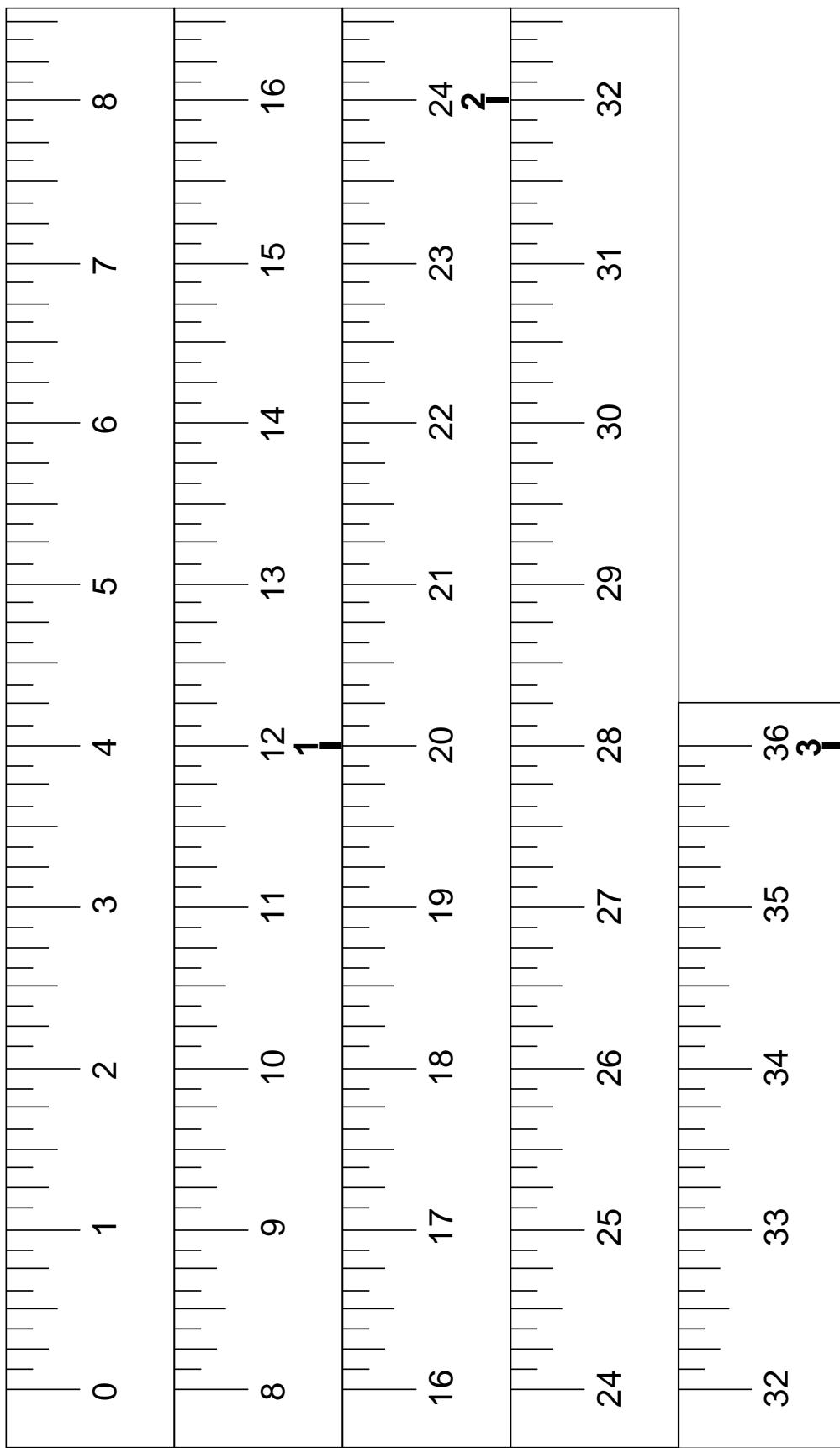


Name _____

Centimeter Rulers



Customary Measuring Tape (1 Yard)



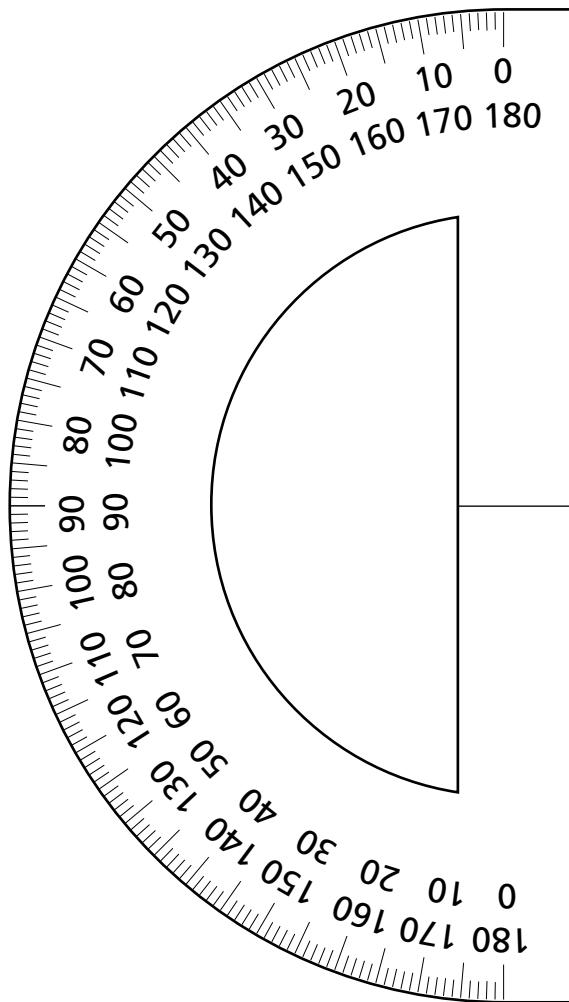
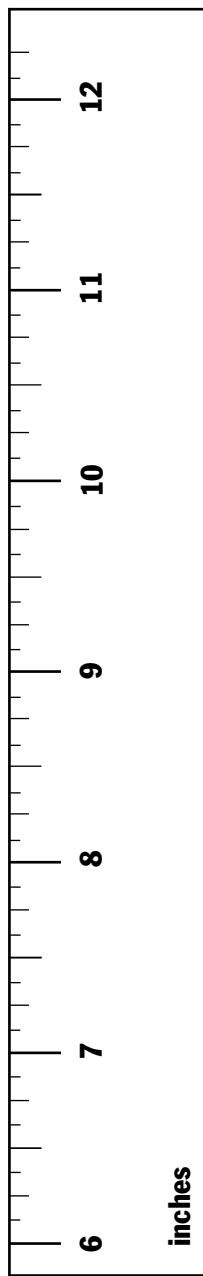
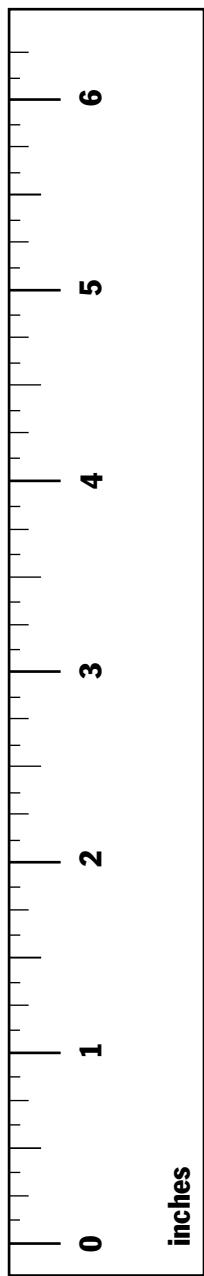
To make a yardstick of 36 inches:

1. Cut out all of the strips
2. Carefully overlap each strip.
3. Tape or glue them together to form a yardstick.

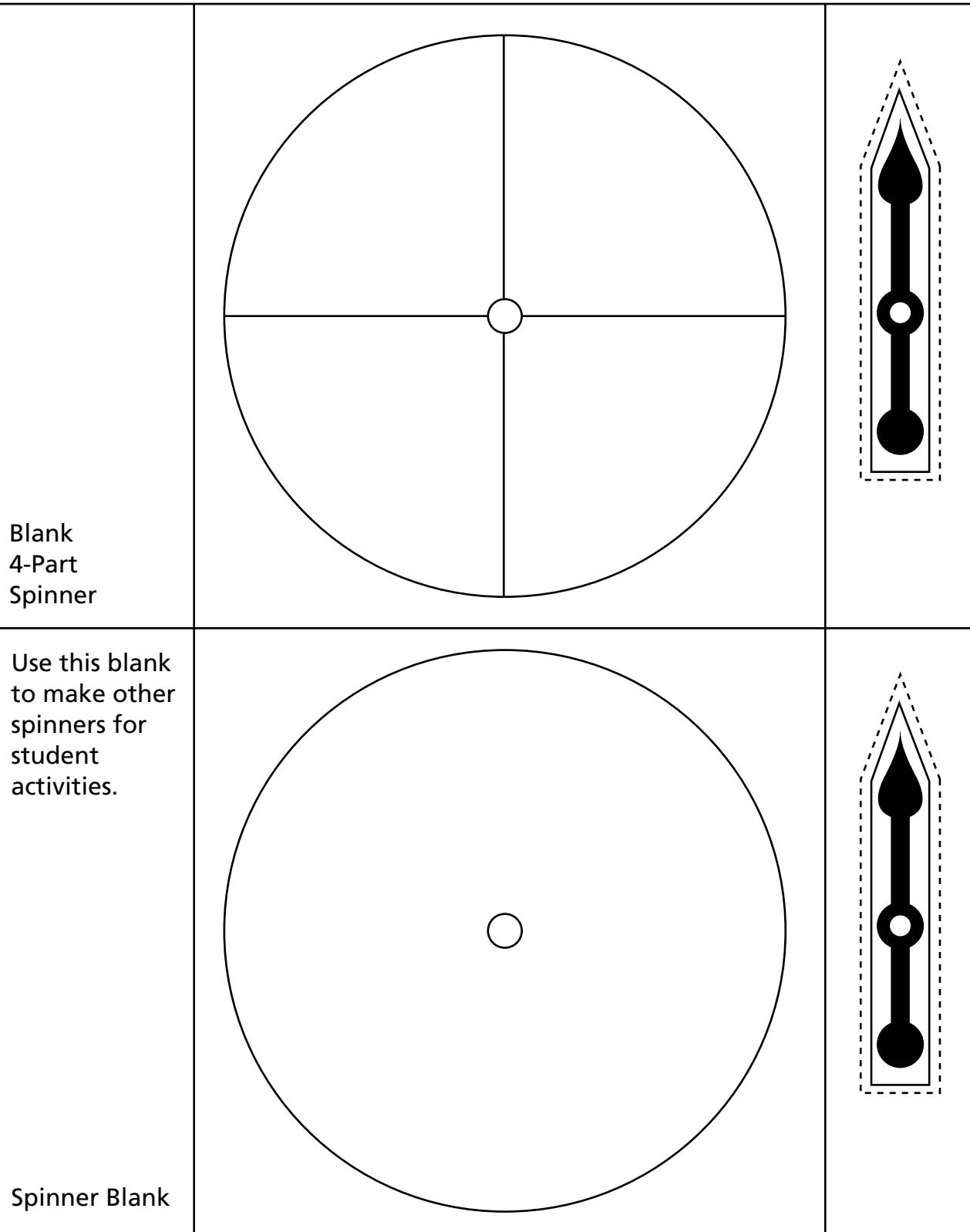
12-Inch Ruler/Protractor

To make a 12-inch ruler:

