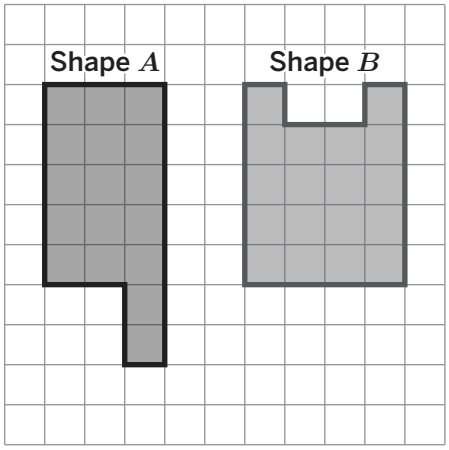
Name: ..... Date: ..... Period: .....

Additional Practice 1.01

1. Which shape has a greater area? Show or explain your thinking.

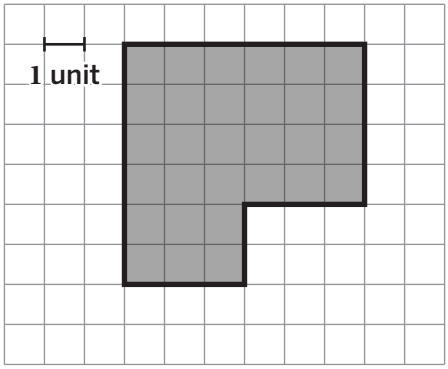


A. Shape A

B. Shape B

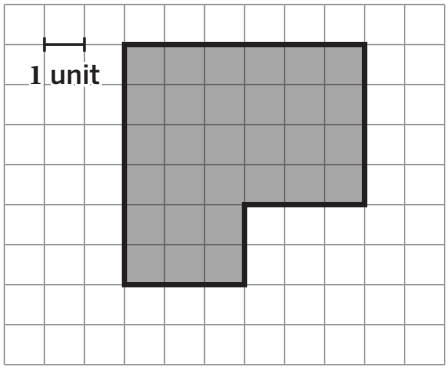
C. Shape C

Problems 2–4. Here is a new shape.



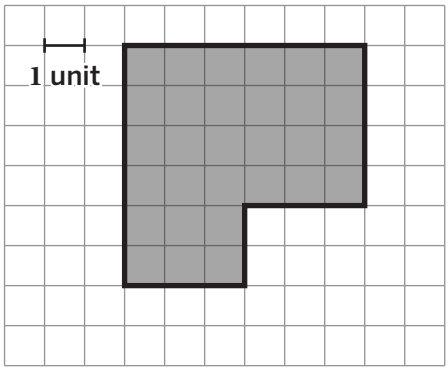
2. Determine the area of the shape. Show or explain your thinking.

3. Show or describe another way to determine the area of this shape.

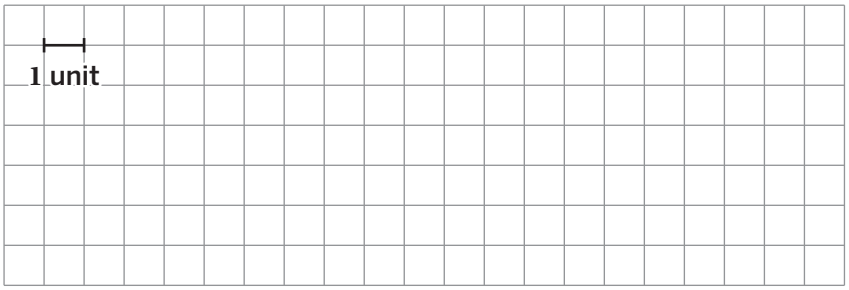


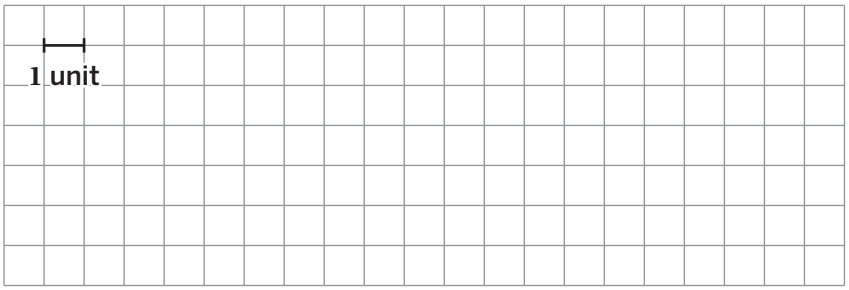
Name: ..... Date: ..... Period: .....

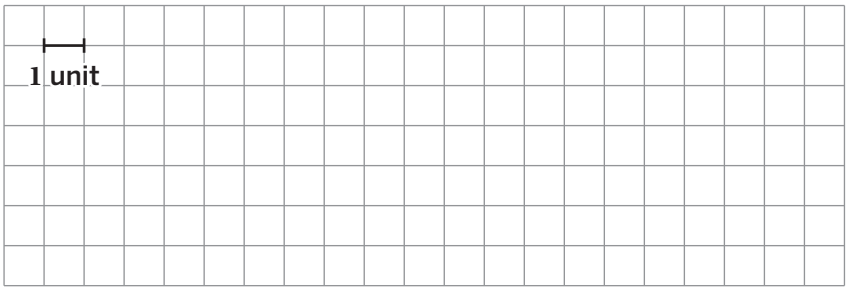
4. Show or describe how you would change this shape so it has an area of 20 square units.



5. Draw *three* different quadrilaterals, each with an area of 24 square units. Each square in this grid has an area of 1 square unit.





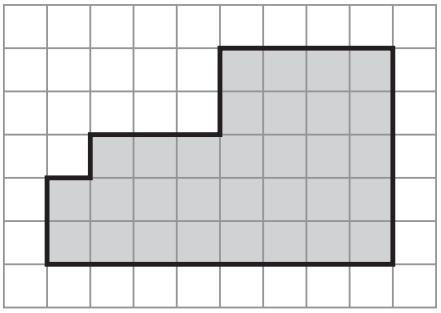


Name: ..... Date: ..... Period: .....

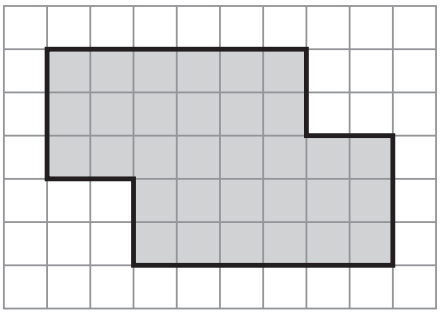
Additional Practice 1.02

1. Determine the total area of the shaded region in each figure.

a

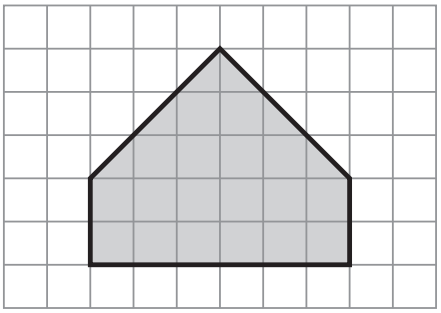


b

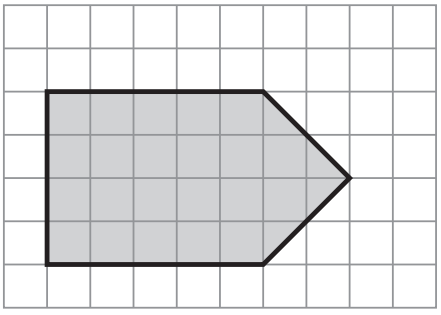


2. Determine the total area of the shaded region in each figure.

a

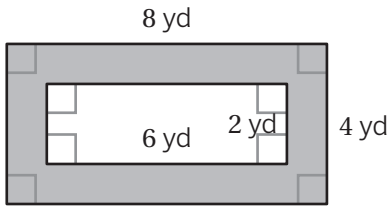


b

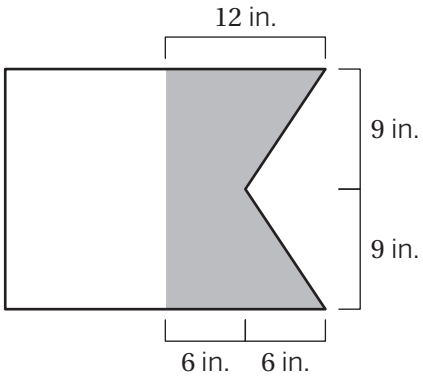


Name: ..... Date: ..... Period: .....

3. Determine the total area of the shaded region. Show your thinking.

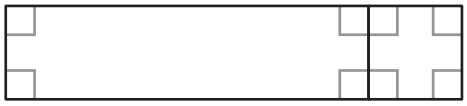


4. A maritime flag representing the letter *A* is shown. What is the area of the shaded part of the flag? Show your thinking.



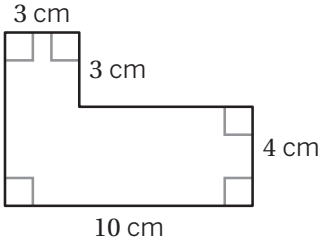
5. Two gardens have very different shapes. Clare said that both gardens have the same area. Do you agree with Clare? Explain your thinking.

Garden A



Garden B

6. Clare calculated the area of this figure. Her work is shown. Is Clare correct? Explain your thinking.



Clare's work:

$(10 \times 4) - (3 \times 3)$

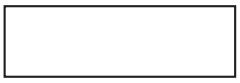
$= 40 - 9$

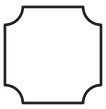
$= 31 \text{ cm}^2$

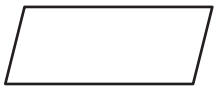
Name: ..... Date: ..... Period: .....

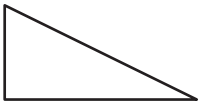
Additional Practice 1.03

1. Select *all* of the polygons that are parallelograms.

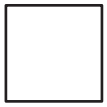
☐ **A.** 

☐ **B.** 

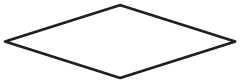
☐ **C.** 

☐ **D.** 

☐ **E.** 

☐ **F.** 

2. Determine whether each figure is a parallelogram. Write *yes* or *no*. Explain your thinking.

Figure	Parallelogram? (yes/no)	Explanation
a 		
b 		
c 		
d 		

3. Determine which statements about parallelograms are true. Select *all* that apply.

☐ **A.** A parallelogram can be rearranged to form a rectangle.

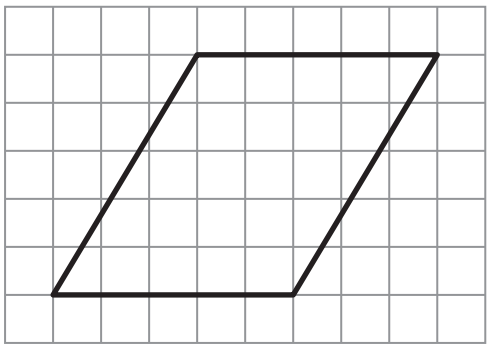
☐ **B.** A parallelogram has one pair of parallel sides.

☐ **C.** A parallelogram can have more than four sides.

☐ **D.** Each pair of opposite sides have the same length.

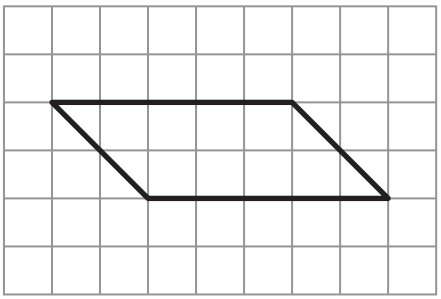
☐ **E.** A square is a parallelogram.

4. Decompose and rearrange this parallelogram to form a rectangle. What is the area of the parallelogram? Show your thinking.

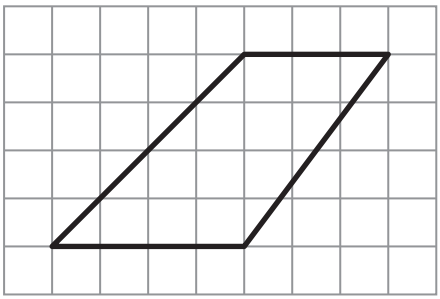


5. Decompose and rearrange each parallelogram to form a rectangle. Determine the area of each parallelogram. Show your thinking.

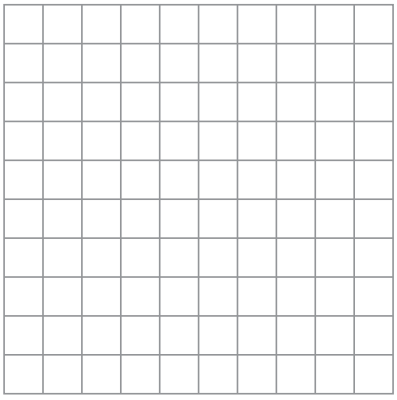
a



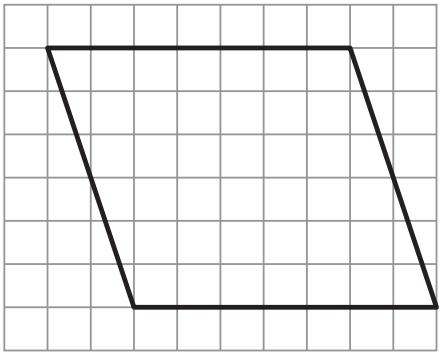
b



6. Draw a rectangle on the grid that has an area of 10 square units. Then decompose and rearrange the pieces of your rectangle to draw a parallelogram on the grid that has the same area. Show your thinking.