1. Cut out ruler strips.
2. Glue the strips together to form a 12-inch ruler.

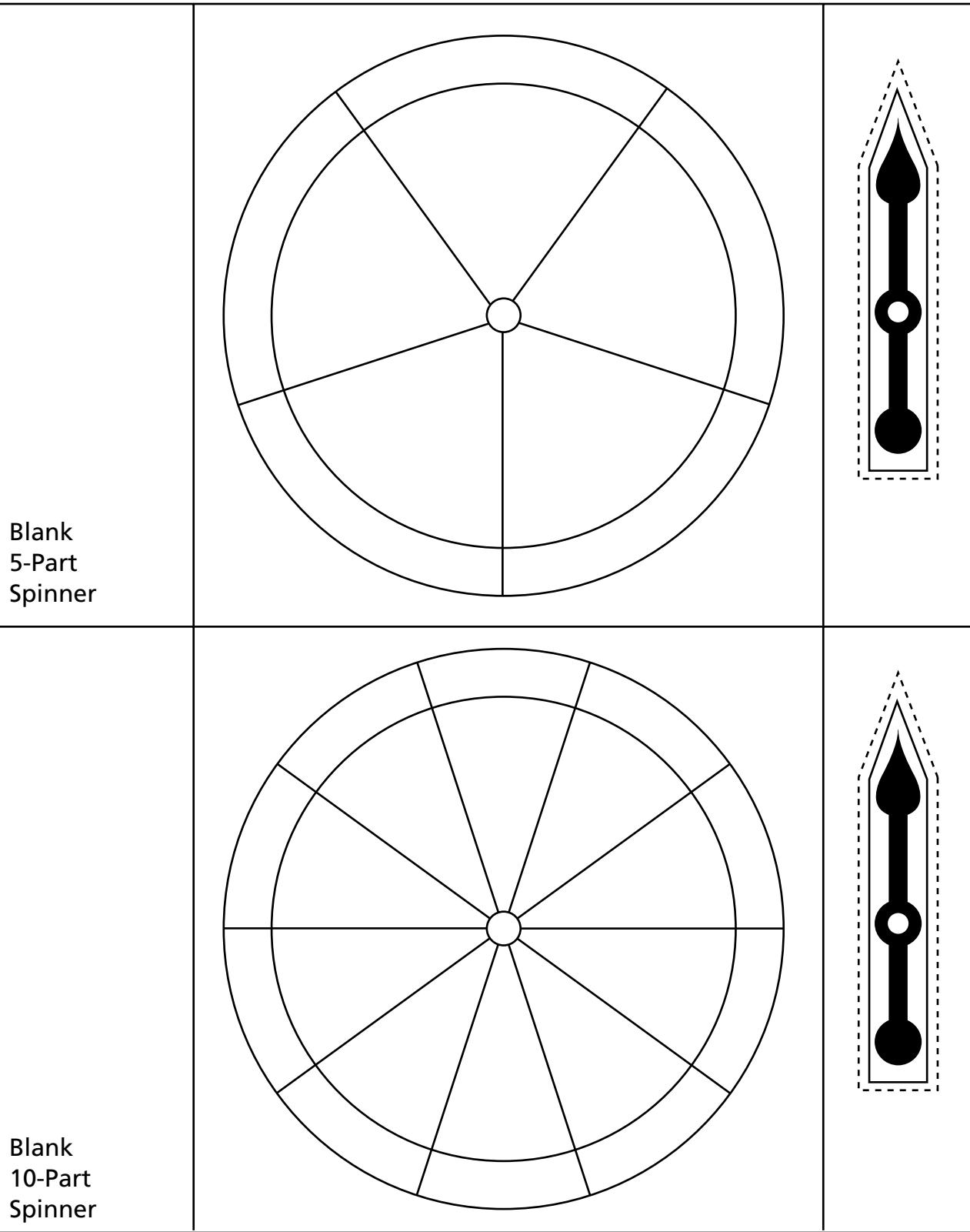


Spinner Blanks, Sheet 1



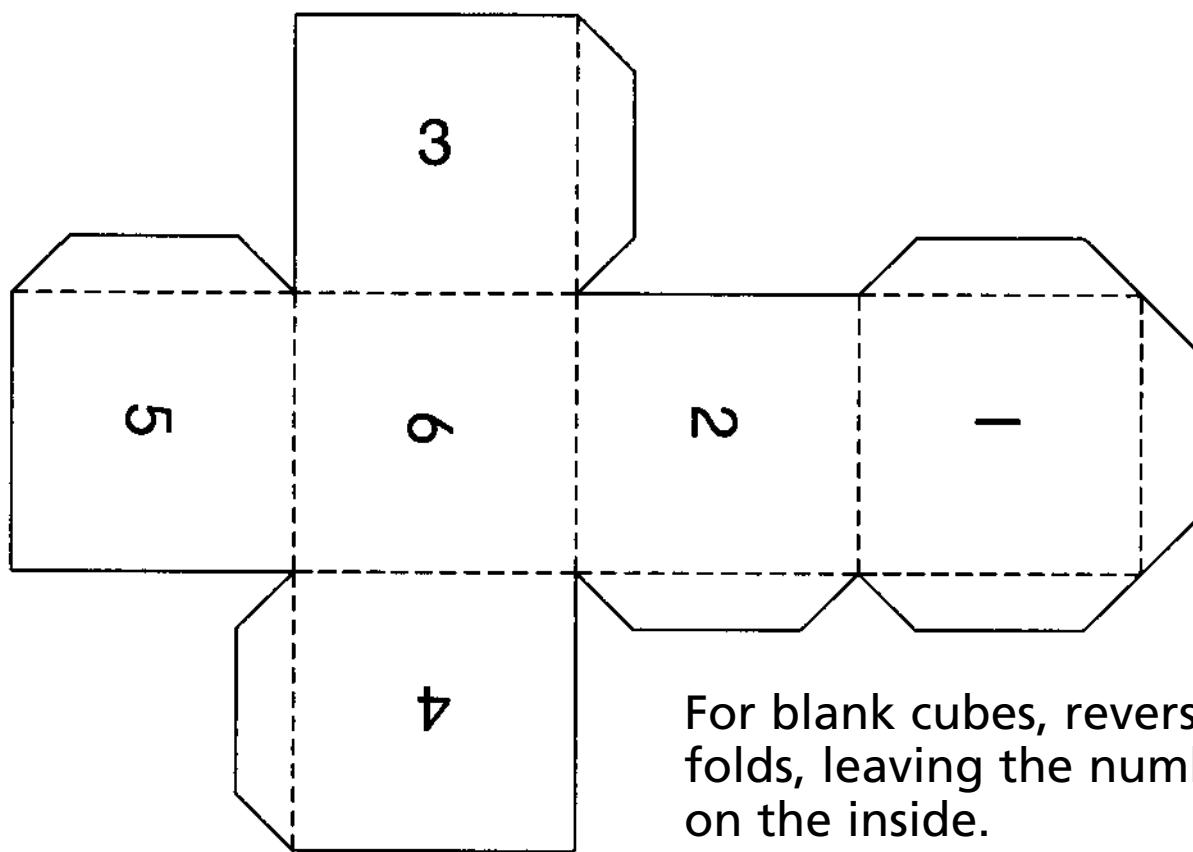
1. Complete the spinner.
2. Add color.
3. Mount on heavy paper.
4. Cut out and punch a hole.
5. Attach spinner with a paper fastener.

Spinner Blanks, Sheet 2



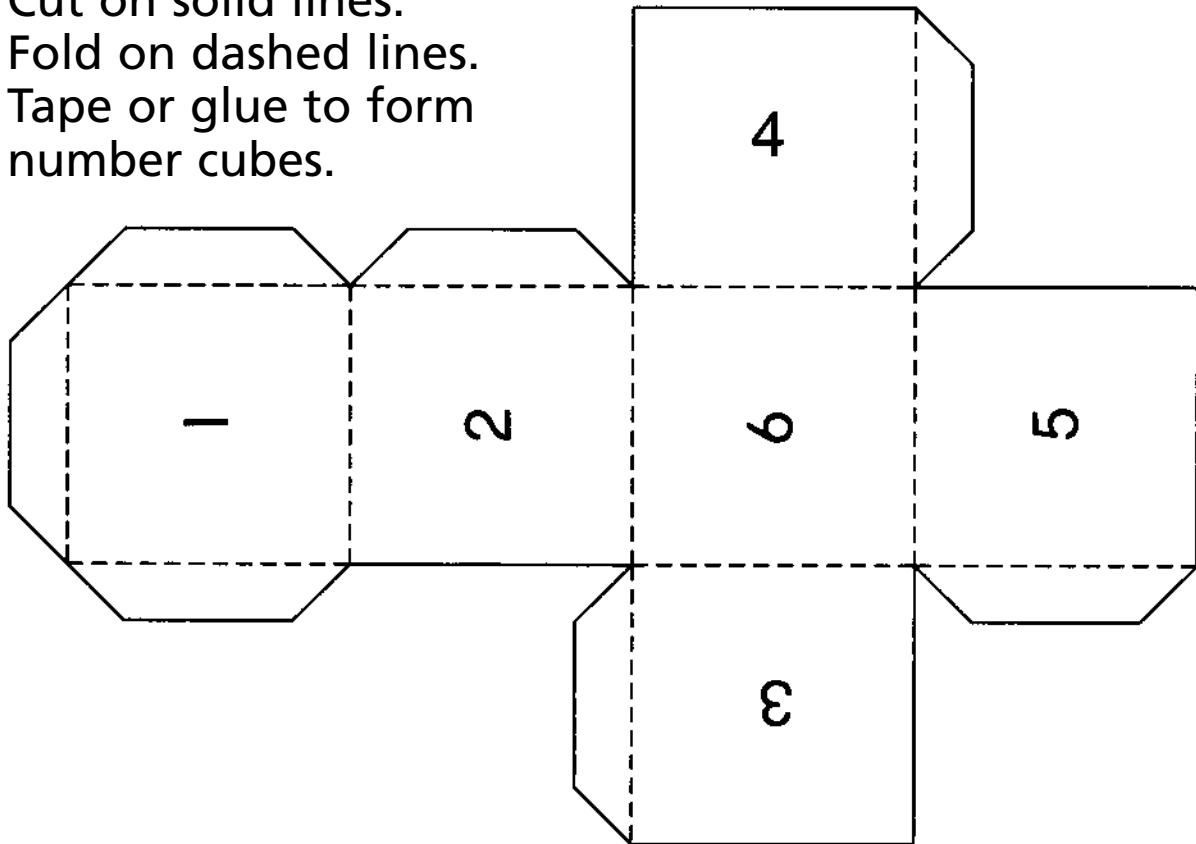
1. Complete the spinner.
2. Add color.
3. Mount on heavy paper.
4. Cut out and punch a hole.
5. Attach spinner with a paper fastener.

Number Cube Patterns



For blank cubes, reverse the folds, leaving the numbers on the inside.

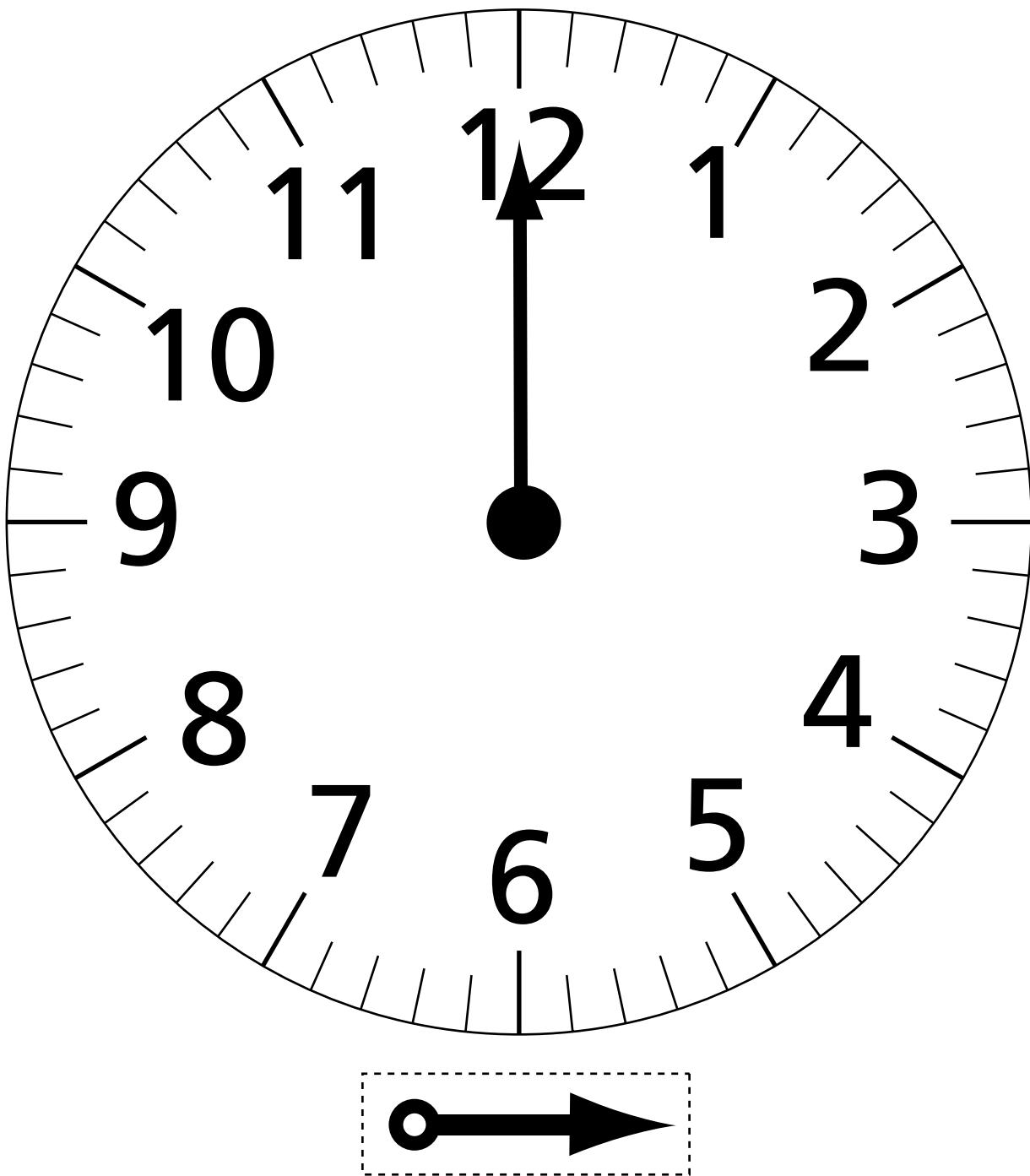
1. Cut on solid lines.
2. Fold on dashed lines.
3. Tape or glue to form number cubes.



Name _____

Analog Clockface, Sheet 1

Teacher
Tools
23

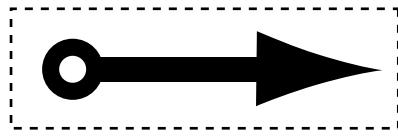
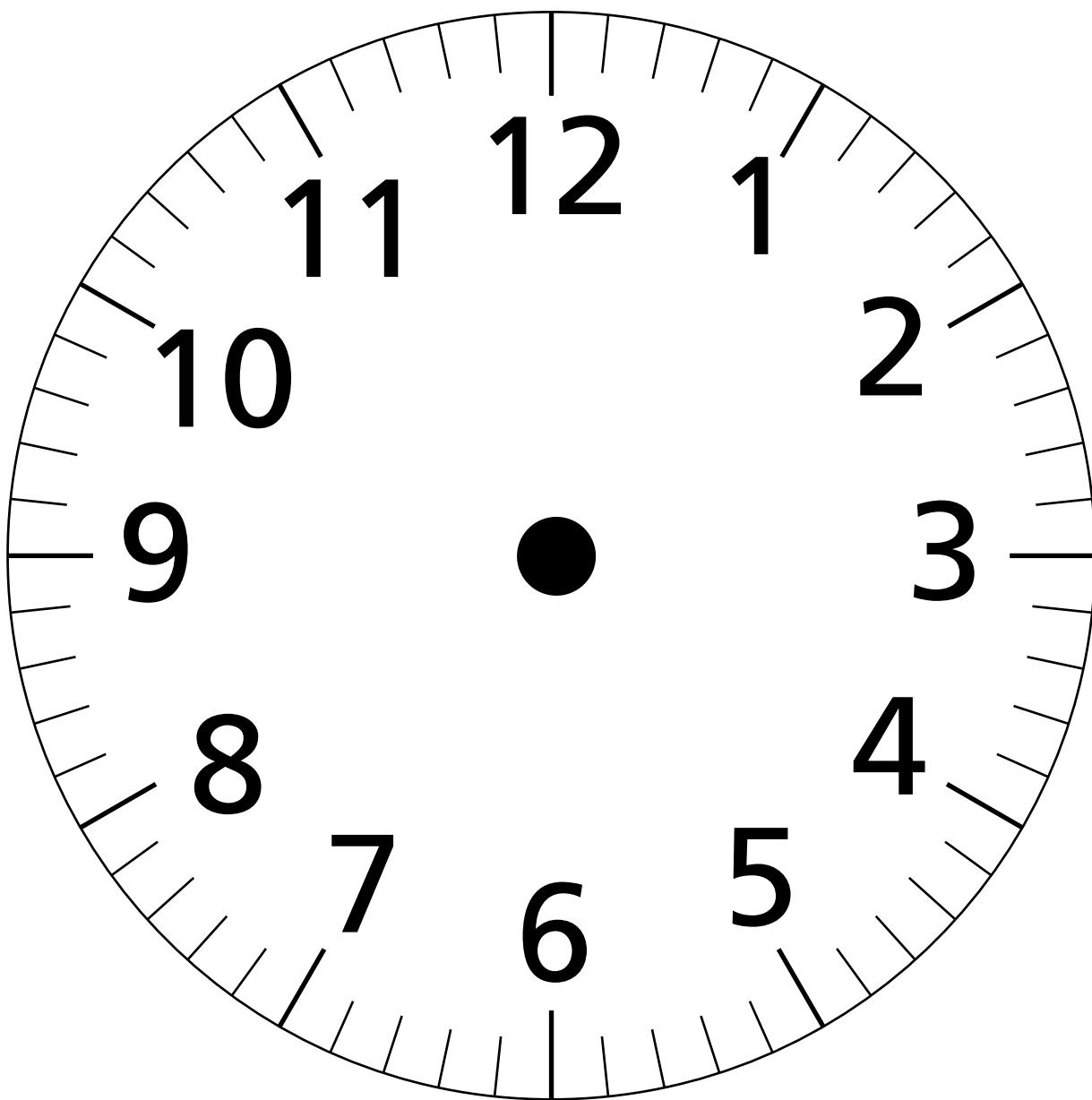