7. Han says he can determine the area of this parallelogram by cutting part of the left side and moving it to the right side to form a rectangle, and that the area of this parallelogram is 36 square units. Do you agree with Han? Explain your thinking.



Name: ..... Date: ..... Period: .....

Additional Practice 1.05

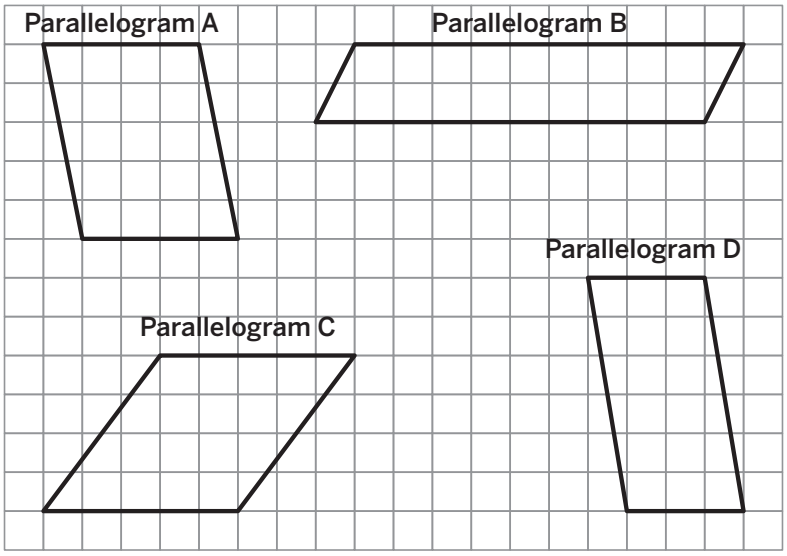
1. Three of these parallelograms have the same area. Which parallelogram has a *different* area than the others?

A. Parallelogram A

B. Parallelogram B

C. Parallelogram C

D. Parallelogram D



2. The base lengths b and corresponding heights h of four different parallelograms are listed. Which base-height pair represents the parallelogram with the greatest area?

A. $b = 8, h = 3.2$

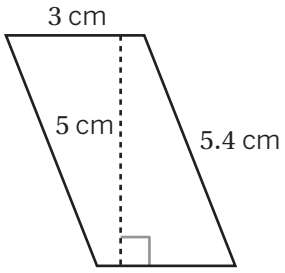
B. $b = 5.6, h = 4$

C. $b = 10, h = 2.6$

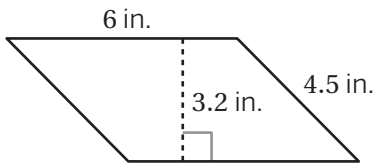
D. $b = 7.4, h = 4$

3. Determine the area of each parallelogram. Show your thinking.

a



b



4. The base lengths b and corresponding heights h are listed for two different parallelograms. Determine the area of each parallelogram. Show your thinking.

a $b = 12.5$ in., $h = 9$ in.

b $b = 6$ cm, $h = 5.5$ cm

Name: ..... Date: ..... Period: .....

5. The base lengths b and corresponding areas A of four different parallelograms are listed. Determine the height of each parallelogram. Show your thinking.

a $b = 12$, $A = 84$

b $b = 6$, $A = 54$

c $b = 5.5$, $A = 33$

d $b = 8.2$, $A = 28.7$

6. The heights h and corresponding areas A of four different parallelograms are listed. Determine the length of the base of each parallelogram. Show your thinking.

a $h = 4$, $A = 16$

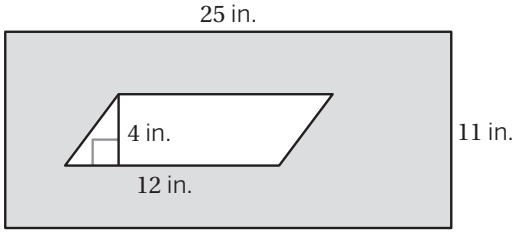
b $h = 7$, $A = 35$

c $h = 2.5$, $A = 10$

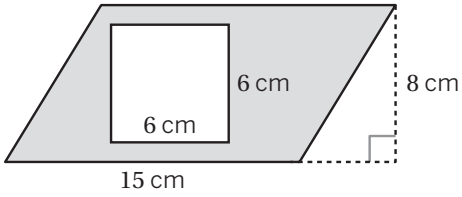
d $h = 8$, $A = 28$

7. Determine the area of the shaded region in each figure. Show your thinking.

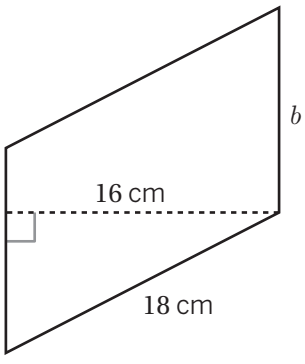
a



b



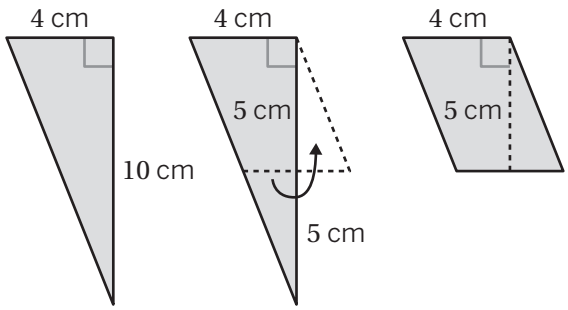
8. The parallelogram shown has an area of 144 cm^2. Mai claims the length of the base b is 8 cm. Do you agree with Mai? Explain your thinking.



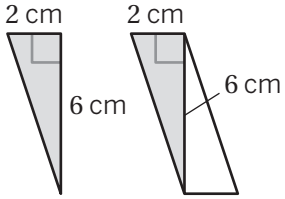
Name: ..... Date: ..... Period: .....

Additional Practice 1.06

1. To determine the area of this triangle, Jada drew a line through the midpoints of the two longer sides of the triangle, which decomposed the triangle into a trapezoid and a smaller triangle. She then rearranged the two shapes to form a parallelogram. Explain how Jada could use her parallelogram to determine the area of the triangle.

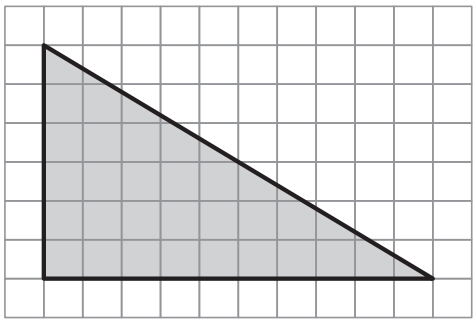


2. To determine the area of this triangle, Lin used two identical copies of a triangle to compose a different parallelogram. Explain how Lin could use her parallelogram to determine the area of the triangle.

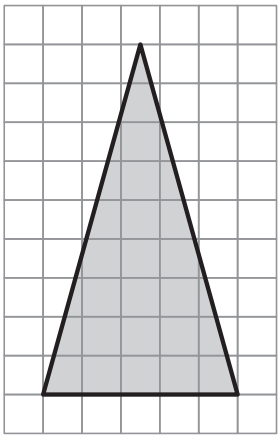


3. Determine the area of each triangle. Show your thinking.

a



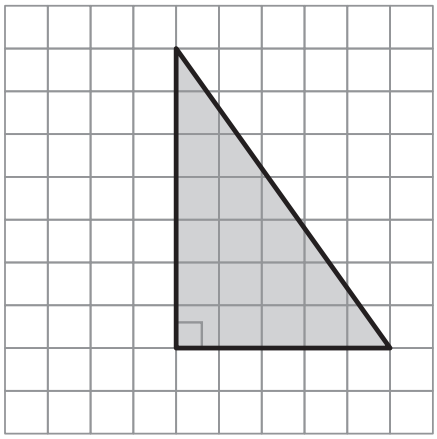
b



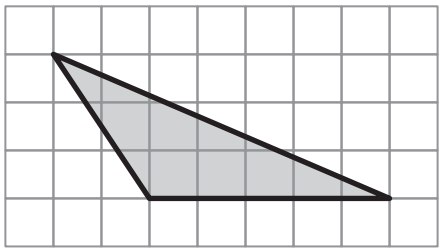
Name: Date: Period:

For Problems 4–6, three different triangles are shown on grids. For each triangle, determine the area using one of the strategies from the lesson. Then show or explain your thinking for each triangle.

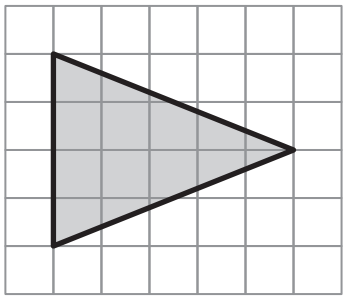
4.



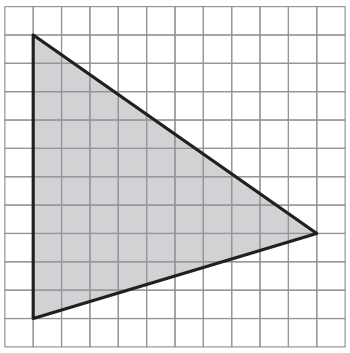
5.



6.



7. Shawn says the area of this triangle is 100 square units. Do you agree with Shawn? Explain your thinking.



Name: ..... Date: ..... Period: .....

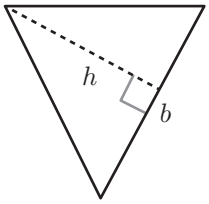
Additional Practice 1.07

1. Determine which statements are true about the base and height of a triangle. Select *all* that apply.

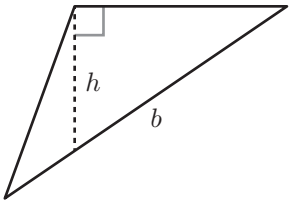
- ☐ **A.** Any side of a triangle can be a base.
- ☐ **B.** The height must be drawn inside the triangle.
- ☐ **C.** A height that corresponds to the base of a triangle is always perpendicular to the base.
- ☐ **D.** A height that corresponds to the base of a triangle is always drawn at a right angle to the base.
- ☐ **E.** For a chosen base, there is more than one possible height that can be drawn.

2. Which triangles have a correct height labeled for the given base? Select *all* that apply.

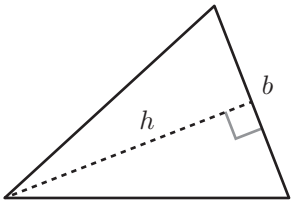
☐ **A.** **Triangle A**



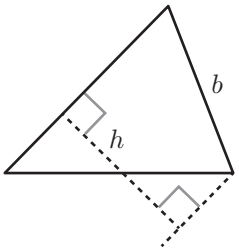
☐ **B.** **Triangle B**



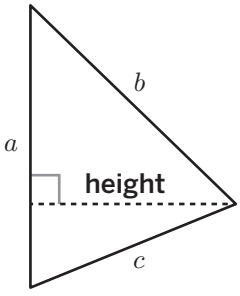
☐ **C.** **Triangle C**



☐ **D.** **Triangle D**



3. Which is a corresponding base for the indicated height of the triangle?



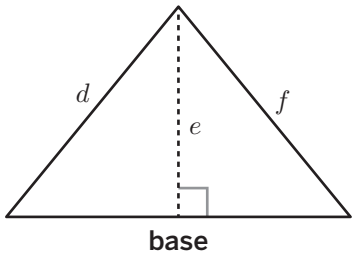
A. Side a

B. Side b

C. Side c

Name: ..... Date: ..... Period: .....

4. Which is a corresponding height that corresponds to the given base of the triangle?

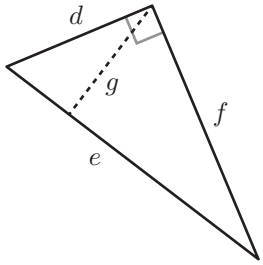


A. Side d

B. Side e

C. Side f

5. Name a corresponding height for each indicated base.

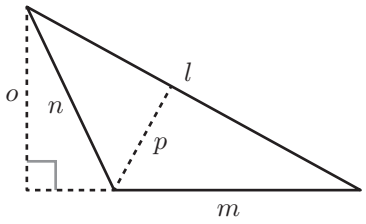


a Side d

b Side e

c Side f

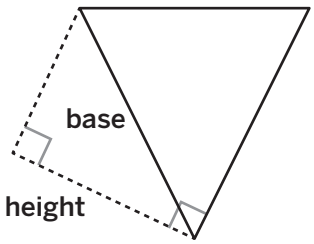
6. Name a corresponding height for each indicated base.



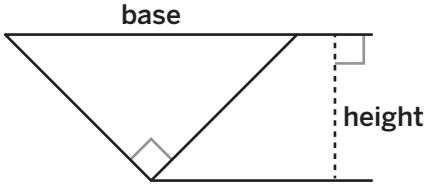
a Side l

b Side m

7. Tyler identified and labeled a base of the triangle and a corresponding height, as shown. Did Tyler correctly label the base and corresponding height? Explain your thinking.



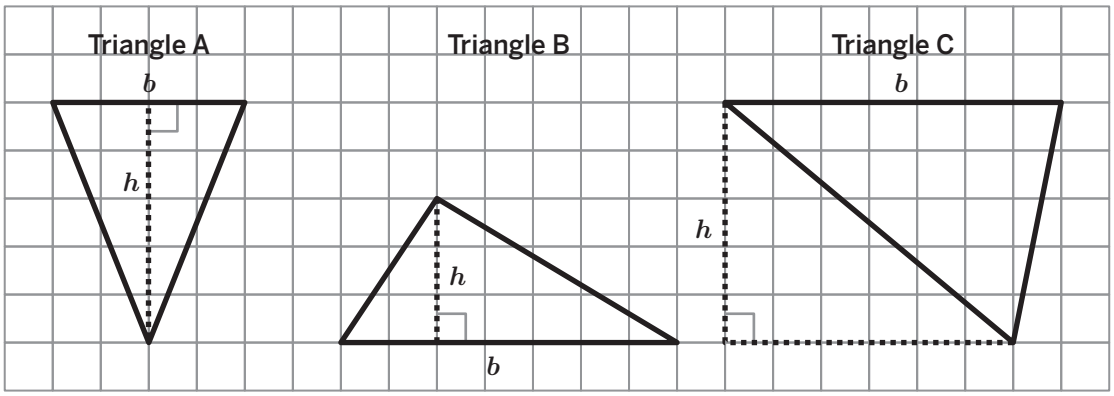
8. Elena identified and labeled a base of the triangle and a corresponding height, as shown. Did Elena correctly label the base and corresponding height? Explain your thinking.



Name: ..... Date: ..... Period: .....

Additional Practice 1.08

1. For each triangle, a base b and its corresponding height h are labeled.

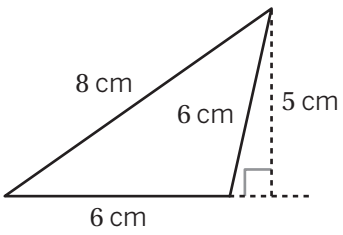


Complete the table for Triangles A, B, and C.

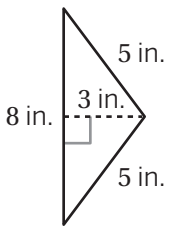
	Base (units)	Height (units)	Area (square units)
Triangle A			
Triangle B			
Triangle C			
Any triangle	b	h	

2. Determine the area of each triangle. Show your thinking.

a



b

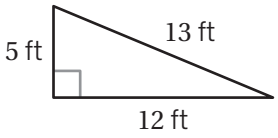


Name: Date: Period:

3. Complete the table by determining the area for each triangle, given the base and height.

	Base (units)	Height (units)	Area (square units)
Triangle A	8	6	
Triangle B	16	5	
Triangle C	3	3	
Triangle D	10.5	5	

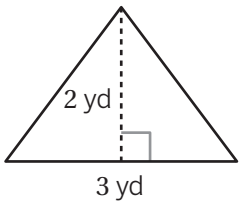
4. Determine the area of the triangle. Show your thinking.



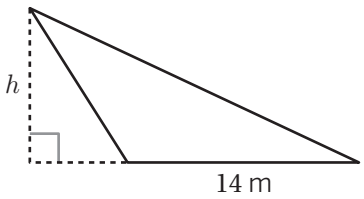
5. A triangle has a base with a length of 24.8 cm and a height of 16 cm. Determine the area.

6. A triangle has a base with a length of 7 in. and a height of 12 in. Determine its area.

7. A herb garden in Bard's backyard is shaped like a triangle, with the dimensions shown. Determine the area of the herb garden.



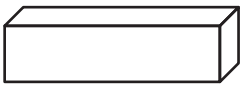
8. A triangle has a base that is 14 m long and an area of 70 m^2. What is the height of this triangle? Explain your thinking.

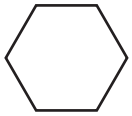


Name: ..... Date: ..... Period: .....

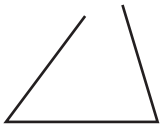
Additional Practice 1.09

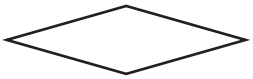
1. Select *all* the polygons.

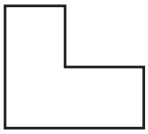
☐ **A.** 

☐ **B.** 

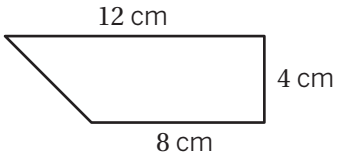
☐ **C.** 

☐ **D.** 

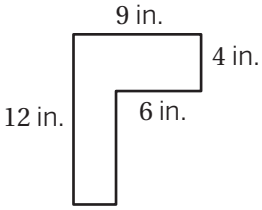
☐ **E.** 

☐ **F.** 

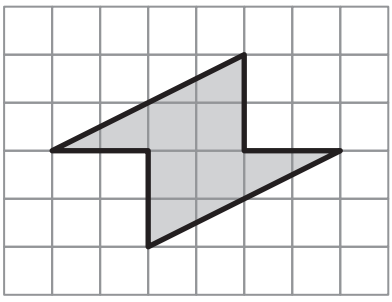
2. Decompose this polygon to determine its area. Explain your thinking.



3. Decompose this polygon to determine its area. Explain your thinking.

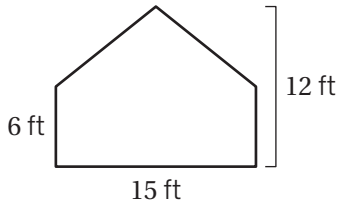


4. Decompose this polygon to determine its area. Explain your thinking.

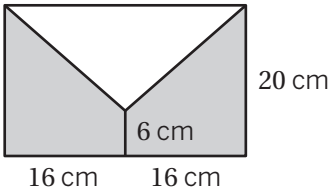


Name: ..... Date: ..... Period: .....

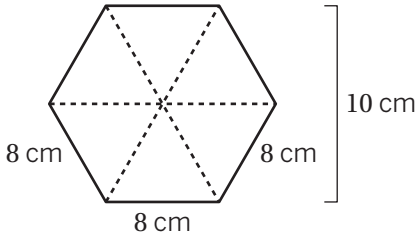
5. Decompose this polygon to determine its area. Explain your thinking.



6. Determine the area of the shaded region. Explain your thinking.



7. The hexagon has a side length of 8 cm. Diego determines the area of the hexagon as 20 cm^2. Is Diego correct? Explain your thinking.



Name: ..... Date: ..... Period: .....

Additional Practice 1.12

Problems 1–3. Compare the units for surface area and volume.

1. Select *all* the units that can be used to describe surface area.

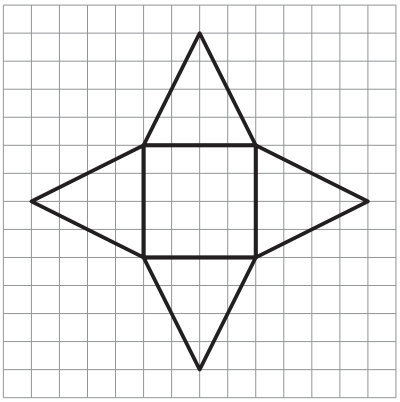
- ☐ **A.** Square inches
- ☐ **B.** Meters
- ☐ **C.** Centimeters
- ☐ **D.** Cubic feet
- ☐ **E.** Square meters
- ☐ **F.** Cubic inches

2. Select *all* the units that can be used to describe volume.

- ☐ **A.** Square inches
- ☐ **B.** Meters
- ☐ **C.** Centimeters
- ☐ **D.** Cubic feet
- ☐ **E.** Square meters
- ☐ **F.** Cubic inches

3. Compare your answers. What is the difference between the units you selected for surface area versus volume?

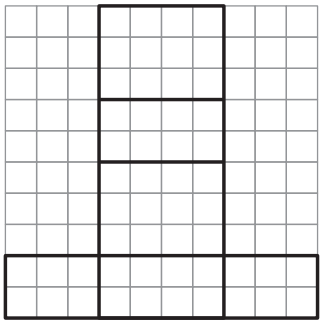
4. Here is a net.



Determine the surface area of this polyhedron (in square units). Show or explain your thinking.

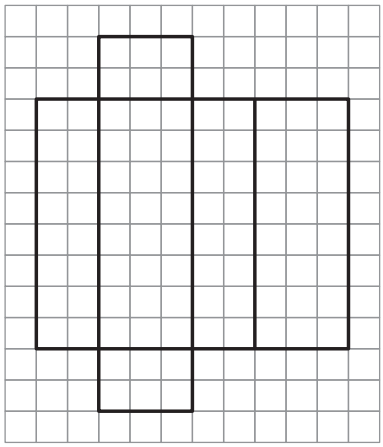
Name: ..... Date: ..... Period: .....

5. Refer to the net shown. Which expressions would be used to determine the surface area, in square units, of the rectangular prism that would be formed by the net? Select *all* that apply.

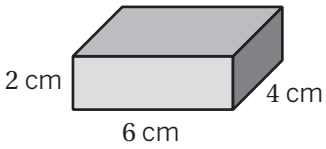


- ☐ **A.** $4 \cdot 3$
- ☐ **B.** $2 \cdot 6$
- ☐ **C.** $4 \cdot 5$
- ☐ **D.** $4 \cdot 2$
- ☐ **E.** $3 \cdot 5$
- ☐ **F.** $3 \cdot 2$

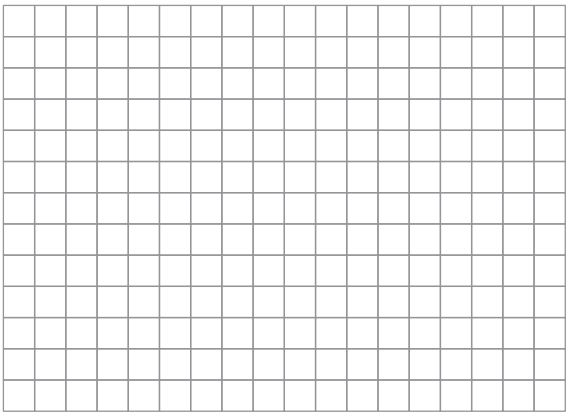
6. Refer to the net shown. Determine the surface area, in square units, of the rectangular prism that would be formed by this net. Show or explain your thinking.



7. Refer to the rectangular prism shown.



a Use the grid to draw a net for the prism. The length of one grid square is 1 cm. Label the top, bottom, left, right, front and back faces.

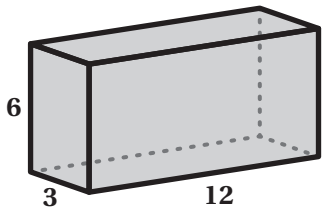


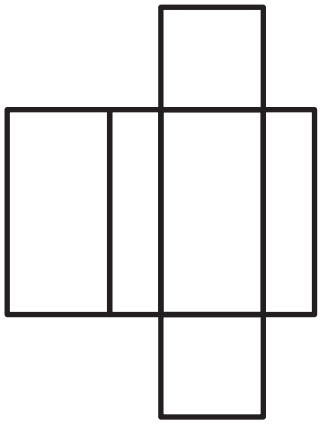
b Determine the surface area of the prism.

Name: ..... Date: ..... Period: .....

Additional Practice 1.13

Problems 1–2. Here is a rectangular prism and its matching net.

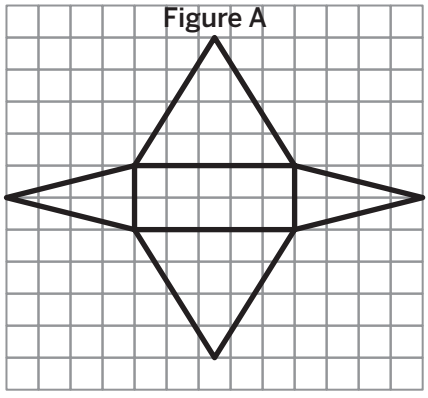




1. Use the rectangular prism to label all the lengths in this net.

2. Use the net to calculate the surface area in square units. Show or explain your thinking.

3. The net for Figure A is shown.



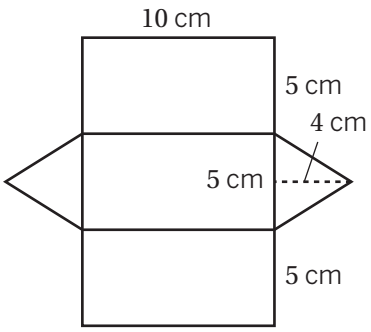
a Name the type of polyhedron that the net would form when assembled.

b Determine the surface area of the polyhedron.

Name: ..... Date: ..... Period: .....