1. Mount on heavy paper.
2. Cut out the hour hand.
3. Attach it to the clock with a paper fastener.

Name _____

Analog Clockface, Sheet 2

Teacher
Tools
24

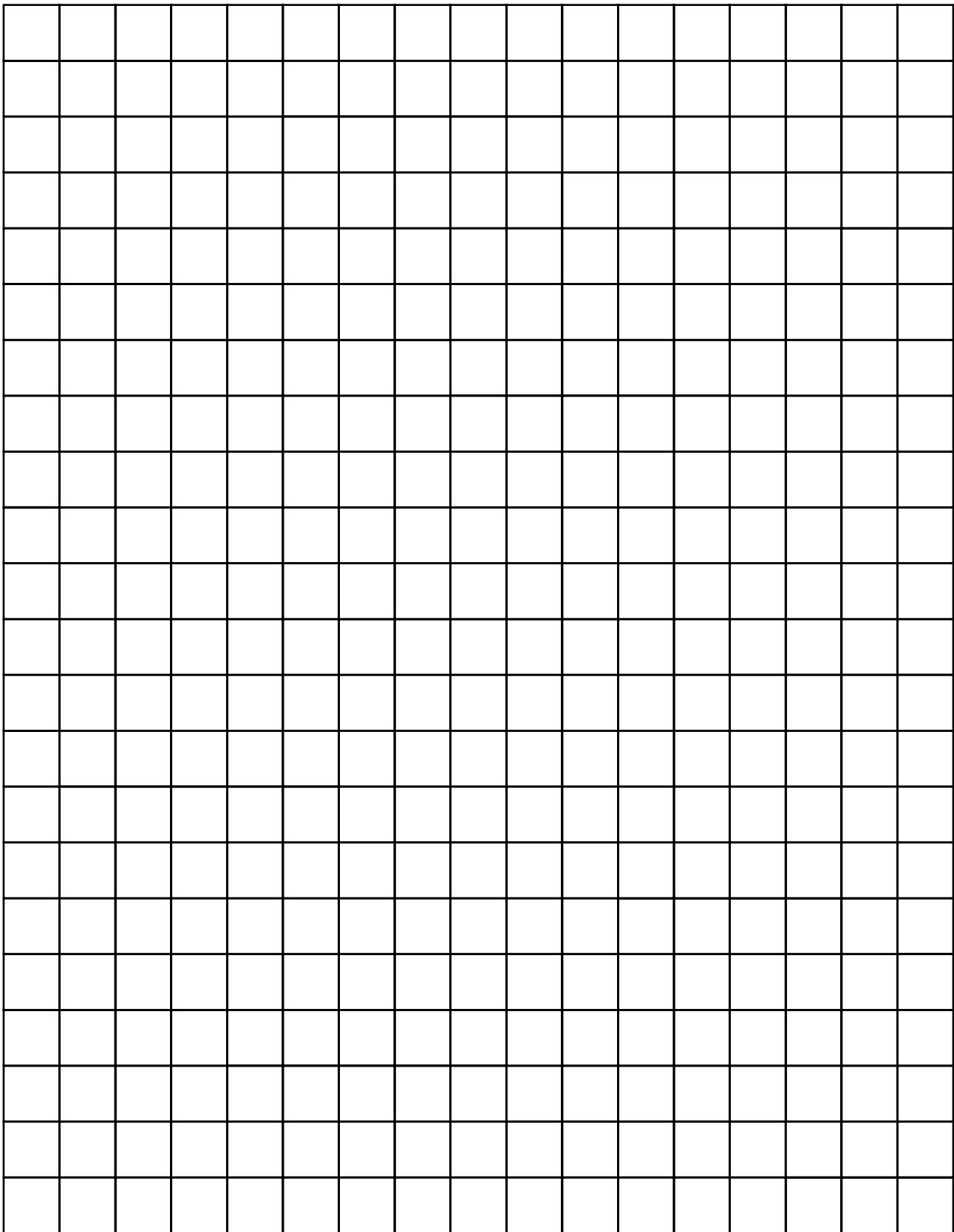


1. Mount on heavy paper.
2. Cut out the clock hands.
3. Attach them to the clock with a paper fastener.

Name _____

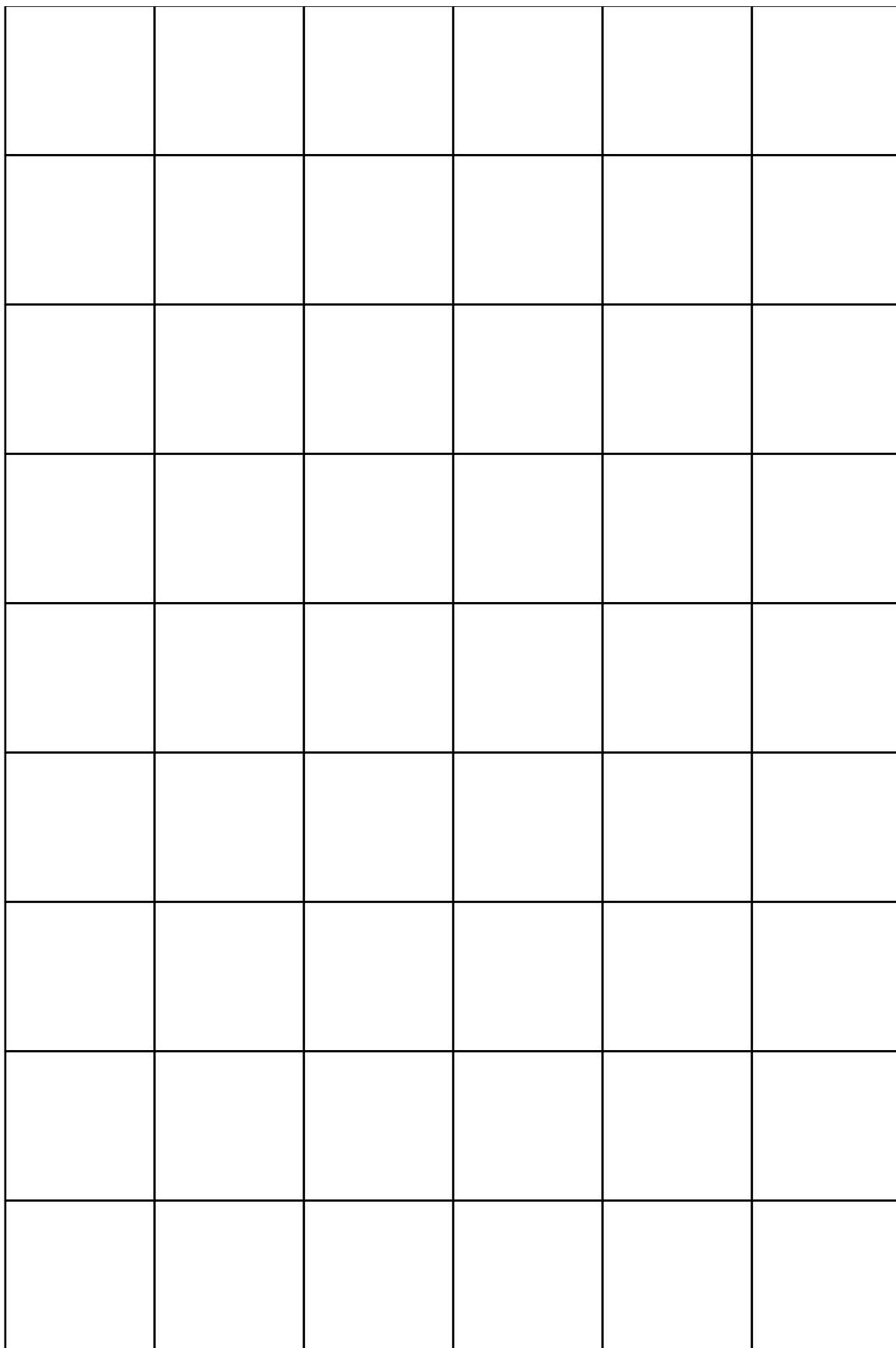
Centimeter Graph Paper

Teacher
Tools
25



Name _____

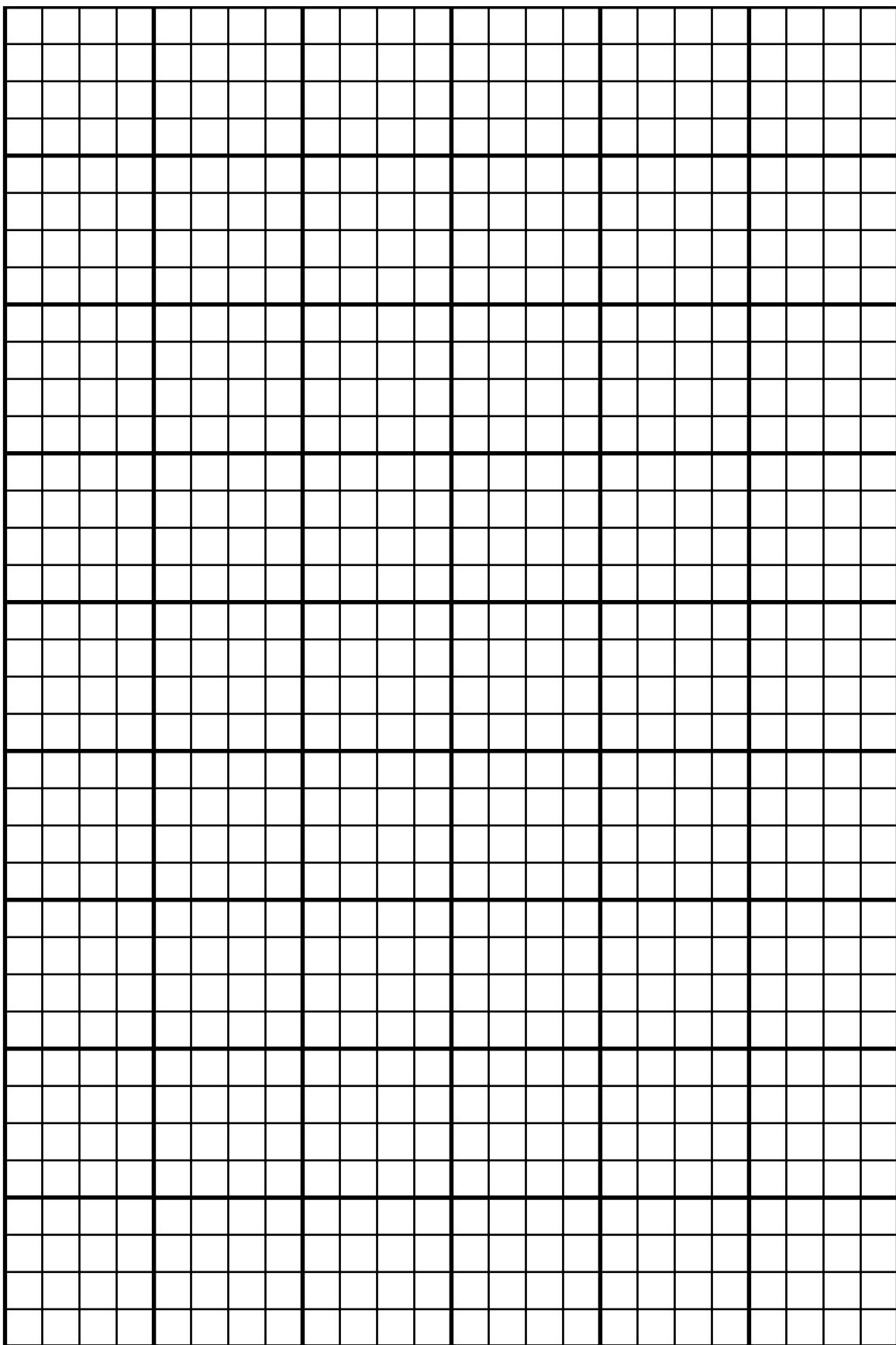
Inch Graph Paper, Sheet 1



Name _____

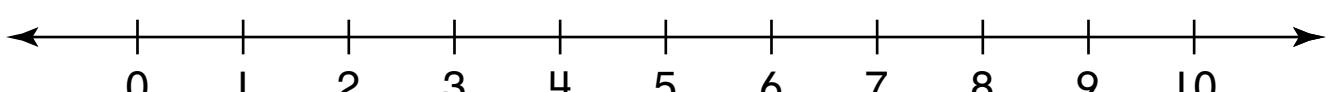
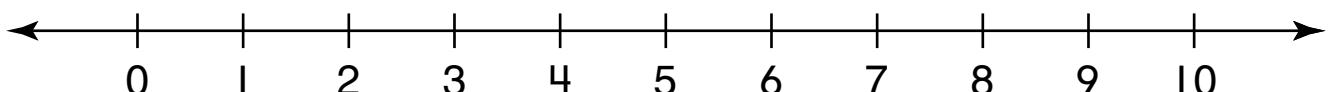
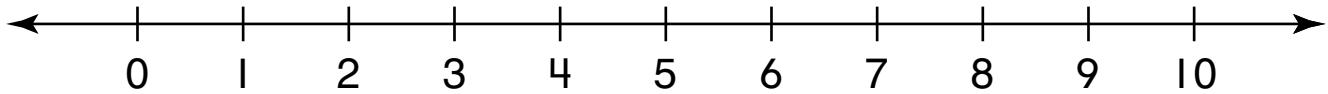
Inch Graph Paper, Sheet 2

Teacher
Tools
27



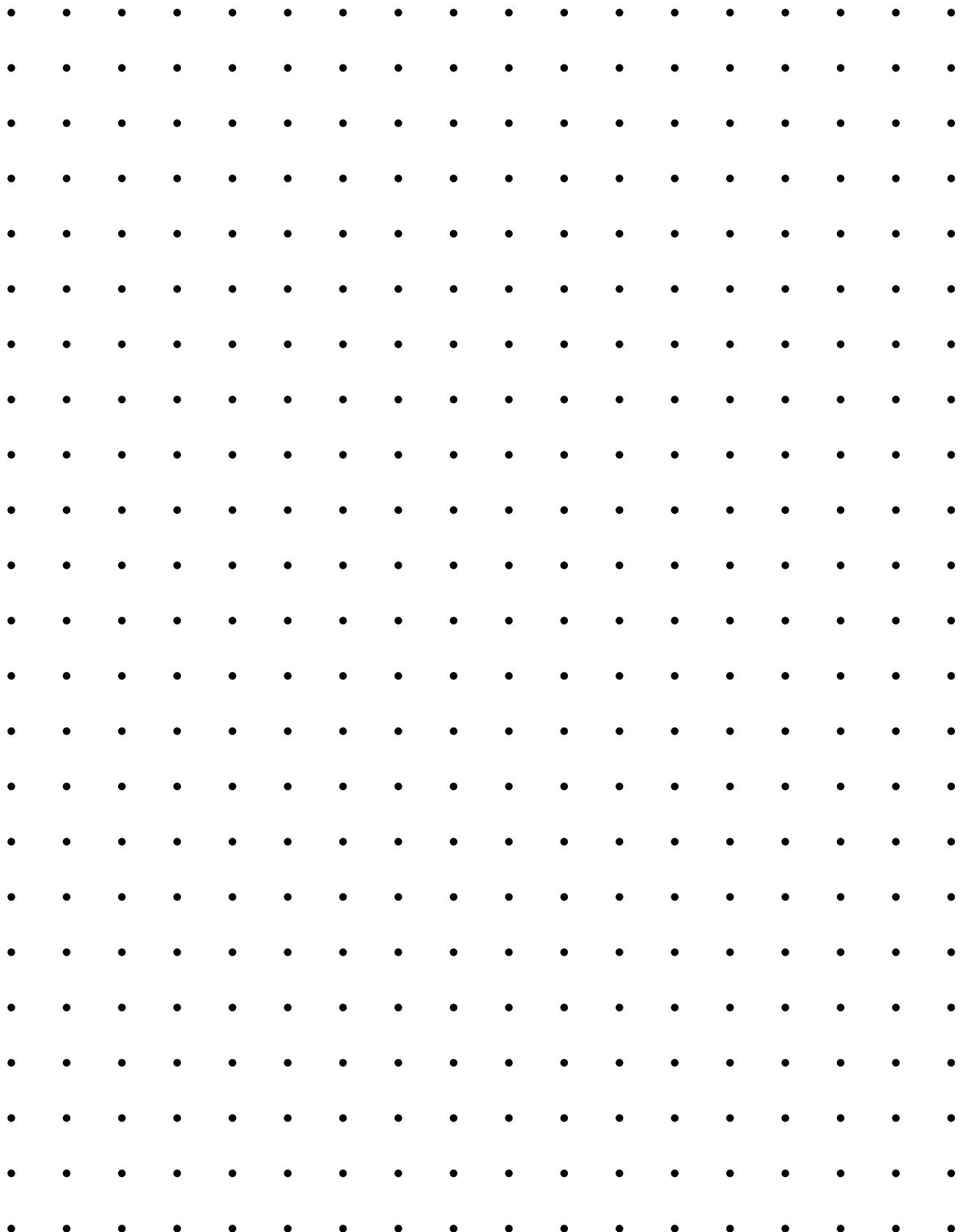
Name _____

Number Lines



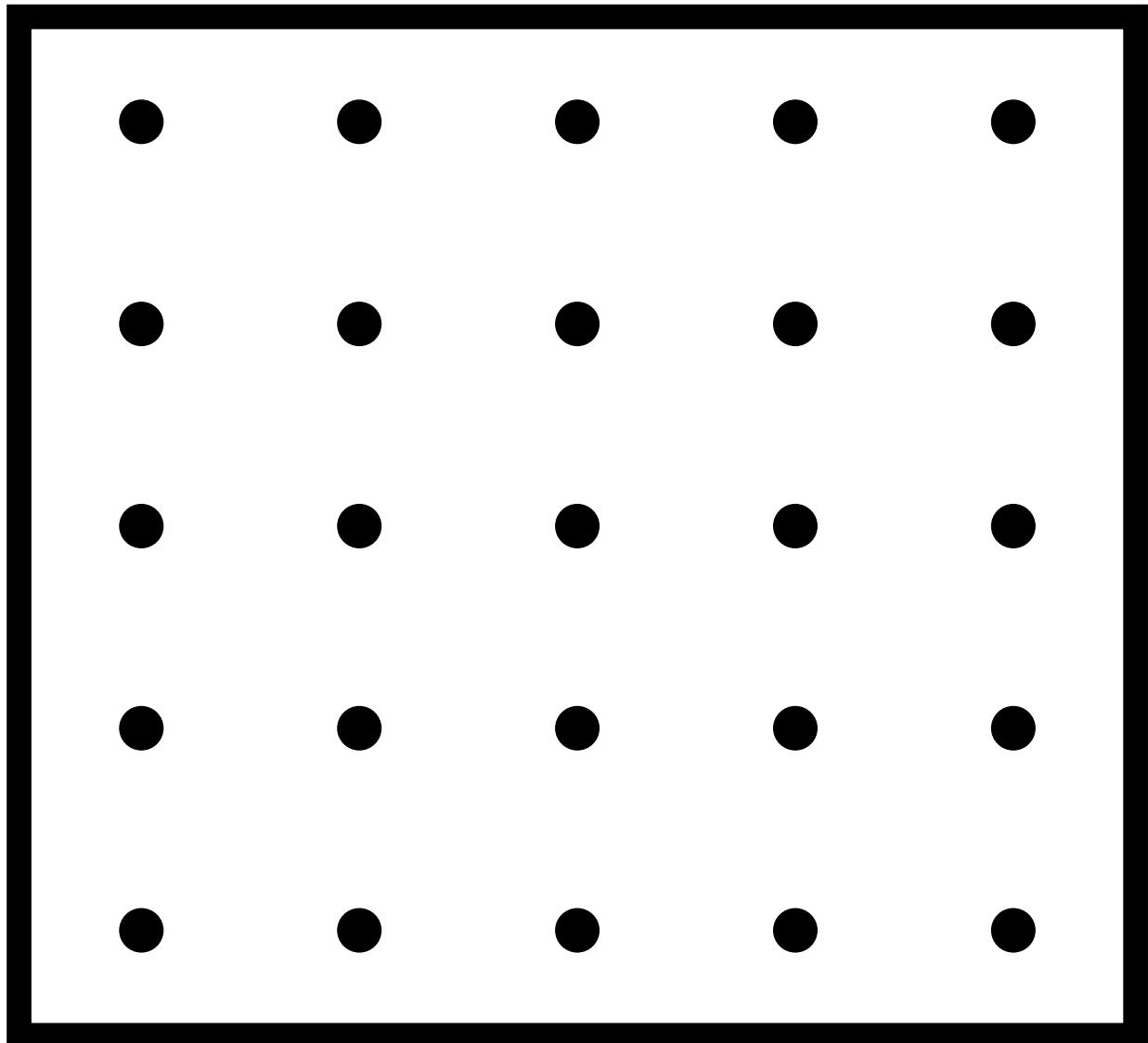
Name _____

Centimeter Dot Paper



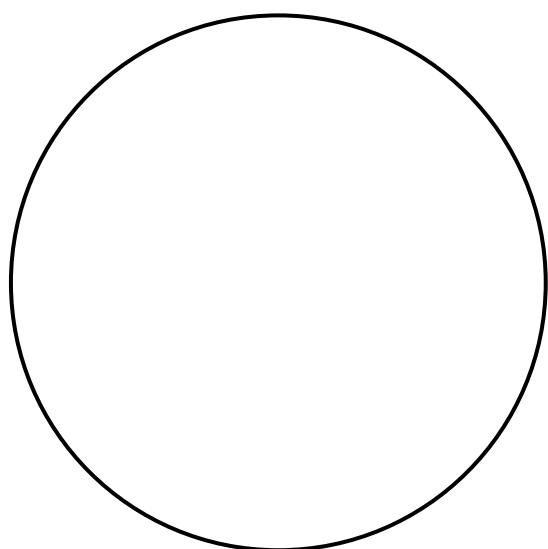
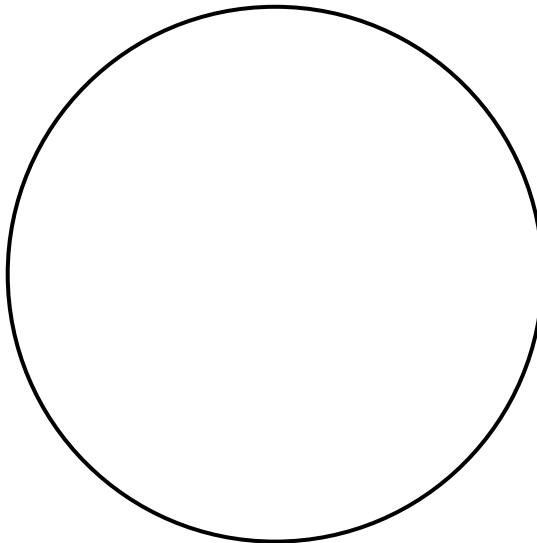
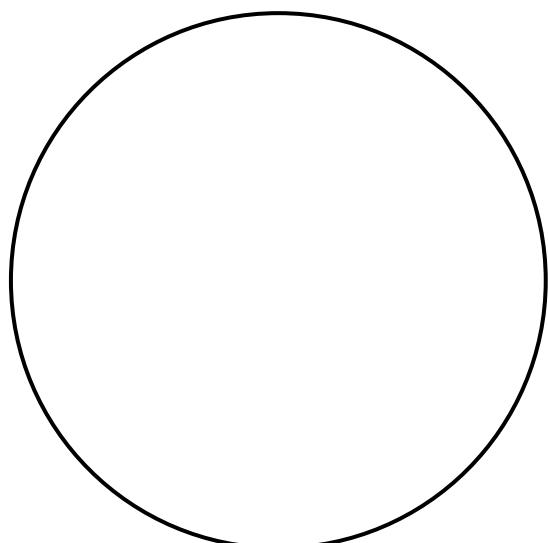
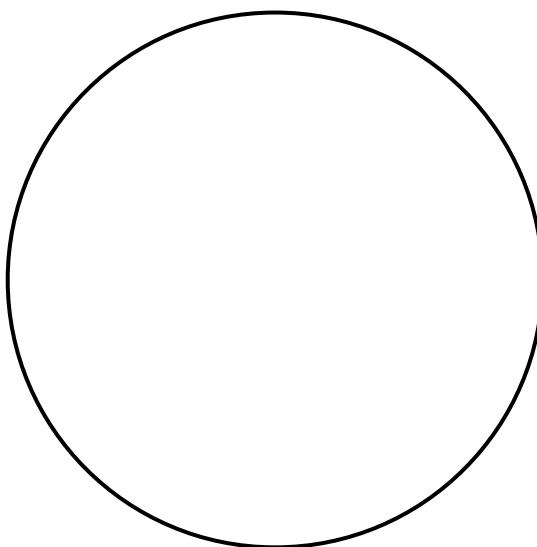
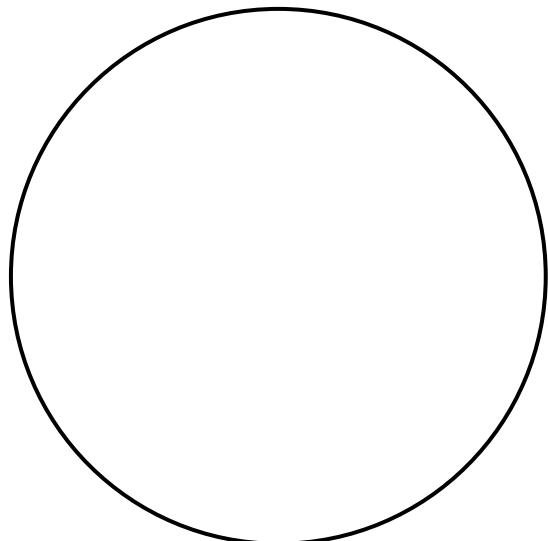
Name _____