4. The net for Figure B is shown.

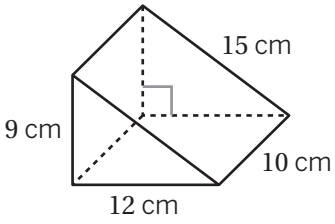
Figure B

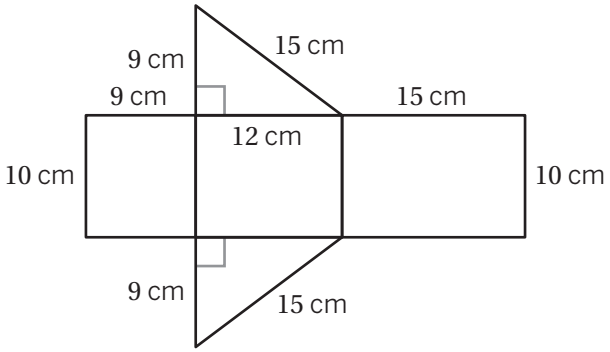


a Name the type of polyhedron that the net would form when assembled.

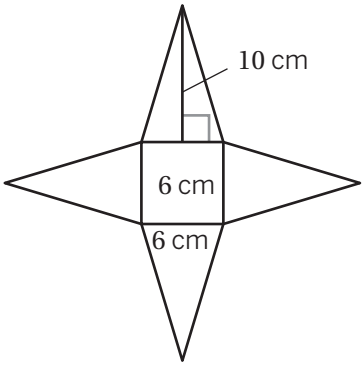
b Determine the surface area of the polyhedron.

5. The net of this triangular prism is shown. Determine the surface area of this figure.





6. Bard claims the surface area of this square pyramid is 192 cm^2. Is Bard correct? Explain your thinking.

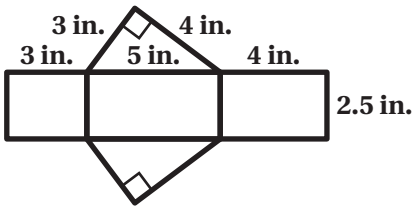


Name: ..... Date: ..... Period: .....

Additional Practice 1.14

1. Can the faces of a square prism be rectangles? Explain your thinking.

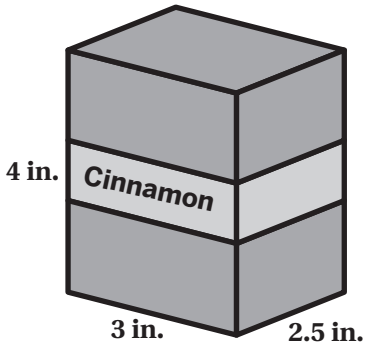
Problems 2–3. Here is a net



2. What three-dimensional figure can you create from this net?

3. What is the surface area of this figure?

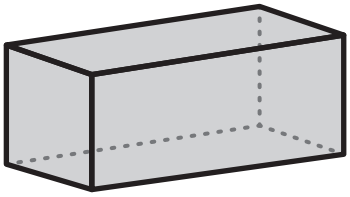
Problems 4–5. This container of cinnamon measures 3 inches by 2.5 inches by 4 inches.



4. Estimate how much plastic the container uses. Explain your thinking.

5. Estimate how much cinnamon the container can hold. Explain your thinking.

Problems 6–7. An artist created a new marble sculpture for a park in town. The sculpture measures 5 meters tall, 10.5 meters long, and 5 meters wide.



6. Draw the net of this sculpture.

7. Determine the surface area of the marble sculpture.

Name: ..... Date: ..... Period: .....

Additional Practice 2.02

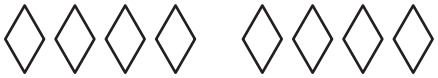
1. Use a ratio relationship to describe each diagram.

a **Triangles** 

Circles 

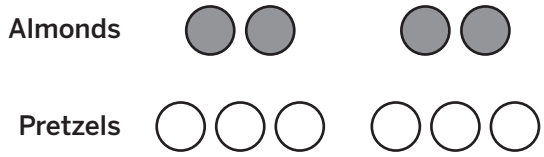
There are ..... triangles for every ..... circles.

b **Squares** 

Diamonds 

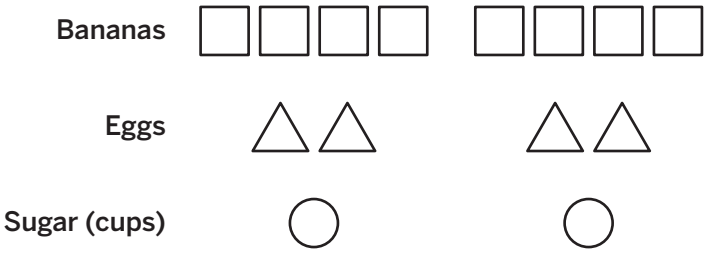
The ratio of diamonds to squares is ..... to .....

2. The diagram represents the number of almonds to pretzels in a snack mix. Select *all* the statements that correctly describe the relationship between almonds and pretzels.



- ☐ **A.** The ratio of almonds to pretzels is 3 to 2.
- ☐ **B.** For every 2 pretzels, there are 3 almonds.
- ☐ **C.** The ratio of almonds to pretzels is 2 : 3.
- ☐ **D.** For every 3 almonds, there are 2 pretzels.
- ☐ **E.** For every 6 pretzels, there are 2 almonds.
- ☐ **F.** The ratio of almonds to pretzels is 4 : 6.

3. The diagram represents a recipe for banana bread, which says to combine 4 bananas with 2 eggs and 1 cup of sugar.



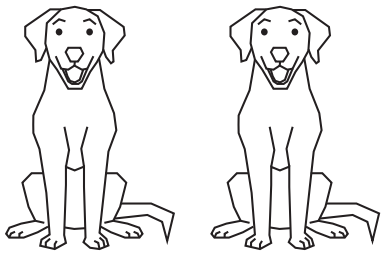
b The ratio of eggs to sugar is ..... : .....

b The ratio of sugar to bananas is ..... to .....

c There are ..... bananas for every 1 egg.

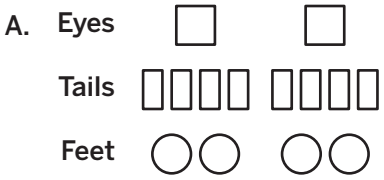
Name: ..... Date: ..... Period: .....

Refer to the picture of the 2 dogs for Problems 4–5.

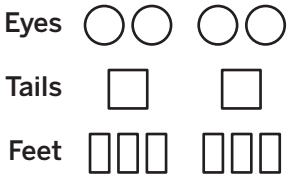


4. Which diagram represents the ratio relationship among the number of eyes, tails, and feet?

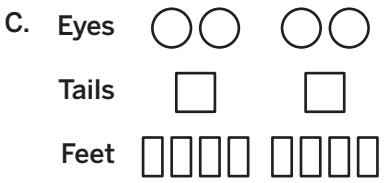
A.



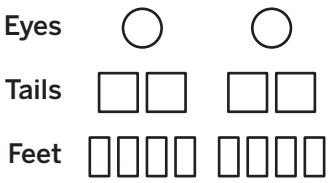
B.



C.



D.



5. Complete each statement.

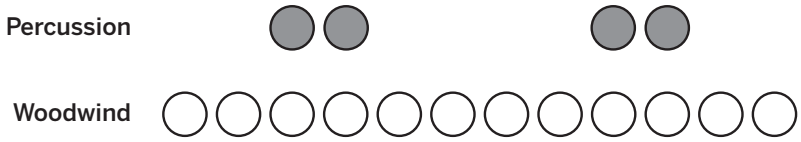
a The ratio of eyes to tails is ..... : .....

b The ratio of feet to tails is ..... to .....

c There are ..... eyes for every tail.

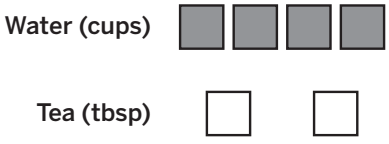
d There are ..... feet for every tail.

6. The diagram represents the number of percussion players and woodwind players in a school band.



Clare says the ratio of woodwind players to percussion players is $2 : 6$. Andre says the ratio of woodwind players to percussion players is $1 : 3$. Who is correct? Explain your thinking.

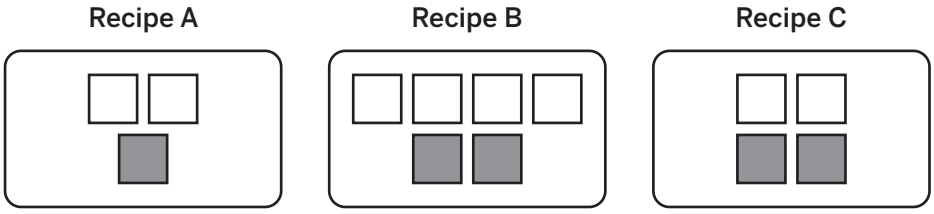
7. The diagram represents the number of cups of water and tablespoons of loose tea to make iced tea. Mai says the ratio of water to tea is $4 : 2$. What is another ratio that Mai could write for the ratio of water to tea? Explain your thinking.



Name: ..... Date: ..... Period: .....

Additional Practice 2.03

The diagrams represent three possible recipes for green dye using blue and yellow food coloring. Use these diagrams for Problems 1–4.



Key:

□ = 1 drop blue food coloring ■ = 1 drop yellow food coloring

1. Use the diagrams to complete each pair of statements.

a Recipe A uses ..... drop(s) of blue food coloring and ..... drop(s) of yellow food coloring.

The ratio of drops of blue to yellow in Recipe A is .....

b Recipe B uses ..... drop(s) of blue food coloring and ..... drop(s) of yellow food coloring.

The ratio of drops of blue to yellow in Recipe B is .....

c Recipe C uses ..... drop(s) of blue food coloring and ..... drop(s) of yellow food coloring.

The ratio of drops of blue to yellow in Recipe C is .....

2. Which statement is *true* about the ratios of the recipes?

A. The quantities in Recipe A are double that of Recipe B.

B. The quantities in Recipe B are double that of Recipe C.

C. The quantities in Recipe C are double that of Recipe A.

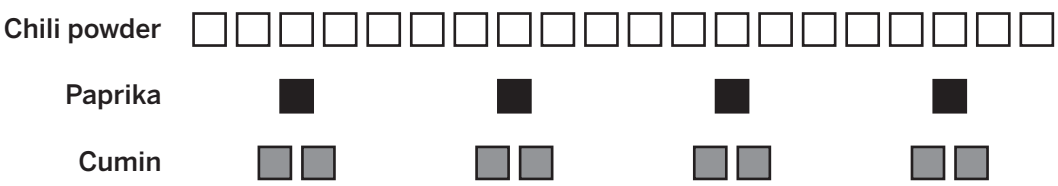
D. The quantities in Recipe B are double that of Recipe A.

3. To darken green paint, you can add more drops of blue. Which Recipe has the lightest shade of green paint? Explain your thinking.

4. What could be added to Recipe B so that the color will be the same as Recipe C?

Name: Date: Period:

5. A recipe for 1 batch of taco seasoning says, "Mix 5 parts chili powder, one part paprika, and two parts cumin." How many batches are represented by the diagram? Explain your thinking.



6. Kiran makes banana oatmeal pancakes by mixing 2 mashed bananas with 3 cups of oatmeal (along with some other ingredients).

a Draw a diagram that clearly represents doubling the recipe for banana oatmeal pancakes.

Bananas

Oatmeal (cups)

b Draw a diagram that clearly represents tripling the recipe for banana oatmeal pancakes.

Bananas

Oatmeal (cups)

7. In a recipe for sparkling orange juice, the ratio of cups of orange juice to cups of sparkling water is 2 : 1.

a Write the ratio of cups of orange juice to cups of sparkling water that represents a double batch. Show your thinking.

b Write the ratio of cups of orange juice to cups of sparkling water that represents a quadruple batch. Show your thinking.

8. When Elena makes one batch of hummingbird food, she mixes 4 cups of water with 1 cup of sugar, which is enough for one hummingbird feeder.

a If Elena has 5 hummingbird feeders in her yard, what is the ratio of cups of water to cups of sugar that she would use? Show your thinking.

b Elena says that if she has 3 hummingbird feeders in her yard, she would need 2 cups of sugar and 8 cups of water. Is Elena correct? Write *yes* or *no*. Explain your thinking.

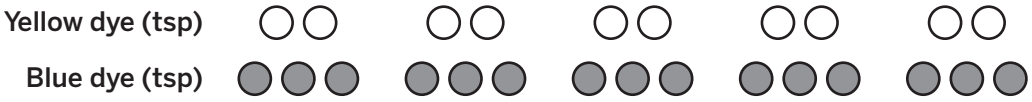
Name: ..... Date: ..... Period: .....

Additional Practice 2.04

1. The diagram shows a mixture of black paint and white paint needed for 3 batches of a particular gray paint.

What is the ratio of black paint to white paint, for 1 batch? Explain your thinking.

2. The diagram shows a mixture of yellow dye and blue dye needed for 5 batches of a particular green dye.



What is the ratio of blue dye to yellow dye, for 1 batch? Explain your thinking.

3. Bard makes pink paint by mixing 16 tbsp of white paint and 4 tbsp of red paint. Which of these mixtures produce the same pink paint as Bard's mixture, but in a smaller amount? Select *all* that apply.

- ☐ **A.** Mix 15 tbsp of white paint and 3 tbsp of red paint.
- ☐ **B.** For every tbsp of red paint, mix 4 tbsp of white paint.
- ☐ **C.** Mix tbsp of red paint and white paint in the ratio 4 : 1.
- ☐ **D.** For every 2 tbsp of red paint, mix 8 tbsp of white paint.
- ☐ **E.** Mix 8 tbsp of white paint with 4 tbsp of red paint.

4. Lin makes sparkling lemonade by mixing 12 cups of lemonade and 16 cups of sparkling water.

a What is the ratio of sparkling water to lemonade? Explain your answer.

b If Lin uses 6 cups of lemonade, how many cups of sparkling water should she use so the taste remains the same? Explain your answer.

c If Lin uses 4 cups of sparkling water, how many cups of lemonade should she use so the taste remains the same? Explain your answer.

Name: Date: Period:

5. To make 1 batch of pale yellow paint, Diego mixes 3 cups of yellow paint with 1 gallon of white paint. How could Diego make a mixture that is a darker tint of yellow than the pale yellow? Select *all* that apply.

- ☐ **A.** Add more white paint to the mixture.
- ☐ **B.** Mix 5 cups of yellow paint with 1 gallon of white paint.
- ☐ **C.** Mix 2 gallons of white paint with 3 cups of yellow paint.
- ☐ **D.** Add more yellow paint to the mixture.
- ☐ **E.** Mix 3 cups of yellow paint with one-half gallon of white paint.

6. When dyeing yarn, it is recommended that you use 750 ml of water for every 25 g of yarn fibers. Complete the table with the possible ratios for dyeing yarn.

Water (ml)	Yarn fibers (g)
750	25
150	
	1

7. To make a large batch of pancake mix, the directions say to use 40 cups of water and 28 cups of pancake mix.

a Diego only needs half the amount of pancake mix. What ratio would represent half of the recipe? Explain your thinking.

b Lin wants to use 8 cups of water and 7 cups of pancake mix. Is her ratio equivalent to the ratio in the directions? Explain your thinking.

8. Orange paint can be made by mixing 35 tsp of red paint and 14 tsp of yellow paint. Kiran and Priya each attempted to make a smaller amount of the same orange paint color. Diagrams that represent their color mixtures are shown.

Kiran

Red (tsp) □□□□□□□□□□

Yellow (tsp) □□

Priya

Red (tsp) □□□□□□□□□□□□□□□□

Yellow (tsp) □□□□□□

Does either person's color mixture make the same orange color as the original orange paint? Write *yes* or *no*. Explain your thinking.

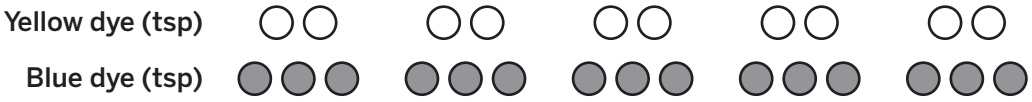
Name: ..... Date: ..... Period: .....

Additional Practice 2.04

1. The diagram shows a mixture of black paint and white paint needed for 3 batches of a particular gray paint.

What is the ratio of black paint to white paint, for 1 batch? Explain your thinking.

2. The diagram shows a mixture of yellow dye and blue dye needed for 5 batches of a particular green dye.



What is the ratio of blue dye to yellow dye, for 1 batch? Explain your thinking.

3. Bard makes pink paint by mixing 16 tbsp of white paint and 4 tbsp of red paint. Which of these mixtures produce the same pink paint as Bard's mixture, but in a smaller amount? Select *all* that apply.

- ☐ **A.** Mix 15 tbsp of white paint and 3 tbsp of red paint.
- ☐ **B.** For every tbsp of red paint, mix 4 tbsp of white paint.
- ☐ **C.** Mix tbsp of red paint and white paint in the ratio 4 : 1.
- ☐ **D.** For every 2 tbsp of red paint, mix 8 tbsp of white paint.
- ☐ **E.** Mix 8 tbsp of white paint with 4 tbsp of red paint.

4. Lin makes sparkling lemonade by mixing 12 cups of lemonade and 16 cups of sparkling water.

a What is the ratio of sparkling water to lemonade? Explain your answer.

b If Lin uses 6 cups of lemonade, how many cups of sparkling water should she use so the taste remains the same? Explain your answer.

c If Lin uses 4 cups of sparkling water, how many cups of lemonade should she use so the taste remains the same? Explain your answer.

Name: Date: Period:

5. To make 1 batch of pale yellow paint, Diego mixes 3 cups of yellow paint with 1 gallon of white paint. How could Diego make a mixture that is a darker tint of yellow than the pale yellow? Select *all* that apply.

- ☐ **A.** Add more white paint to the mixture.
- ☐ **B.** Mix 5 cups of yellow paint with 1 gallon of white paint.
- ☐ **C.** Mix 2 gallons of white paint with 3 cups of yellow paint.
- ☐ **D.** Add more yellow paint to the mixture.
- ☐ **E.** Mix 3 cups of yellow paint with one-half gallon of white paint.

6. When dyeing yarn, it is recommended that you use 750 ml of water for every 25 g of yarn fibers. Complete the table with the possible ratios for dyeing yarn.

Water (ml)	Yarn fibers (g)
750	25
150	
	1

7. To make a large batch of pancake mix, the directions say to use 40 cups of water and 28 cups of pancake mix.

a Diego only needs half the amount of pancake mix. What ratio would represent half of the recipe? Explain your thinking.

b Lin wants to use 8 cups of water and 7 cups of pancake mix. Is her ratio equivalent to the ratio in the directions? Explain your thinking.

8. Orange paint can be made by mixing 35 tsp of red paint and 14 tsp of yellow paint. Kiran and Priya each attempted to make a smaller amount of the same orange paint color. Diagrams that represent their color mixtures are shown.

Kiran

Red (tsp) □□□□□□□□□□

Yellow (tsp) □□

Priya

Red (tsp) □□□□□□□□□□□□□□□□

Yellow (tsp) □□□□□□

Does either person's color mixture make the same orange color as the original orange paint? Write *yes* or *no*. Explain your thinking.

Name: ..... Date: ..... Period: .....

Additional Practice 2.08

1. Determine *all* the factors of each number.

a 16

b 25

c 100

d 37

2. For the numbers 20 and 24, determine each of the following.

a The factors of 20.

b The factors of 24.

c The common factors of 20 and 24.

d The GCF of 20 and 24.

3. For the numbers 18 and 27, determine each of the following.

a The factors of 18.

b The factors of 27.

c The common factors of 18 and 27.

d The GCF of 18 and 27.

4. Determine the GCF for each pair of numbers. Explain your thinking.

a 33 and 15

b 8 and 32

c 45 and 54

d 35 and 21

5. Refer to the numbers 42 and 96.

a How many common factors do 42 and 96 have? Explain your thinking.

b What is the GCF of 42 and 96? Explain your thinking.

6. A teacher is making gift bags. Each bag is to be filled with pencils and erasers. The teacher has 40 pencils and 60 erasers to use. Each bag will have the same number of each item, with no items left over. What are some possibilities of pencils and erasers in the gift bags? Select *all* that apply.

- ☐ **A.** 10 bags with 4 pencils and 6 erasers
- ☐ **B.** 4 bags with 6 pencils and 4 erasers
- ☐ **C.** 20 bags with 2 pencils and 6 erasers
- ☐ **D.** 2 bags with 20 pencils and 30 erasers
- ☐ **E.** 5 bags with 8 pencils and 12 erasers

7. A middle school band has 72 sixth grade students and 54 seventh grade students. The band director wants to make groups of performers, with the same combination of sixth grade and seventh grade students in each group. She wants to form as many groups as possible.

a What is the greatest number of groups that could be formed? Explain your thinking.

b Using your answer from Problem 7a, how many sixth graders would be in each group?

c Using your answer from Problem 7a, how many seventh graders would be in each group?

8. Jada, Shawn, and Noah were all asked to determine the greatest common factor of 16, 72, and 80. Their responses are shown.

- Jada says that the greatest common factor is 16.
- Shawn says that the greatest common factor is 8.
- Noah says that the greatest common factor is 9.

Who is correct? Explain your thinking.

Name: ..... Date: ..... Period: .....

Additional Practice 2.09

1. There are 3 possible mixtures of a pink paint.
- Mixture A is made with 18 tsp of white paint and 12 tsp of red paint.
- Mixture B is made with 6 tsp of white paint and 5 tsp of red paint.
- Mixture C is made with 12 tsp of white paint and 10 tsp of red paint.

Which mixture is the *lightest* tint of pink paint? Explain your thinking.

2. Priya has 2 white marbles and 4 blue marbles. Lin has 4 white marbles and 16 blue marbles. Who has the greater ratio of white marbles to blue marbles? Explain your thinking.

A. Priya

B. Lin

C. They have the same ratio of white to blue marbles.

3. Kiran shops at a bulk store where he can purchase dry goods by the ounce.

a Determine the price per ounce for each item that Kiran buys.

Item	Price ($)	Number of ounces	Price per ounce ($)
Banana chips	9	36	
Macadamia nuts	16	8	
Dried mango	8	8	
Cinnamon pecans	18	24	
Pistachios	3.75	5	

b Which item has the least price per ounce? Explaining your thinking.

4. Noah's team won 10 games and lost 5 games. Tyler's team won 12 games and lost 4 games. Whose team had the greater ratios of wins to losses? Explain your thinking.

A. Noah's team

B. Tyler's team

C. Both teams have the same ratio of wins to losses.

5. Movie tickets cost different amounts depending on the day and time of the show.

- Bard paid $39 for 6 tickets.
- Andre paid $21.75 for 3 tickets.
- Mai paid $31.25 for 5 tickets.

Who paid the lowest price per ticket? Explain your thinking.

A. Bard

B. Andre

C. Mai

6. Diego swam 200 meters in 58 seconds. Han swam 300 meters in 87 seconds. Both swam at a constant speed. Who swam at a faster constant speed? Explain your thinking.

A. Diego

B. Han

C. They swam at the same speed.

7. Clare ran 3 miles in 27 minutes. Jada ran 5 miles in 40 minutes. Both ran at a constant speed. Did they run at the *same* constant speed? Write *yes* or *no*. Explain your thinking.

8. Shawn paid $11.25 for 2.5 lb of chicken. Lin paid $25.50 for 6 lb of chicken. Lin says she paid less per pound of chicken than Shawn. Is Lin correct? Write *yes* or *no*. Explain your thinking.

Name: ..... Date: ..... Period: .....

Additional Practice 2.10

1. To make a fruit smoothie, Andre uses $\frac{1}{2}$ cups of almond milk and $1\frac{1}{2}$ cups of frozen berries. The table shows equivalent ratios of almond milk and frozen berries.

Almond milk (cups)	Frozen berries (cups)
$\frac{1}{2}$	$1\frac{1}{2}$
1	3
$1\frac{1}{2}$	$4\frac{1}{2}$
2	6

Which statements are *true* about the ratio of almond milk to frozen berries? Select *all* that apply.

- ☐ **A.** For every 3 cups of berries, there is 1 cup of almond milk.
- ☐ **B.** For every 2 cups of berries, there are 6 cups of almond milk.
- ☐ **C.** For every $1\frac{1}{2}$ cups of berries, there is 1 cup of almond milk.
- ☐ **D.** For every 1 cup of almond milk, there are 3 cups of berries.
- ☐ **E.** For every $\frac{1}{2}$ cups of almond milk, there are $1\frac{1}{2}$ cups of berries.

2. A particular pink paint is made by mixing 3 parts of red paint with 9 parts of white paint. Complete the table with the amount of red paint and white paint needed to make different amounts of the same shade of pink paint.

Red paint	White paint
1	
$\frac{1}{2}$	
	12
	6

Name: Date: Period:

3. In a recipe for waffles, there are $2\frac{1}{4}$ cups of flour for every 2 cups of milk. A family is making several batches of waffles. Determine how much of each ingredient the family will need. Consider using a table to help with your thinking.

a How many cups of milk are needed to make 3 batches of waffles?

b How many cups of flour are needed to make 3 batches of waffles?

c How many cups of milk are needed to make 5 batches of waffles?

d How many cups of flour are needed to make 6 batches of waffles?

4. A car travels at a constant speed and its distance traveled in 1, 2, and 3 hours is shown on the table. How far does the car travel in 8 hours? Explain your thinking.

Time (hours)	Distance (miles)
1	65
2	130
3	195

5. Complete the table to determine two equivalent ratios to $24 : 15$ with lesser values and two equivalent ratios with greater values.

24	15

6. A recipe for a batch of bran muffins calls for $\frac{3}{4}$ cup of brown sugar and 3 cups of bran cereal. Andre says that, if he triples the recipe, he will need $3\frac{3}{4}$ cups of brown sugar and 9 cups of bran cereal. Is Andre correct? Write *yes* or *no*. Explain your thinking.