Large Dot Paper



Name _____

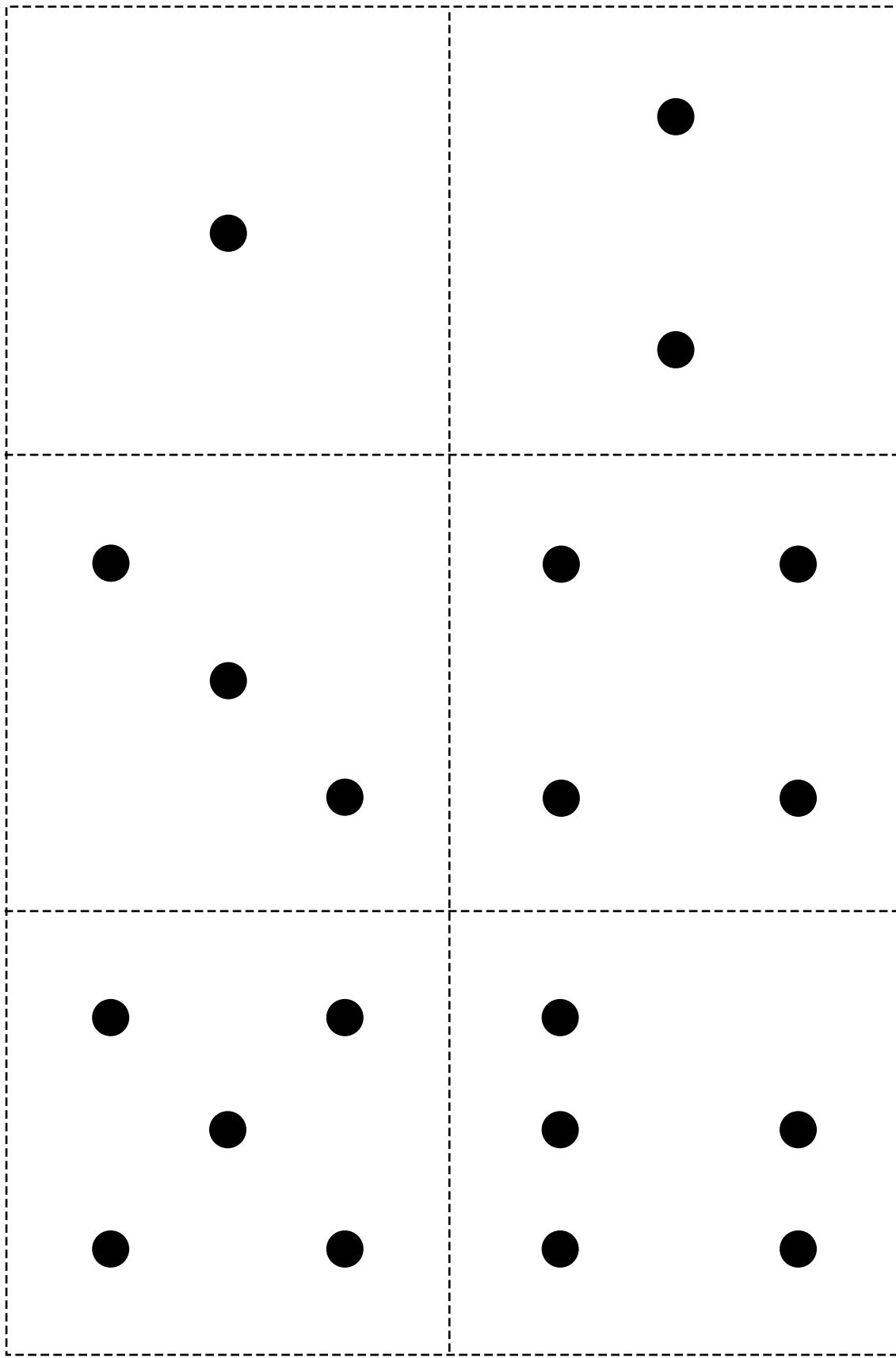
Multiplication Mat



Name _____

Dot Cards 1–5

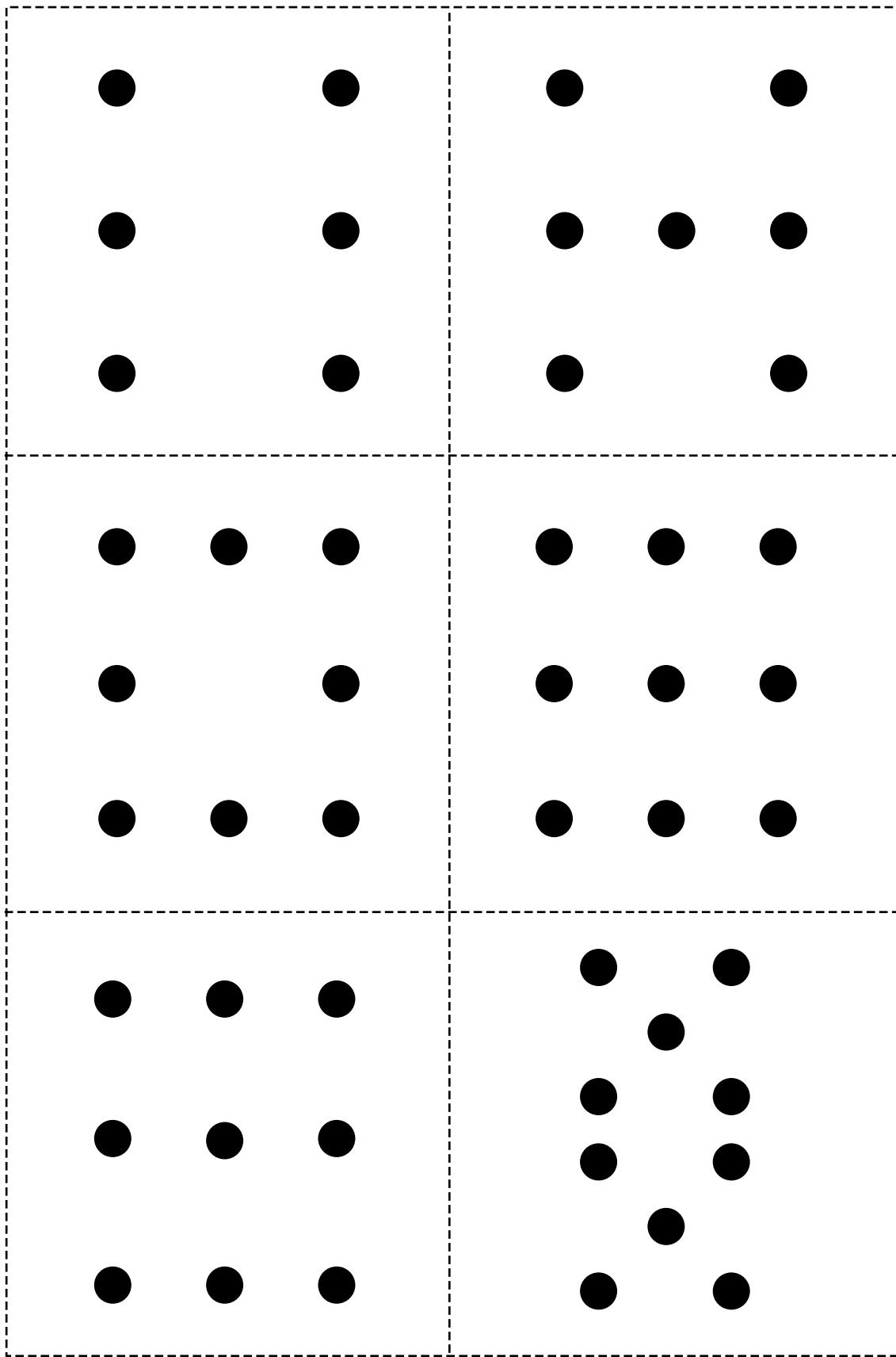
Teacher
Tools
32



Name _____

Dot Cards 6–10

Teacher
Tools
33



Multiplication Fact Table

×	0	1	2	3	4	5	6	7	8	9	10	11	12
0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10	11	12
2	0	2	4	6	8	10	12	14	16	18	20	22	24
3	0	3	6	9	12	15	18	21	24	27	30	33	36
4	0	4	8	12	16	20	24	28	32	36	40	44	48
5	0	5	10	15	20	25	30	35	40	45	50	55	60
6	0	6	12	18	24	30	36	42	48	54	60	66	72
7	0	7	14	21	28	35	42	49	56	63	70	77	84
8	0	8	16	24	32	40	48	56	64	72	80	88	96
9	0	9	18	27	36	45	54	63	72	81	90	99	108
10	0	10	20	30	40	50	60	70	80	90	100	110	120
11	0	11	22	33	44	55	66	77	88	99	110	121	132
12	0	12	24	36	48	60	72	84	96	108	120	132	144

Name _____

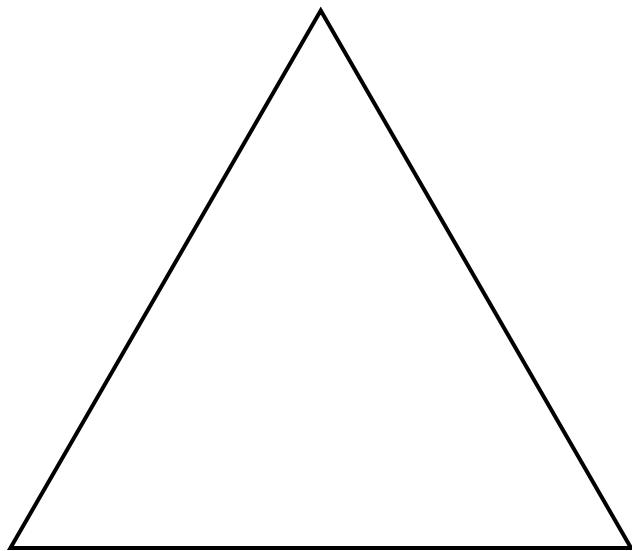
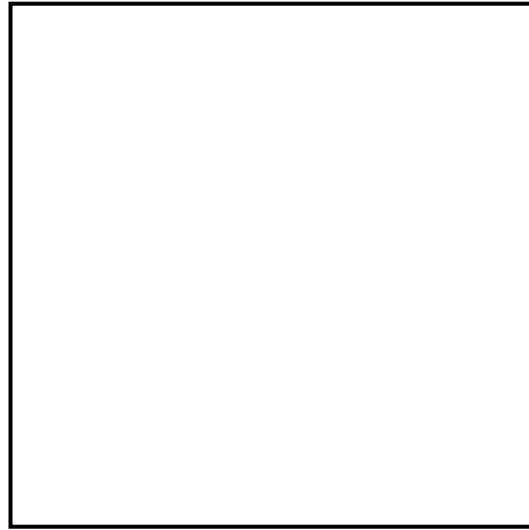
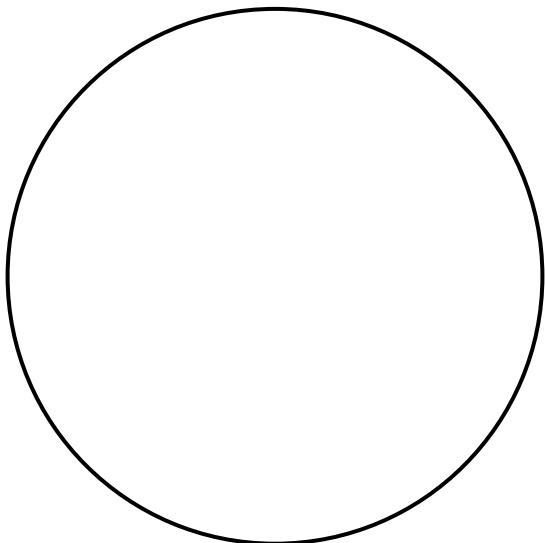
Blank Multiplication Fact Table

×	0	1	2	3	4	5	6	7	8	9	10	11	12
0													
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													

Name _____

2-Dimensional Shapes, Sheet 2

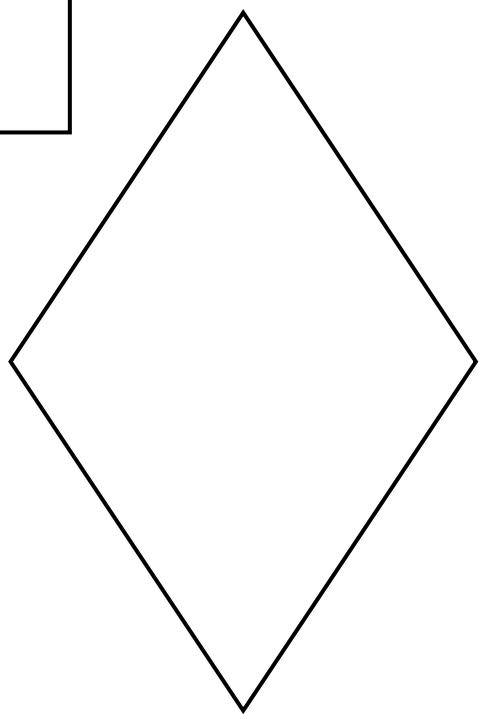
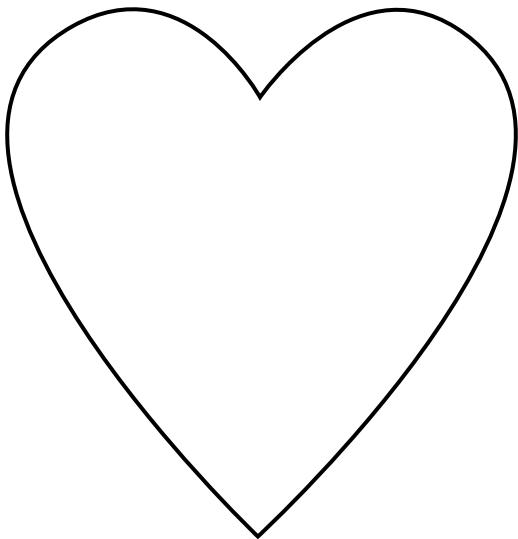
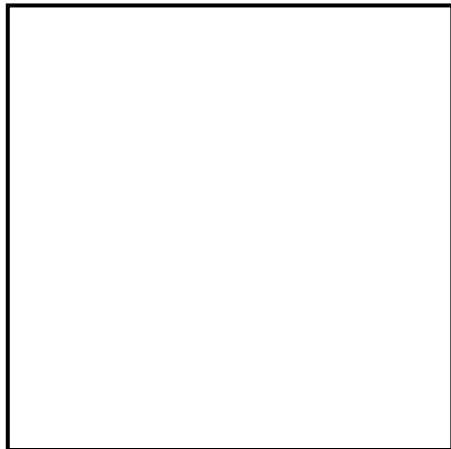
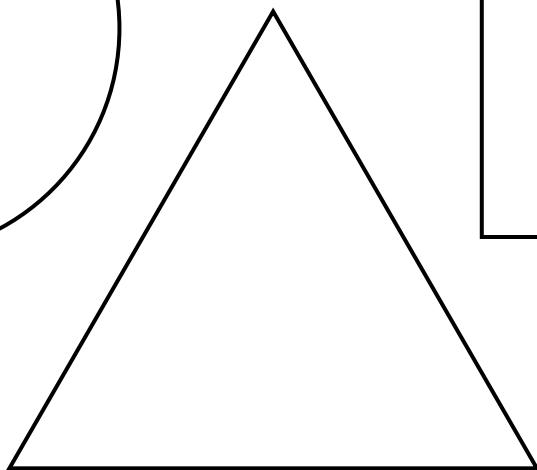
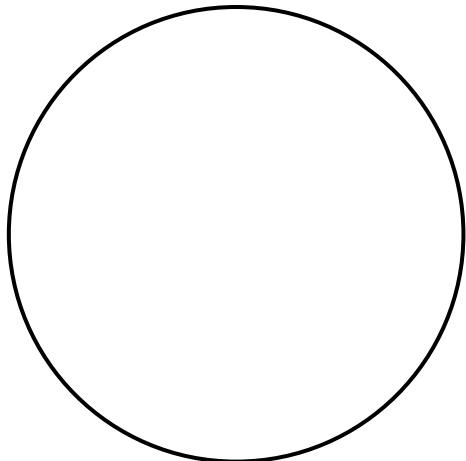
Teacher
Tools
36



Name _____

2-Dimensional Shapes, Sheet 3

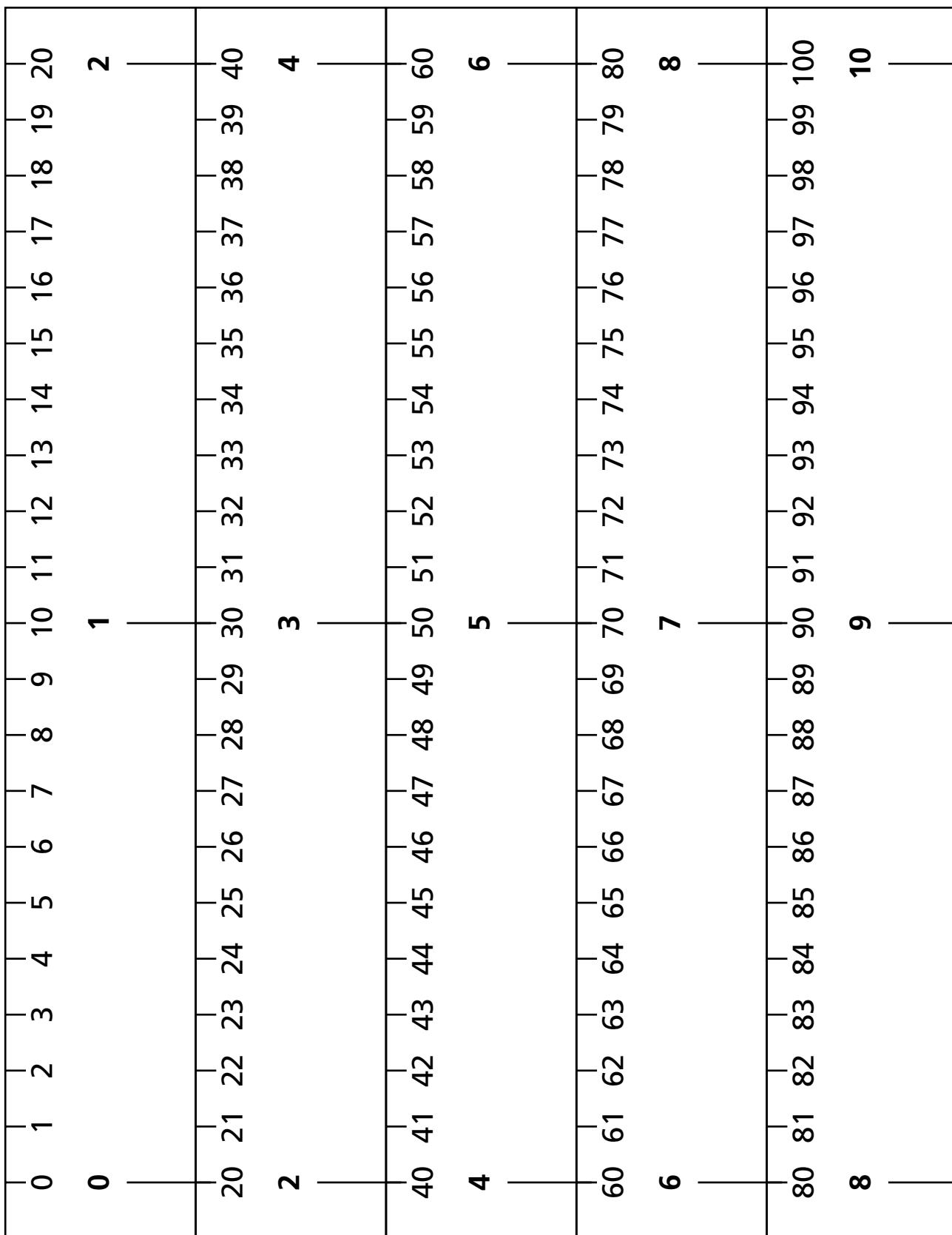
Teacher
Tools
37



Name _____

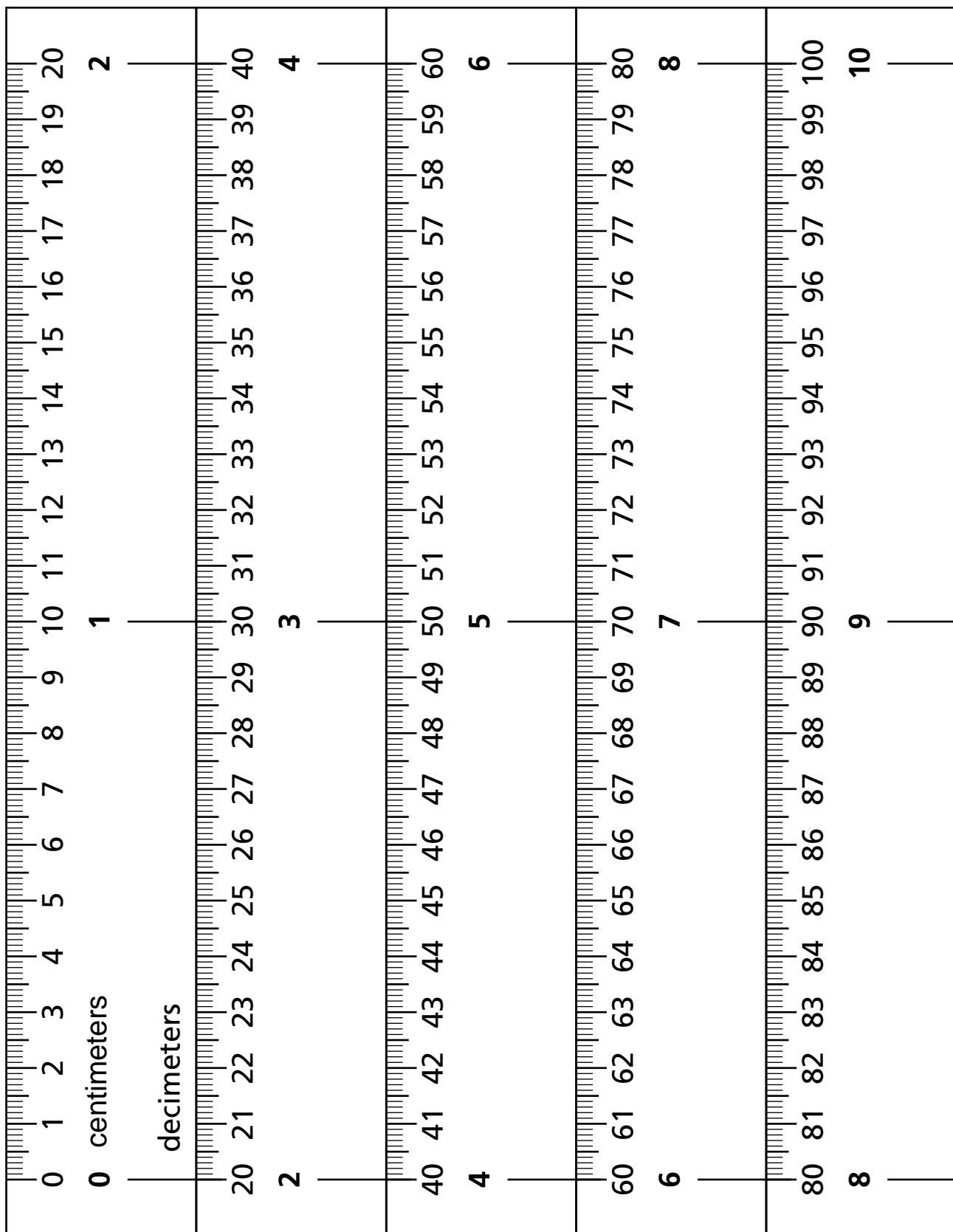
Metric Measuring Tape (100 Centimeters)

Teacher
Tools
38



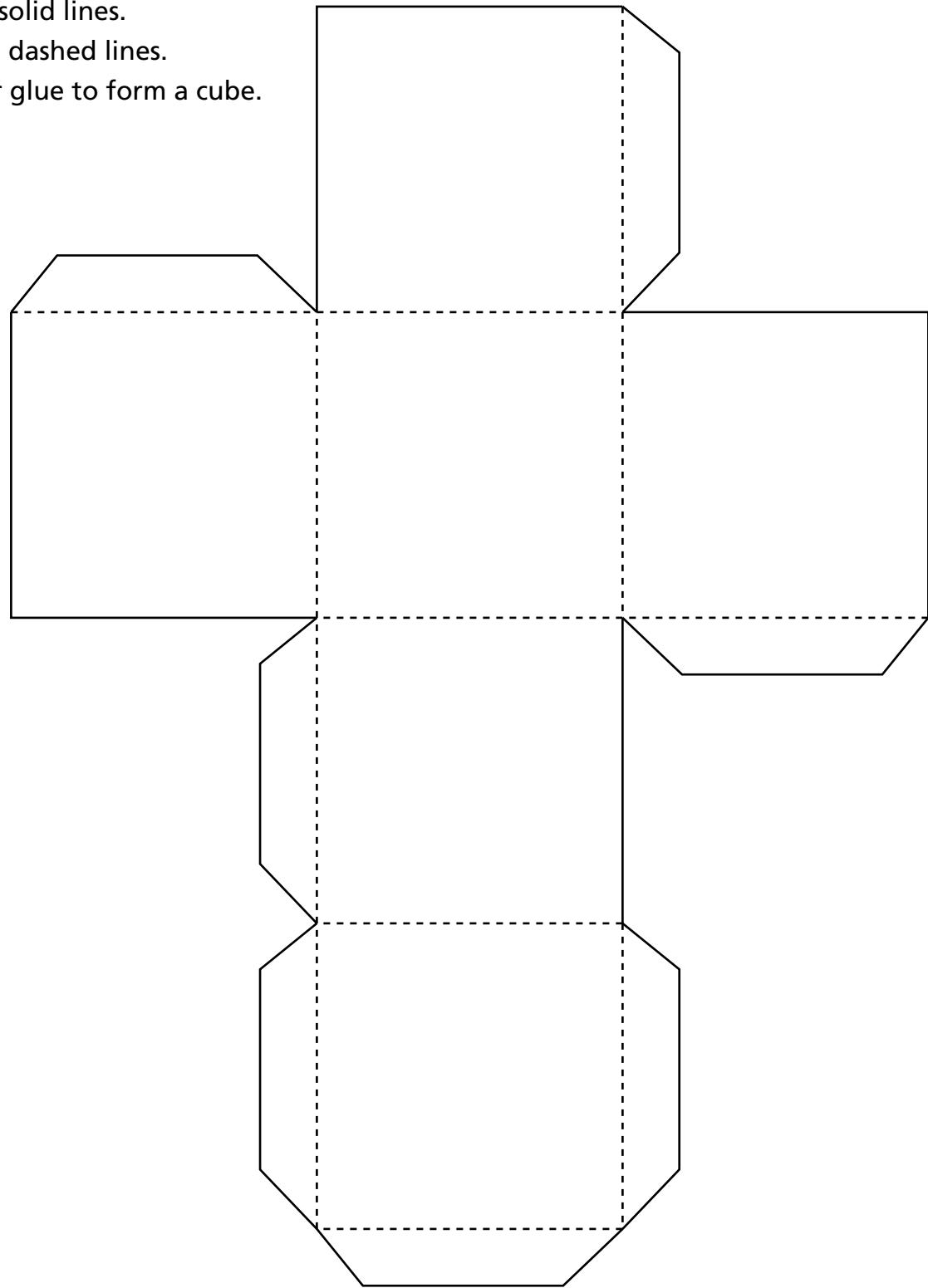
1. Cut strips apart.
2. Tape together for a metric measuring tape.

Metric Measuring Tape (1 Meter)