Name: ..... Date: ..... Period: .....

Additional Practice 2.11

1. Determine the missing number on the ratio table.

7	12
	48

2. A recipe calls for 2 lb of chicken and $3\frac{1}{2}$ cups of tomato sauce. Andre makes 3 batches of the recipe. Which gives the amounts needed for 3 batches?

A. 5 lb of chicken, 9 cups of tomato sauce

B. 5 lb of chicken, $10\frac{1}{2}$ cups of tomato sauce

C. 6 lb of chicken, 9 cups of tomato sauce

D. 6 lb of chicken, $10\frac{1}{2}$ cups of tomato sauce

3. A chef is pickling onions. He needs 12 gallons of white vinegar. The restaurant supply store sells 2 gallons of vinegar for $4.88, but allows customers to buy any amount of vinegar at the same rate. Which of the following ratios correctly represents the price of the vinegar? Select *all* that apply.

☐ **A.** 7 gallons to $14.64

☐ **B.** 14 gallons to $34.16

☐ **C.** 1 gallon to $2.44

☐ **D.** 20 gallons to $43.92

☐ **E.** 5 gallons to $12.20

4. A full-grown elephant drinks about 1,330 liters of water each week. Complete each ratio based on this information.

a ..... liters to 1 day

b 570 liters to ..... days

c ..... liters to 3 weeks

d 2,280 liters to ..... days

e ..... liters to 12 weeks

5. A caterer needs to buy 38 lb of potatoes for a catering event. It costs $6 for 5 lb of potatoes at a restaurant supply store.

a Write a ratio for the price of the potatoes per pound.

b If all potatoes are sold at this rate, how much will the caterer pay for the potatoes they need? Explain your thinking.

6. A caterer also needs to buy 130 rolls for the catering event. A bakery sells rolls by the dozen where it costs $4.80 for a dozen rolls.

a Write a ratio for the given information about the cost of the rolls.

b If all rolls are sold at the same rate, how much will the caterer pay for the rolls they need? Explain your thinking.

7. The directions for a shade of green paint say, "Mix 7 ml yellow paint with 3 ml blue paint." Han has 42 ml of yellow paint and 25 ml of blue paint. If Han wants to use all of the yellow paint, how much blue paint, if any, will he have left? Explain your thinking.

Note: Consider using this ratio table to help with your thinking.

Yellow (ml)	Blue (ml)

8. Mai is reading a 55-page book. She read the first 35 pages in 30 minutes. If she continues to read at the same rate, will she be able to complete this book in less than 1 hour? Write *yes* or *no*. Explain your thinking.

Name: ..... Date: ..... Period: .....

Additional Practice 2.13

1. The ratio of cats to dogs at a boarding facility one weekend is $3 : 8$. There are 33 dogs and cats staying for the weekend in all. Complete the table to show how many dogs and how many cats were at the boarding facility for the weekend.

Cats	Dogs	Total animals
3	8	

2. The ratio of yellow labrador retrievers to black labrador retrievers at a puppy training class is $4 : 3$. If there are 14 labrador retrievers at the class, how many are yellow labrador retrievers and how many are black labrador retrievers? Consider using a diagram or table to help with your thinking.

3. A veterinarian examined 72 pets at her clinic in one day. The ratio of dogs to other pets was $8 : 1$. How many dogs and how many other pets did the veterinarian see? Consider using a diagram or table to help with your thinking.

4. A boarding facility washes 5 small dogs for every 2 large dogs. Consider using a diagram or table to help with your thinking.

a If a total of 35 dogs were washed during one week, how many were large dogs?

b If a total of 42 dogs were washed during another week, how many were small dogs?

c If 40 small dogs were washed last week, what is the total number of dogs that were washed last week?

5. Diego has $\$100$. He uses the ratio $3 : 2$ to determine how much he can spend and how much he can save. Consider using a diagram or table to help with your thinking.

a How much money will Diego spend?

b How much money will Diego save?

6. Jada has a bag of 110 marbles. The ratio of red marbles to blue marbles is $4 : 1$. Consider using a diagram or table to help with your thinking.

a How many red marbles does Jada have?

b How many blue marbles does Jada have?

7. The first floor of a house contains a family room and a dining room. The combined area of these two rooms is 270 ft^2. The ratio of the area of the family room to the area of the dining room is $4 : 2$. What is the area of each room? Consider using this table to help with your thinking.

Family room (ft^2)	Dining room (ft^2)	Total area (ft^2)

a What is the area of the family room?

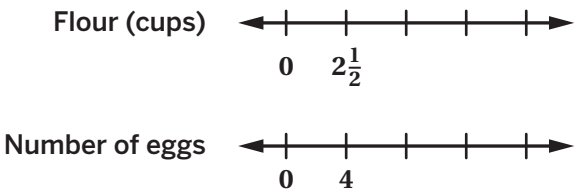
b What is the area of the dining room?

8. A teacher is planning a field trip to the zoo. The zoo requires 3 chaperones for every 25 students. Shawn says, "If there are 112 students in Grade 6 going on this field trip, 12 chaperones are needed." Is Shawn correct? Write *yes* or *no*. Explain your thinking.

Name: ..... Date: ..... Period: .....

Additional Practice 2.14

1. The double number line diagram shows the amount of flour and eggs needed for one batch of homemade pasta.



a Complete the diagram to show the amount of flour and eggs needed for 2, 3, and 4 batches of homemade pasta.

b What is the ratio of cups of flour to eggs?

c How much flour and how many eggs are needed in 5 batches of homemade pasta?

d How much flour is used with 16 eggs?

e How many eggs are used with $7\frac{1}{2}$ cups of flour?

2. One batch of purple paint uses 3 tsp of blue paint and 5 tsp of red paint. Shawn made a large amount of the same color purple paint using 40 tsp of red paint. Explain your thinking for each part.

a How many batches of purple paint did Shawn make?

b How many teaspoons of blue paint did Shawn use?

3. Kiran has 80 chocolate chip granola bars, 72 peanut butter granola bars, and 16 oatmeal rasin granola bars for a bake sale. He wants to make bags that have all three types of granola bars and the same number of each type in each bag, without any left over. Which are possible combinations of granola bars in the bags? Select *all* that apply.

- ☐ **A.** 8 bags with 10 chocolate chip bars, 9 peanut butter bars, and 2 oatmeal rasin bars.
- ☐ **B.** 2 bags with 40 chocolate chip bars, 36 peanut butter bars, and 8 oatmeal rasin bars.
- ☐ **C.** 16 bags with 5 chocolate chip bars, 4 peanut butter bars, and 1 oatmeal rasin bars.
- ☐ **D.** 10 bags with 4 chocolate chip bars, 7 peanut butter bars, and 2 oatmeal rasin bars.
- ☐ **E.** 4 bags with 20 chocolate chip bars, 18 peanut butter bars, and 4 oatmeal rasin bars.

4. A bakery makes blueberry muffins, raspberry muffins, and banana muffins in the ratio of $9 : 2 : 4$. If the bakery makes 540 muffins today, how many of each type did they make?

a Blueberry muffins

b Raspberry muffins

c Banana muffins

Name: ..... Date: ..... Period: .....

Additional Practice 3.01

Problems 1–3: For each pair, circle the larger unit of measurement.

1. **A.** Mile **B.** Meter

2. **A.** Inch **B.** Foot

3. **A.** Pound **B.** Gram

4. Determine whether each unit of measurement measures length, volume, or weight.

Unit	Length	Volume	Weight
Millimeter			
Pound			
Cup			
Quart			
Yard			
Gram			

Problems 5–7: Identify a unit that can be used to measure:

5. The length of a hammer.

6. The volume of an orange soda can.

7. The weight of a truck.

Name: ..... Date: ..... Period: .....

8. Select *all* the measurements that you could measure from a box of cereal.

- ☐ **A.** Inches
- ☐ **B.** Miles
- ☐ **C.** Kilometers
- ☐ **D.** Gallons
- ☐ **E.** Cups
- ☐ **F.** Ounces

9. Match each object with the unit you would most likely use to measure it.

a.	The height of a house .	..... Kilometers
b.	The length of a nail.	..... Pounds
c.	The weight of a staple.	..... Grams
d.	The distance between two towns.	..... Centimeters
e.	The weight of a piggy bank.	..... Feet
f.	The volume of a pitcher of lemonade.	..... Gallons

Name: ..... Date: ..... Period: .....

Additional Practice 3.03

1. Cordelia is 66 inches tall. If 100 inches = 254 centimeters, which value is closest to her height in centimeters?

A. 41.94 centimeters
B. 83.82 centimeters
C. 167.64 centimeters
D. 335.28 centimeters

2. A yard is equal to 3 feet, and there are 1,760 yards in 1 mile. How many feet are there in 5 miles?

A. 3,520
B. 5,280
C. 7,040
D. 8,800

3. Gloria's family exchanged 500 dollars for 480 euros. Complete the table to determine the conversions between euros and dollars.

Dollars	Euros
500	480
50	
2	
4	
	1,200
	2,112

Problems 4–6: Use the conversion rate that makes the most sense to determine the approximate value of each missing quantity. Show or explain your thinking.

1 kilogram = 1000 grams	3 ounces ≈ 85 grams
11 pounds ≈ 5 kilograms	4 kilograms ≈ 141 ounces

4. 18 ounces ≈ ..... grams

5. 25 kilograms ≈ ..... pounds

6. 28 kilograms ≈ ..... ounces

7. Josephine lives 600 meters from her school in France. Thomas lives $1{,}000$ feet from his school in the United States. Given that every 3 meters is approximately 10 feet, who lives farther from their school? Circle one and explain your thinking.

Josephine Thomas About the same distance

8. Auden's puppy eats about 100 grams of dog food per day. Auden wants to know how many pounds that is. Auden knows that there is approximately 454 grams in a pound. About how many pounds is 100 grams?

Name: ..... Date: ..... Period: .....

Additional Practice 3.05

Problems 1–2: Turtle A walks 1.5 feet in 5 seconds. Turtle B walks 3 feet in 9 seconds. Each turtle keeps walking at those speeds.

1. How far does each turtle walk in 45 seconds?

2. If the two turtles start at the same place and walk in the same direction, how far apart will the two turtles be after 3 minutes? Show or explain your thinking.

3. A cheetah runs 100 m in 6 seconds.

a At this rate, how long will it take the cheetah to run 150 m? Show your thinking.

b How far will the cheetah run in 27 seconds? Show your thinking.

4. Snail A travels 4 in. in 7 minutes. Snail B travels 6 in. in 10 minutes. Each snail continues traveling at a constant speed.

a How far does Snail A travel in 35 minutes? Show your thinking.

b How far does Snail B travel in 35 minutes? Show your thinking.

c If the two snails start at the same place and travel in the same direction, how far apart will the two snails be after 84 minutes? Show your thinking.

5. Elena reads 15 pages in 25 minutes. Shawn reads 12 pages in 15 minutes. Both read at a constant rate.

a Who reads faster? Show your thinking.

b How many pages can Elena read in 1 hour? Show your thinking.

c How many pages can Shawn read in 1 hour? Show your thinking.

Priya types 1,100 words in 20 minutes. Tyler types 600 words in 10 minutes. Andre types 300 words in 6 minutes. Each person types at a constant rate. Use this information for Problems 6–8.

6. Complete the tables to represent the number of words each person can type in different amounts of time.

a **Priya**

Words	Time (min)
	1
	30
	45

b **Tyler**

Words	Time (min)
	1
	30
	45

c **Andre**

Words	Time (min)
	1
	30
	45

7. Which person is typing at a faster rate? How much faster? Show or explain your thinking.

8. How long will it take each person to type 3,300 words? Explain your thinking.

Name: ..... Date: ..... Period: .....

Additional Practice 3.06

Problems 1–3: Tomas purchased a new printer for their office. The printer can print 250 pages every 2 minutes.

1. How many pages can the printer make per minute?

2. How many minutes does it take per page?

3. How many pages can be printed in 10 minutes?

4. A farm lets you pick 2 pt of blueberries for $6.00.

a What is the cost per pint? Show your thinking.

b How many pints can you buy per dollar? Show your thinking.

c At this rate, how many pints can you buy for $15? Show your thinking.

d At this rate, how much will 7 pt of blueberries cost? Show your thinking.

5. A farm lets you pick 4 lb of strawberries for $16.00.

a What is the cost per pound? Show your thinking.

b How many pounds can you buy per dollar? Show your thinking.

c At this rate, how many pounds can you buy for $22? Show your thinking.

d At this rate, how much will 10 lb of strawberries cost? Show your thinking.

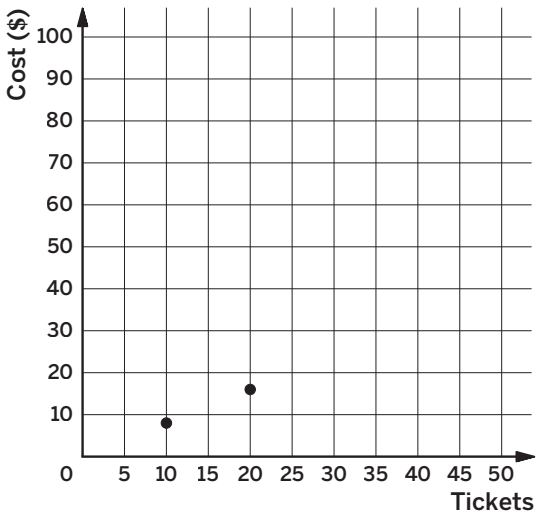
Name: ..... Date: ..... Period: .....