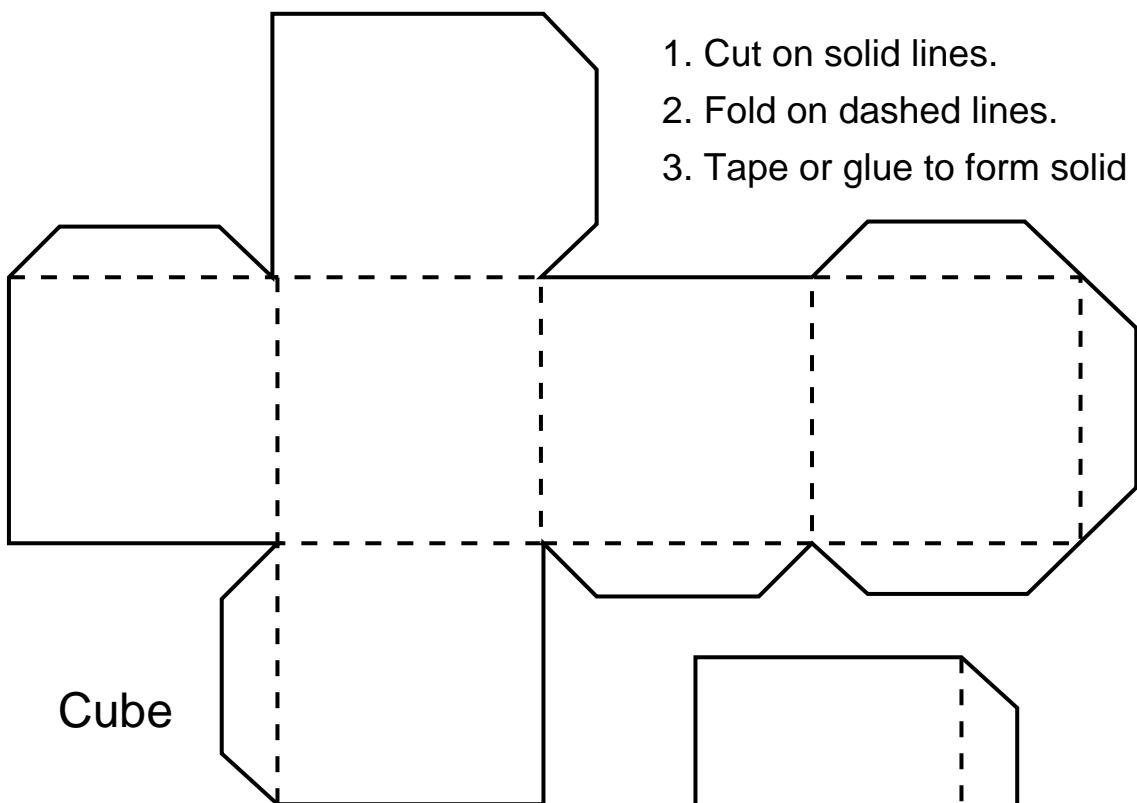
Cube Net

1. Cut on solid lines.
2. Fold on dashed lines.
3. Tape or glue to form a cube.

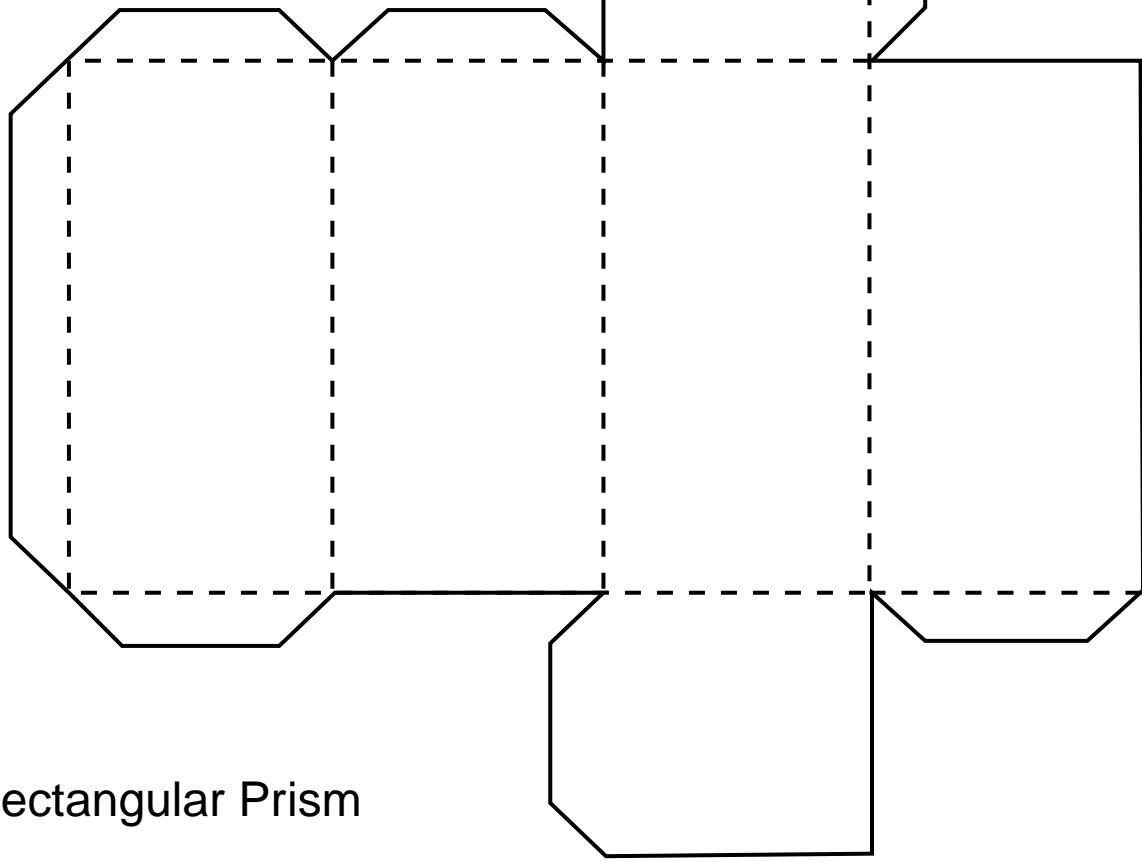


3-Dimensional Figure Nets, Sheet 1

1. Cut on solid lines.
2. Fold on dashed lines.
3. Tape or glue to form solid figures.

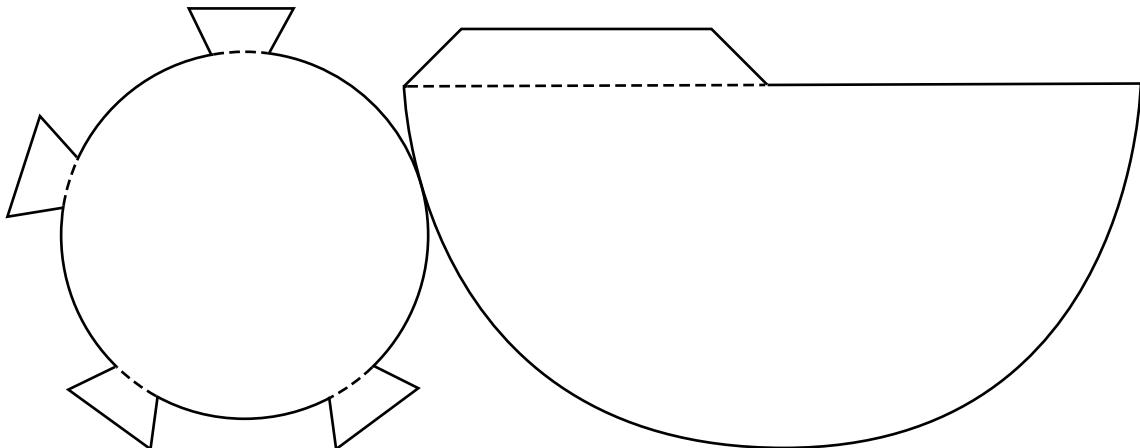


Cube



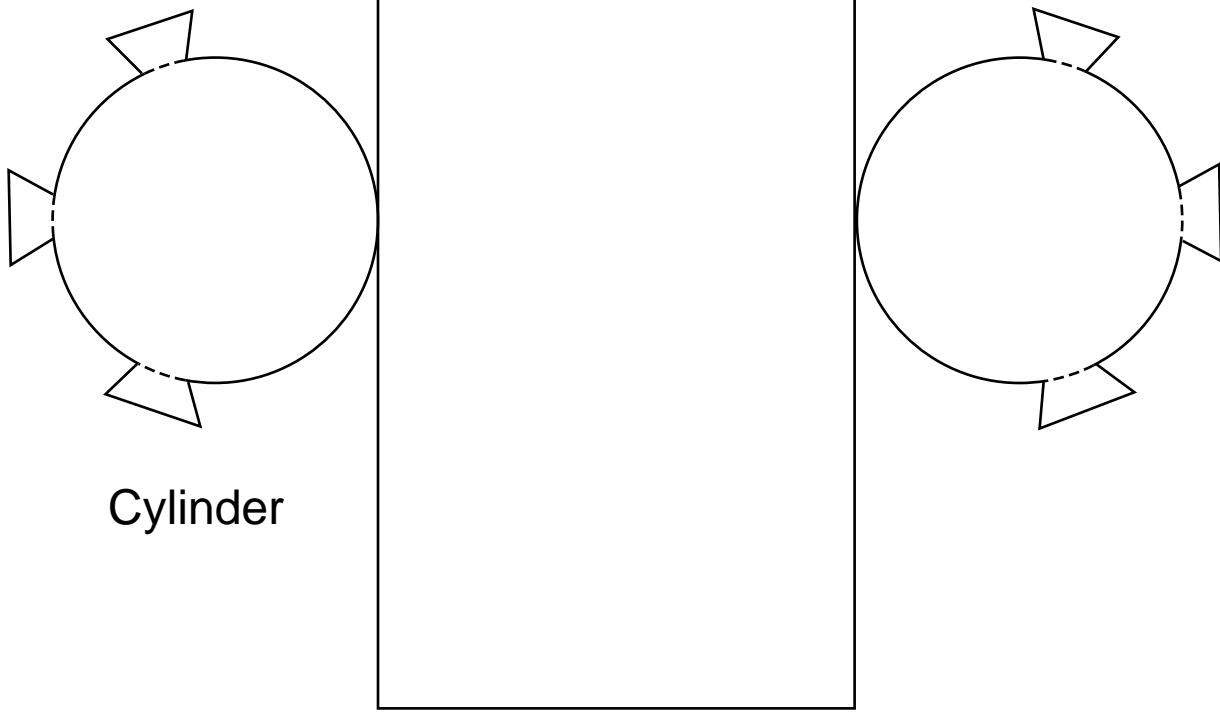
Rectangular Prism

3-Dimensional Figure Nets, Sheet 2



Cone

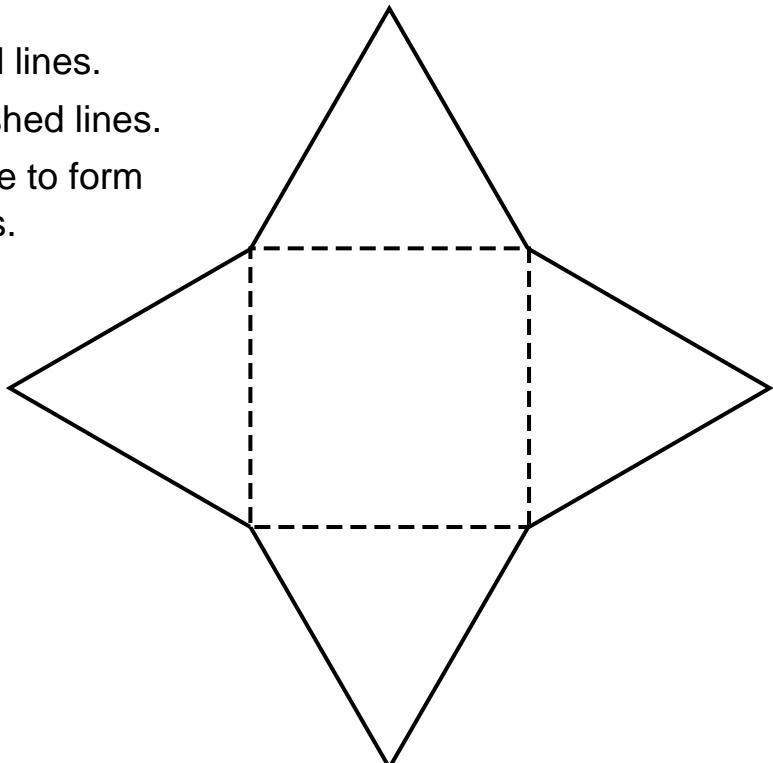
1. Cut on solid lines.
2. Fold on dashed lines.
3. Tape or glue to form solid figures.



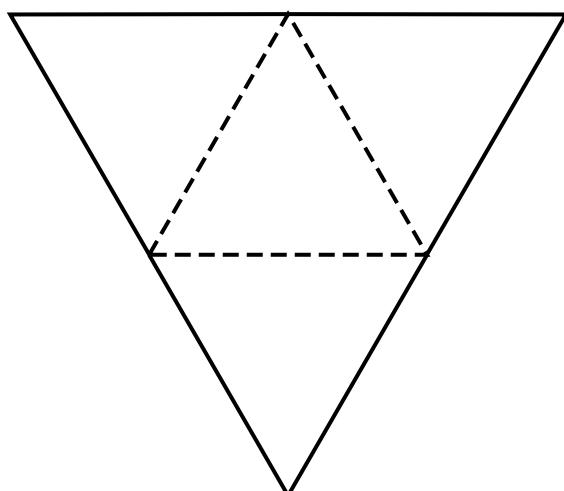
Cylinder

3-Dimensional Figure Nets, Sheet 3

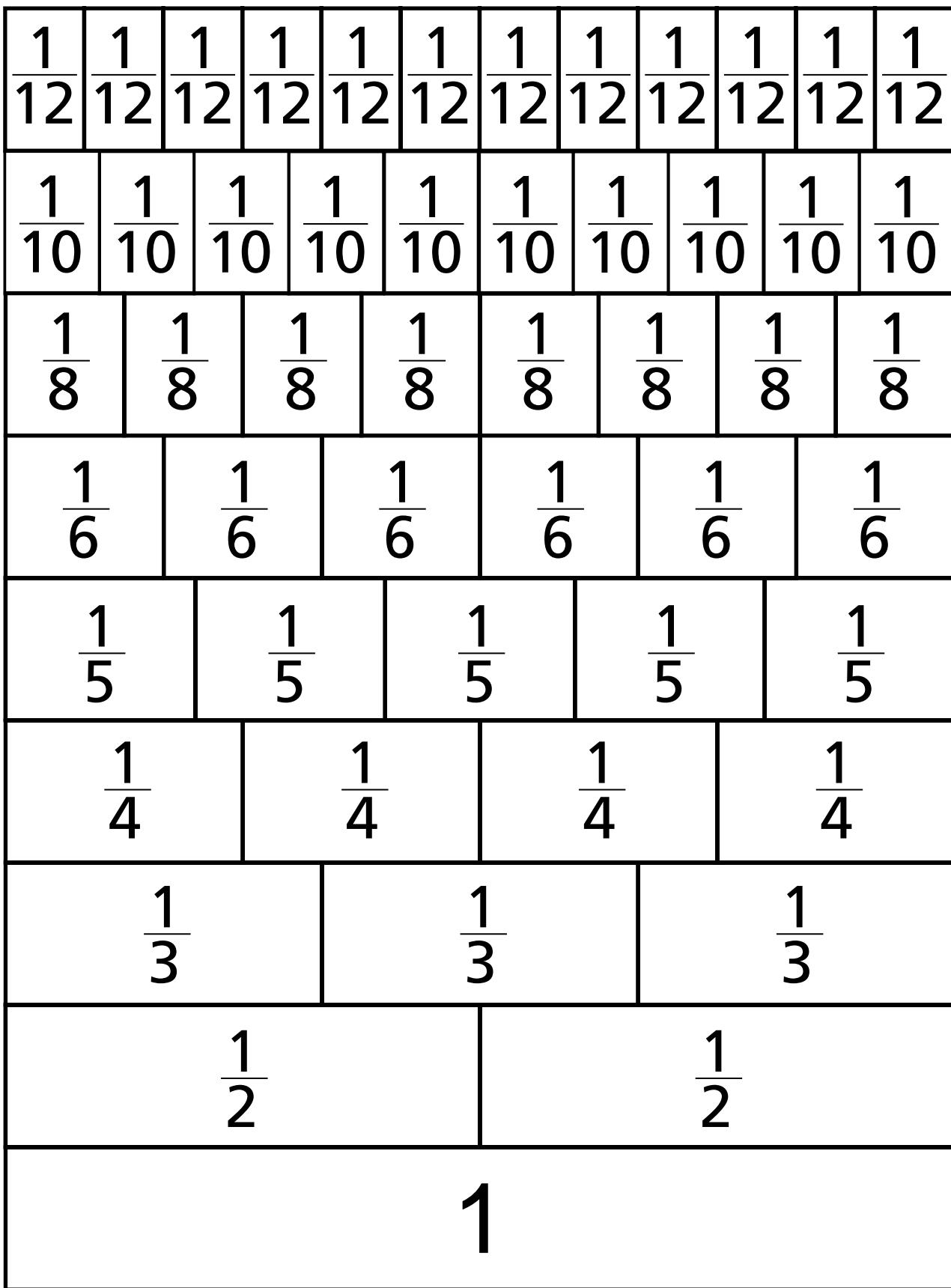
1. Cut on solid lines.
2. Fold on dashed lines.
3. Tape or glue to form solid figures.