Clare paid $10 for 8 game tickets at her school carnival. Use this information for Problems 6–8.

6. Complete the table to show different numbers of tickets that can be purchased for different dollar amounts at the same rate.

Tickets	Cost ($)	Cost per ticket ($)
8	10	
1		
10		
	18.75	
	30	

7. Clare says that this graph represents two pairs of numbers of tickets and cost, in dollars. Is Clare's graph correct? Explain your thinking.



8. Kiran says that if he pays $6 for 4 tickets, he's getting a better deal than Clare. Do you agree with Kiran? Explain your thinking.

Name: ..... Date: ..... Period: .....

Additional Practice 3.07

1. Which ratio is *not* equivalent to $8 : 6$?

A. $4 : 3$

B. $1 : \frac{3}{4}$

C. $\frac{4}{3} : 1$

D. $\frac{3}{4} : 1$

2. Which ratios are equivalent to $2 : 8$? Select *all* that apply.

☐ **A.** $1 : 4$

☐ **B.** $1 : 2$

☐ **C.** $\frac{2}{8} : 1$

☐ **D.** $1 : \frac{1}{4}$

☐ **E.** $8 : 32$

3. Lin bought a 40 lb bag of dog food for $\$48.80$. Shawn bought an 8 lb bag of dog food for $\$9.88$.

a Complete this table to determine the unit rate for each bag of dog food.

	Dog food (lb)	Price ($)	Unit rate ($ per lb)
Lin	40	48.80	
Shawn	8	9.88	

b Which size bag of dog food offers the best deal? Explain your thinking.

4. Which brand of peanut butter offers the best deal per ounce? Explain your thinking.

- Brand A: 28 oz for $\$4.76$
- Brand B: 48 oz for $\$8.64$
- Brand C: 16 oz for $\$3.52$

Name: Date: Period:

5. The grocery store Noah is shopping at offers different varieties of bags of apples.

a Complete the table to determine the unit price for each variety of apple.

Apple variety	Price ($)	Weight (lb)	Unit rate ($ per lb)
Gala	6.45	5	
Fuji	3.08	4	
Honeycrisp	5.37	3	
Granny Smith	7.74	6	

b Which variety of apples is the best deal? Explain your thinking.

6. Jada reads 15 pages in 12 minutes. Bard reads 21 pages in 28 minutes. Who reads faster? Explain your thinking.

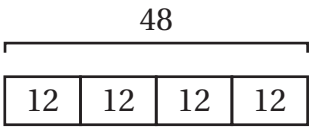
7. Mai uses 8 cups of apples to make 3 pies. Mai says, "At this same rate, I can make 5 pies using 16 cups of apples." Is Mai correct? Explain your thinking.

8. Plane A travels 2,260 miles in 4 hours. Plane B travels 810 miles in $1\frac{1}{2}$ hours. Plane C travels 3,692 miles in $6\frac{1}{2}$ hours. Tyler claims that Plane C has the fastest speed. Do you agree with Tyler? Explain your thinking.

Name: ..... Date: ..... Period: .....

Additional Practice 4.03

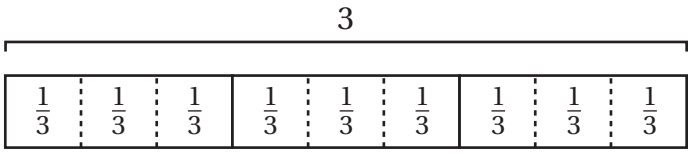
1. Refer to the tape diagram shown.



a Write a multiplication equation that could be represented by the diagram.

b Write a division equation that could be represented by the diagram.

2. Refer to the tape diagram shown.



a Write a multiplication equation that could be represented by the diagram.

b Write a division equation that could be represented by the diagram.

3. Andre's neighborhood swimming pool is open for 10 hours each day. Each lifeguard's shift is $2\frac{1}{2}$ hours. How many shifts will be available throughout the day?

4. Mai was filling several same-sized jars with oatmeal to make overnight oats. She put $\frac{2}{3}$ cup of oatmeal in each jar, using a total of 6 cups.

- Mai says, "I can use the equation $6 \cdot ? = \frac{2}{3}$ to determine how many jars are filled."
- Diego says, "I can use the equation $6 \div \frac{2}{3} = ?$ to determine how many jars are filled."

Do you agree with *one*, *both*, or *neither* of them? Explain your thinking.

Name: Date: Period:

Problems 5–6: Philipe is making an ice cream sundae with two friends. Philipe's two friends are using different-sized scoops to make their sundaes. If Philipe's recipe for the ice cream sunday calls for 6 cups of ice cream, how many scoops of ice cream does each friend need?

5. Tomas: $\frac{1}{2}$–cup scoop

6. Angelica: 3 cup-scoop

7. Priya was filling snack bags with trail mix. After using 9 cups of trail mix, she had filled 12 bags. If all of the snack bags have the same amount of trail mix, how much is in each bag?

a Multiplication equation:

b Division equation:

c Diagram:

d Solution:

Name: Date: Period:

Additional Practice 4.04

Problems 1–5: Levi is planting herbs in his garden. Determine how many of each herb plant Levi can fit in 1 planter. Use the diagrams if they help with your thinking.

1. Sage, if 10 sage plants fill $\frac{1}{2}$ of a planter.

2. Thyme, if 8 thyme plants fill $\frac{2}{3}$ of a planter.

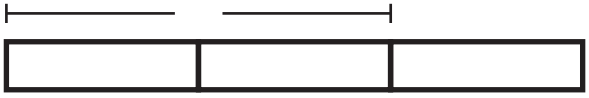
3. Basil, if 3 basil plants fill $\frac{1}{3}$ of a planter.

4. Oregano, if 3 oregano plants fill $\frac{3}{4}$ of a planter.

5. Levi wrote the expression $3 \div \frac{3}{4}$ to represent how many oregano plants fill 1 planter. Describe a situation that represents the expression $6 \div \frac{2}{3}$.

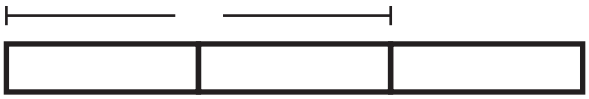
Problems 6–7: Juni picks 12 blackberries from her backyard, which fill $\frac{2}{3}$ of a cup.

6. Label the tape diagram to represent Juni's situation.



Name: Date: Period:

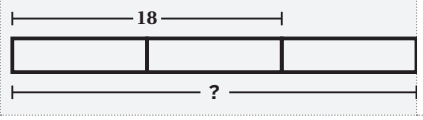
7. Determine how many blackberries fill 1 cup. Use the tape diagram if it helps with your thinking.



8. Maj is painting his kitchen. He uses 5 gallons of paint for $\frac{5}{8}$ of the kitchen. How many gallons of paint would he need to paint the whole kitchen?

9. Sergio is planting flowers in his garden. 21 flowers fill 3 small planters. How many flowers fill 1 small planter?

10. Match each representation with a question.

Representation	18 flowers fill 2 planters. How many flowers fill 1 planter?	18 flowers fill $\frac{2}{3}$ of a planter. How many flowers fill 1 planter?
$18 \div 2 = ?$		
$18 \div \frac{2}{3} = ?$		
$2 \times ? = 18$		
$\frac{2}{3} \times ? = 18$		
		

Name: ..... Date: ..... Period: .....

Additional Practice 4.05

A hexagon represents 1 whole. Use the pattern blocks shown to complete Problems 1–4.

1. What fractions of a whole does each of the following shapes or combinations of shapes represent? Show or explain your thinking.

a 2 rhombuses

b 3 trapezoids

c 3 triangles

d 1 hexagon and 1 triangle

2. Write an equation that could be used to represent each question. Use a question mark for the unknown. Then solve the equation.

a How many $\frac{1}{2}$s are in 3?

b How many $\frac{2}{3}$s are in 4?

c How many $\frac{1}{6}$s are in $3\frac{1}{2}$?

3. How many $\frac{1}{6}$s are in $1\frac{2}{3}$? Show your thinking.

A. $\frac{1}{10}$ **B.** $\frac{5}{18}$

C. $3\frac{3}{5}$ **D.** 10

4. Determine how many $\frac{1}{3}$s are in $2\frac{2}{3}$. Show or explain your thinking.

Name: Date: Period:

5. Bard buys rice in a 4-cup box. Bard's family uses $1\frac{1}{3}$ cups of rice per meal. How many meals does one box last?

a Draw a diagram to represent the scenario. Label your diagram.

b Write a multiplication or division equation to represent the scenario. Use a question mark for the unknown.

c Determine how many meals one box lasts. Explain your thinking.

6. Clare is cutting a 4-ft board into $\frac{4}{5}$ ft sections. How many sections of board will Clare cut?

a Draw a diagram to represent the scenario. Label your diagram.

b Write a multiplication or division equation to represent the scenario. Use a question mark for the unknown.

c Determine how many sections of board Clare will cut.

7. Diego and Han were each asked to write a question that represents the equation $? \cdot \frac{1}{5} = 6$.

Diego's response	Han's response
How many $\frac{1}{5}$s are in 6?	How many 6s are in $\frac{1}{5}$?

Did either Diego or Han correctly write a question that represents the equation? Explain your thinking.

Name: ..... Date: ..... Period: .....

Additional Practice 4.06

1. Select *all* the expressions whose value is greater than 1.

☐ **A.** $2 \div \frac{3}{2}$ ☐ **B.** $\frac{3}{2} \div 2$ ☐ **C.** $\frac{3}{4} \div \frac{1}{3}$ ☐ **D.** $\frac{4}{3} \div 2$ ☐ **E.** $4 \div \frac{3}{4}$

2. Jada ordered a 3-ft sub from the grocery store for a party. She cuts the sub into $\frac{1}{2}$-ft servings. Jada says the sub is long enough to feed 6 people. Do you agree with Jada? Explain your thinking.

Problems 3–4: Here is a diagram.

3. Determine if the value of $1\frac{1}{2} \div \frac{2}{3}$ is:

Less than 1 Greater than 1

4. Calculate the value of the expression in Problem 3.

Use the diagram if it helps you with your thinking.

Problems 5–6: Here is a diagram.

5. Determine if the value of $\frac{1}{2} \div \frac{3}{4}$ is:

Less than 1 Greater than 1

6. Calculate the value of the expression in Problem 5.

Use the diagram if it helps you with your thinking.

Name: Date: Period:

Problems 7–9: Here is a diagram.

7. Calculate $\frac{1}{3} \div \frac{3}{2}$.

Use the diagram if it helps you with your thinking.

8. Calculate $\frac{3}{2} \div \frac{1}{3}$.

Use the diagram if it helps you with your thinking.

9. How are Problems 7 and 8 similar? How do their solutions compare? Why do you think this is the case?

10. Kiran describes how to draw a diagram to represent and calculate $\frac{4}{3} \div \frac{1}{2}$.

Kiran's Response
Draw a tape diagram whose length represents $\frac{4}{3}$. Partition the diagram into 4 equal parts to show 4 groups of $\frac{1}{3}$. Then, partition each $\frac{1}{3}$ into 2 equal parts. There are 8 groups of $\frac{1}{2}$'s in $\frac{4}{3}$. Therefore, the value of $\frac{4}{3} \div \frac{1}{2}$ is 8.

Did Kiran correctly describe how to draw a tape diagram? Explain or show your thinking.

Name: ..... Date: ..... Period: .....

Additional Practice 4.07

Problems 1–4: Calculate the value of each expression. Draw a diagram if it helps with your thinking.

1. $4 \div \frac{3}{4}$

2. $3\frac{2}{3} \div \frac{5}{6}$

3. $\frac{5}{2} \div 1\frac{1}{3}$

4. $2\frac{3}{4} \div \frac{5}{6}$

Problems 5–6: Noah picked $3\frac{1}{2}$ cups of blackberries, which is enough for $\frac{3}{4}$ jars of blackberry jam. Show your thinking.

5. How many cups does Noah need for 1 jar of blackberry jam?

6. How many jars can Noah fill using 8 cups of blackberries?

7. One batch of tomato sauce uses $3\frac{1}{2}$ pounds of tomatoes. André has 5 pounds of tomatoes. He says he can make $1\frac{2}{5}$ batches of tomato sauce. Do you agree with André? Explain your thinking.

8. After charging for $1\frac{1}{3}$ hours, a laptop is at $\frac{3}{5}$ of its full power. How long will it take the laptop to charge completely? Show your thinking.

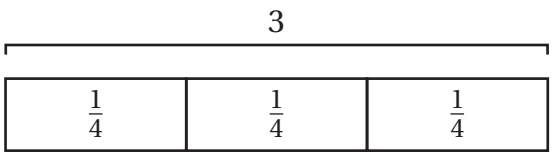
9. Shawn has $5\frac{1}{2}$ cups of lemonade. If each serving of lemonade is $\frac{3}{4}$ cup, how many servings does Shawn have?