Square Pyramid



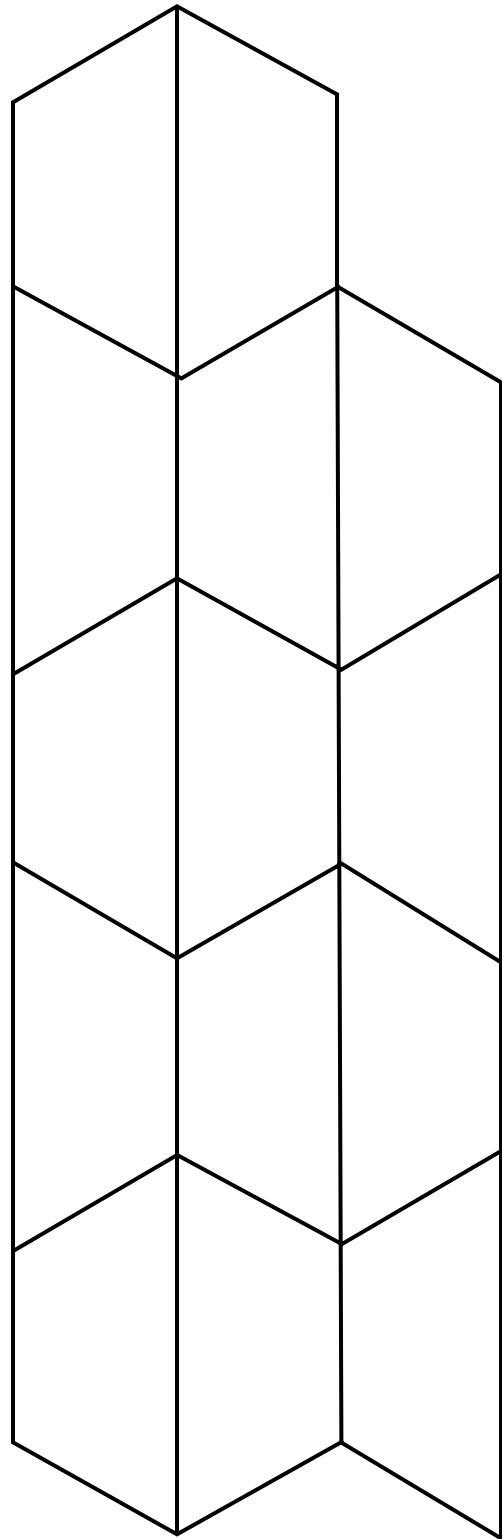
Triangular Pyramid

Fraction Models

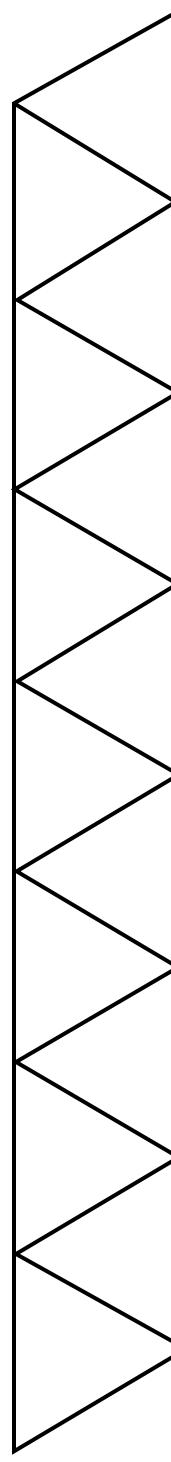
Name _____

Pattern Blocks, Sheet 1

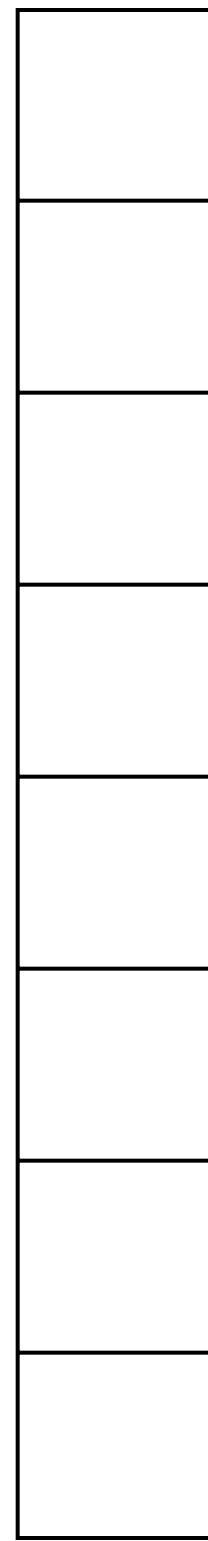
1. Color the shapes. 2. Cut on the lines.



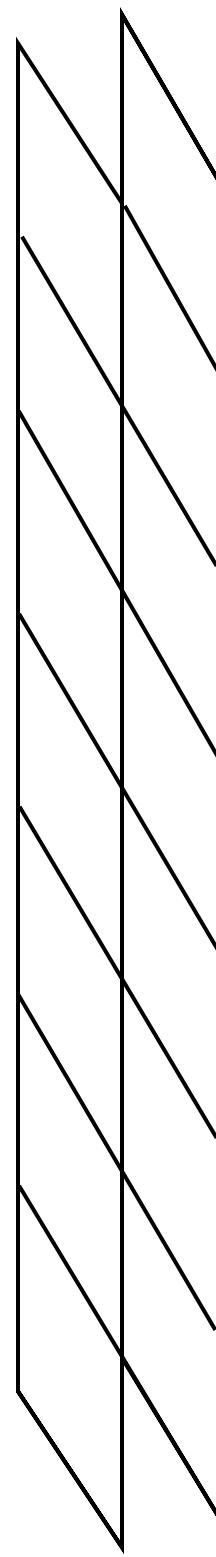
Red



Green



Orange

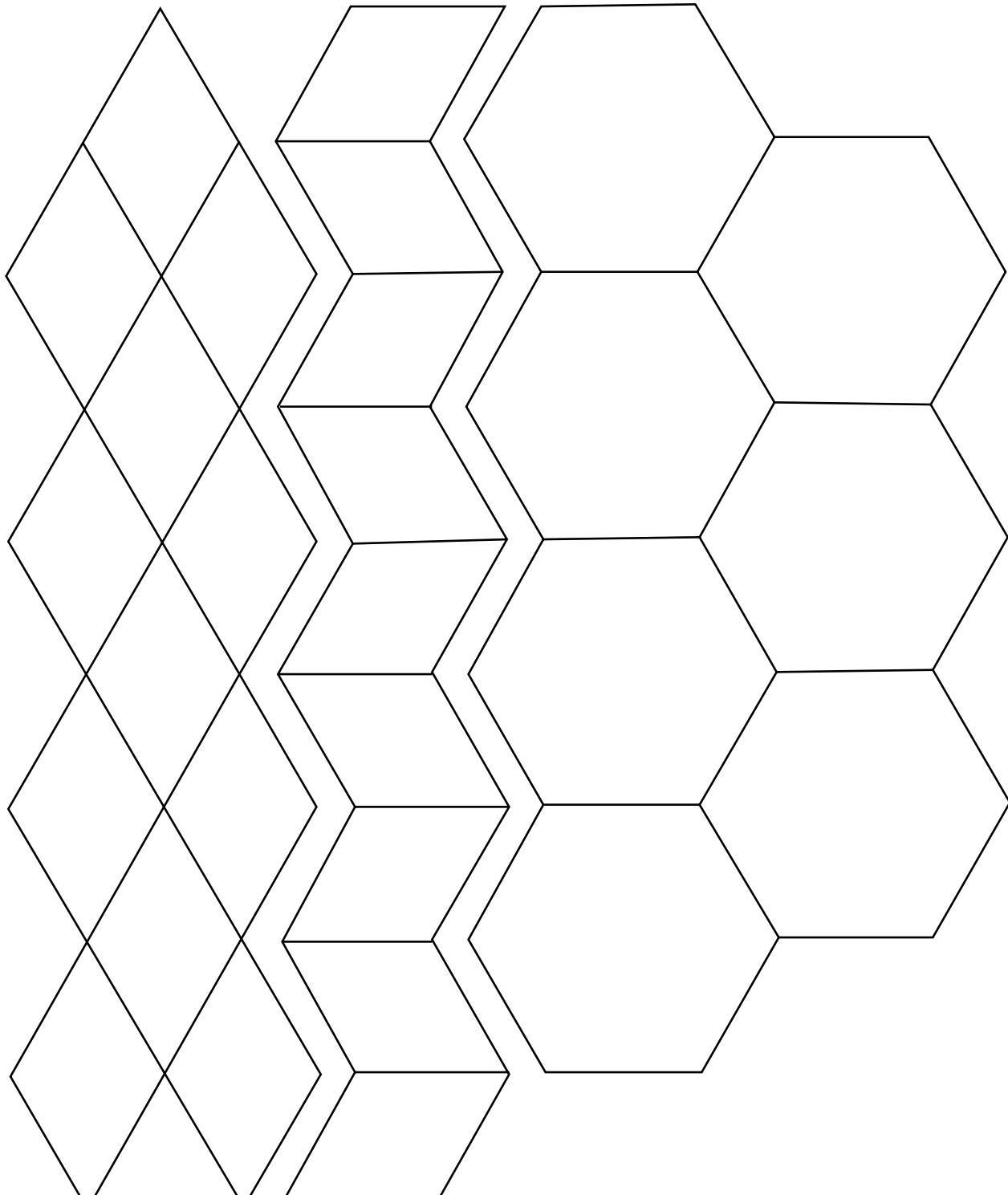


Tan

Name _____

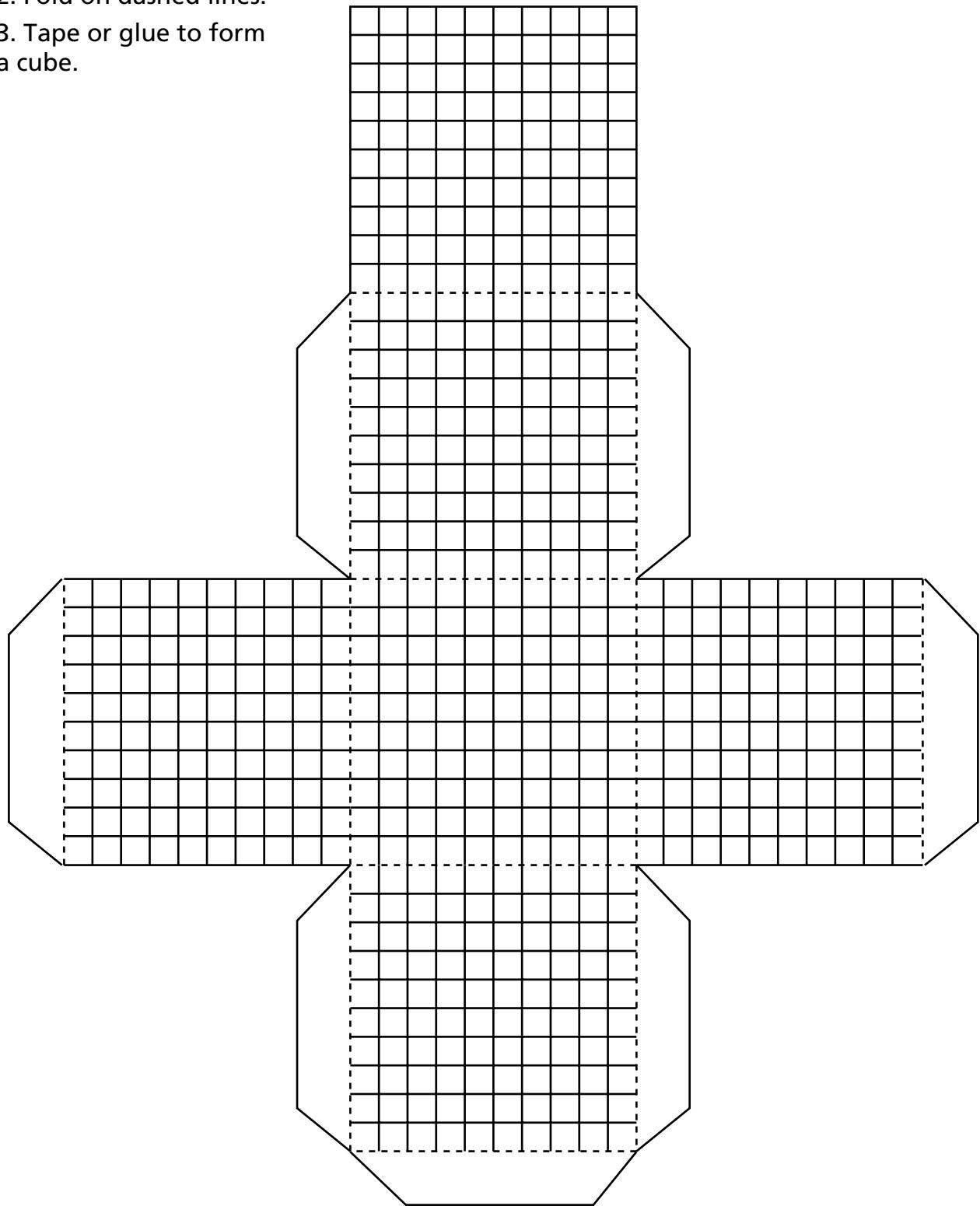
Pattern Blocks, Sheet 2

1. Color the shapes.
2. Cut on the lines.



Thousand Cube Model

1. Cut on solid lines.
2. Fold on dashed lines.
3. Tape or glue to form a cube.



Whole-Number Grid Whole-Number Grid Whole-Number Grid

answer boxes →

0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

number bubbles →

0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

Whole-Number Grid Whole-Number Grid Whole-Number Grid

answer boxes →

0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

number bubbles →

0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

Whole-Number Grid Whole-Number Grid Whole-Number Grid

answer boxes →

0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

number bubbles →

0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

Name _____

Decimal and Money Grid Decimal and Money Grid Decimal and Money Grid

answer boxes → \$

A 10x10 grid for decimal and money calculations. It features a vertical column of 10 answer boxes on the left, each containing a dollar sign (\$) symbol. To the right of these boxes is a vertical column of 10 number bubbles, each containing a digit from 0 to 9. A vertical gray bar separates the answer boxes from the number bubbles. The grid is divided into four quadrants by a horizontal and a vertical gray bar.

\$

A 10x10 grid for decimal and money calculations. It features a vertical column of 10 answer boxes on the left, each containing a dollar sign (\$) symbol. To the right of these boxes is a vertical column of 10 number bubbles, each containing a digit from 0 to 9. A vertical gray bar separates the answer boxes from the number bubbles. The grid is divided into four quadrants by a horizontal and a vertical gray bar.

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Decimal and Money Grid Decimal and Money Grid Decimal and Money Grid

answer boxes → \$

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Decimal and Money Grid Decimal and Money Grid Decimal and Money Grid

answer boxes → \$

A 10x10 grid for decimal and money calculations. It features a vertical column of 10 answer boxes on the left, each containing a dollar sign (\$) symbol. To the right of these boxes is a vertical column of 10 number bubbles, each containing a digit from 0 to 9. A vertical gray bar separates the answer boxes from the number bubbles. The grid is divided into four quadrants by a horizontal and a vertical gray bar.

\$

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\$

A 10x10 grid for decimal and money calculations. It features a vertical column of 10 answer boxes on the left, each containing a dollar sign (\$) symbol. To the right of these boxes is a vertical column of 10 number bubbles, each containing a digit from 0 to 9. A vertical gray bar separates the answer boxes from the number bubbles. The grid is divided into four quadrants by a horizontal and a vertical gray bar.

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