Name: ..... Date: ..... Period: .....

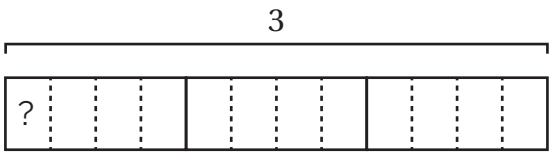
Additional Practice 4.08

1. Which of the tape diagrams shown represents the expression $3 \div \frac{1}{4}$?

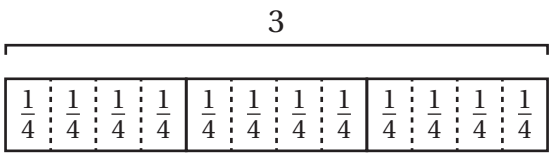
A.



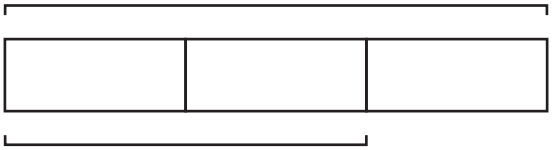
B.



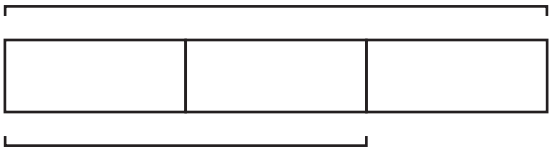
C.



2. Complete the tape diagram shown to represent and solve the following problem. What fraction of $\frac{2}{3}$ is 1?



3. Complete the tape diagram to represent and solve the following problem. Tyler picked 1 cup of blueberries, which is enough for $1\frac{1}{2}$ batches of blueberry muffins. How many cups does he need for 1 batch?



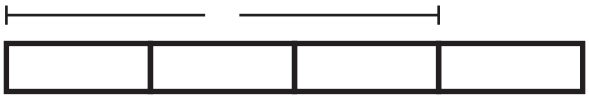
4. Shawn painted $\frac{5}{2}$ yd^2 of wall area with 2 gallons of paint. How many gallons of paint were needed to paint each square yard of wall?

Name: Date: Period:

Problems 5–6: Complete the tape diagram to represent and solve each problem.

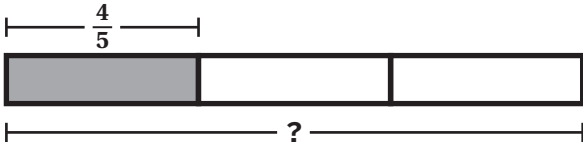
5. Trevor picked 1.5 cups of raspberries, which is enough for $\frac{3}{4}$ of a pan of raspberry shortcake. How many cups does he need for a whole pan of raspberry shortcake?

6. Tonya picked 6 cups of blueberries, which is enough for $\frac{3}{4}$ of a pan of blueberry crumble. How many cups does she need for a whole blueberry crumble?



7. $\frac{3}{5}$ of the town population walks to the park on a given Saturday. If 180 town residents walked to the park that day, how many total residents live in the town?

8. Calculate $\frac{4}{5} \div \frac{1}{3}$. Use the tape diagram if it helps with your thinking.



Name: ..... Date: ..... Period: .....

Additional Practice 4.09

Problems 1–5: Use any strategy to calculate each quotient.

1. $9 \div \frac{1}{3}$

2. $9 \div \frac{3}{5}$

3. $4\frac{3}{4} \div \frac{3}{8}$

4. $\frac{1}{3} \div \frac{4}{5}$

5. $2\frac{3}{4} \div \frac{1}{2}$

6. How many groups of $\frac{3}{4}$ are in $6\frac{1}{2}$?

7. How many groups of $\frac{3}{4}$ are in $3\frac{2}{3}$?

8. Use the equation $3\frac{1}{2} \div \frac{1}{6} = 21$ to determine $3\frac{1}{2} \div \frac{2}{6}$. Explain your thinking.

9. Here are four expressions.

$\frac{5}{3} \div \frac{2}{5}$	$\frac{5}{3} \div 2$	$\frac{5}{3} \div \frac{1}{5}$	$\frac{5}{3} \div 1$

a Order these expressions by value from *least* to *greatest*.

Least **Greatest**

b How are these expressions alike? How are these expressions different? Explain your thinking.

10. Here is an expression from the previous problem.

$\frac{5}{3} \div \frac{1}{5}$

Calculate its value. Explain your approach.

11. Here is a list of expressions.

$6 \times \frac{1}{2}$	$\frac{1}{3} \div \frac{1}{9}$
$\frac{2}{3} \div \frac{1}{9}$	$\frac{4}{5} \div \frac{1}{5}$
$\frac{2}{3} \div \frac{1}{6}$	$\frac{1}{3} \div \frac{1}{5}$
$9 \times \frac{1}{3}$	$4 \times \frac{3}{2}$

a Group the expressions into the appropriate column of the table. One of the expressions will not have a match.

Value of 3	Value of 4	Value of 6

b Explain why one of the expressions does not have a match with one of the columns in the table.

Name: ..... Date: ..... Period: .....

Additional Practice 4.12

1. How many groups of $\frac{5}{6}$ are in each of the following quantities? Show your thinking.

a $\frac{2}{3}$

b $1\frac{1}{2}$

c $4\frac{1}{6}$

2. How many groups of $1\frac{3}{4}$ are in each of the following quantities? Show your thinking.

a $2\frac{1}{2}$

b 4

c $\frac{3}{4}$

3. Shawn's golf club is $3\frac{3}{4}$ ft tall. Shawn's hockey stick is $5\frac{1}{2}$ ft tall.

a What fraction of the golf club's height is the hockey stick? Show your thinking.

b How many times as tall is the hockey stick than the golf club? Show your thinking.

4. Jada is $5\frac{1}{4}$ ft tall. Her little sister is 4 ft tall. How many times taller is Jada than her sister?

A. $\frac{4}{5}$ **B.** $\frac{16}{21}$ **C.** $1\frac{1}{4}$ **D.** $1\frac{5}{16}$

Name: Date: Period:

Clare and Diego each went for a bike ride. Clare rode $1\frac{1}{2}$ mi, and Diego rode $2\frac{3}{4}$ mi. Use this information for Problems 5–6.

5. How many times as far as Clare did Diego ride?

a Write a division expression to represent this situation.

b Determine the solution. Show your thinking.

6. What fraction of Diego's distance did Clare ride?

a Write a division expression to represent this situation.

b Determine the solution. Show your thinking.

7. Andre uses $1\frac{5}{6}$ lb of tomatoes for a batch of homemade spaghetti sauce. He has $9\frac{1}{2}$ lb of tomatoes from his garden. Does Andre have enough tomatoes to make 6 batches of spaghetti sauce? Explain your thinking.

8. Mai has worked $3\frac{3}{4}$ hours of her $7\frac{3}{4}$ hour shift. She says that she has worked more than half of her shift. Is Mai correct? Explain your thinking.

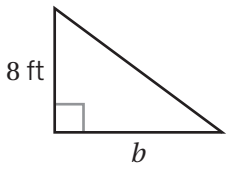
Name: ..... Date: ..... Period: .....

Additional Practice 4.13

1. A rectangular coffee table has a length of $46\frac{1}{2}$ in., a width of w in., and an area of $1{,}395$ in^2. Select *all* the equations that represent the relationship between the dimensions of the coffee table.

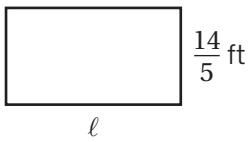
- ☐ **A.** $w \cdot 1{,}395 = 46\frac{1}{2}$
- ☐ **B.** $w \div 1{,}395 = 46\frac{1}{2}$
- ☐ **C.** $46\frac{1}{2} \cdot w = 1395$
- ☐ **D.** $46\frac{1}{2} \cdot 1{,}395 = w$
- ☐ **E.** $1{,}395 \div w = 46\frac{1}{2}$
- ☐ **F.** $1{,}395 \div 46\frac{1}{2} = w$

2. The triangle has a height of 8 ft and an area of 42 ft^2. Select *all* the equations that represent the relationship between the dimensions of the triangle.

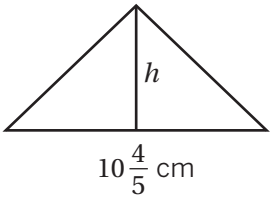


- ☐ **A.** $42 = \frac{1}{2} \cdot b \cdot 8$
- ☐ **B.** $42 \div w = \frac{1}{2} \cdot 8$
- ☐ **C.** $42 \div b = 8$
- ☐ **D.** $4 \cdot b = 42$
- ☐ **E.** $8 \cdot b = 42$
- ☐ **F.** $b \div 8 = 42$

3. The area of the rectangle is 28 ft^2. What is the length of the rectangle? Show your thinking.



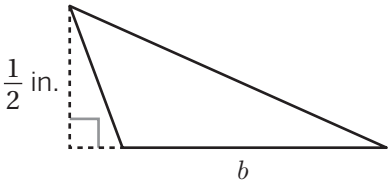
4. The area of the triangle is 27 cm^2. What is the missing height h? Show your thinking.



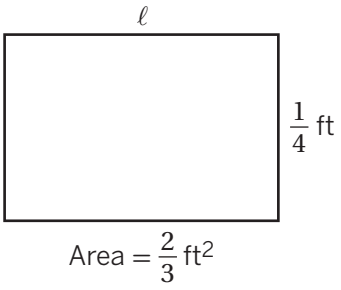
Name: Date: Period:

5. Han is tiling a shower wall that is 8 ft by 6 ft. The tiles are squares with a side length of $1\frac{1}{3}$ ft. How many tiles are needed to cover the entire shower wall? Show or explain your thinking.

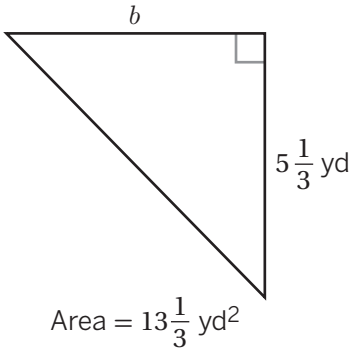
6. The area of the triangle is $\frac{2}{7}$ in^2. What is the missing length b? Show your thinking.



7. Lin said the missing length of the rectangle could be determined by solving the equation $\frac{2}{3} = \ell \cdot \frac{1}{4}$. Do you *agree* or *disagree*? If you agree, use Lin's equation to solve for l. If you disagree, write an equation that would solve for l and then solve your equation.



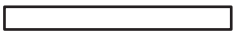
8. Bard said the missing length of the triangle could be determined by solving the equation $\frac{1}{2} \cdot b \cdot 13\frac{1}{3} = 5\frac{1}{3}$. Do you *agree* or *disagree*? If you agree, use Bard's equation to solve for b. If you disagree, write an equation that would solve for b and then solve your equation.



Name: ..... Date: ..... Period: .....

Additional Practice 5.02

Use this key for Problems 1–4.

0.1 tenth 

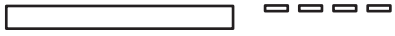
0.01 hundredth 

0.001 thousandth

0.0001 ten-thousandth

1. What number does each diagram represent?

a 

b 

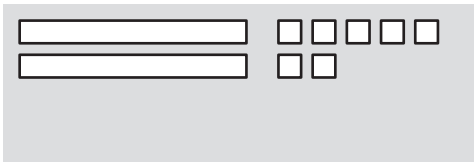
c 

2. Draw a diagram to represent each decimal number.

a 0.3005

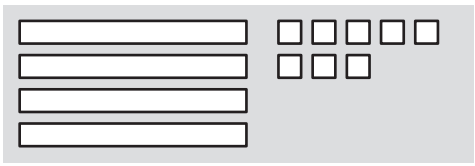
b 0.1502

3. Refer to this diagram.



a Write an addition equation that is represented by the diagram.

b Determine the sum.



4. Refer to this diagram.

a Write a subtraction equation that is represented by the diagram.

b Determine the difference.

5. Consider the expression $2.6 + 0.31$. Write a vertical calculation and determine the sum.

6. Consider the expression $5.972 - 2.87$. Write a vertical calculation and determine the difference.

7. Mai wrote a vertical calculation for the expression $8.75 + 3.1$. Her work is shown.

$$\begin{array}{r} 8.75 \\ +\ 3.01 \\ \hline 11.76 \end{array}$$

Did Mai correctly determine the sum? Explain your thinking.

8. Priya wrote a vertical calculation for the expression $0.91 - 0.8$. Her work is shown.

$$\begin{array}{r} 0.91 \\ -\ 0.8 \\ \hline 0.83 \end{array}$$

Did Priya correctly determine the difference? Explain your thinking.

Name: ..... Date: ..... Period: .....

Additional Practice 5.05

1. Select *all* expressions that are equivalent to $(0.5) \cdot (0.8)$.

- ☐ **A.** $5 \cdot (0.1) \cdot 8 \cdot (0.01)$
- ☐ **B.** $5 \cdot (0.01) \cdot 8 \cdot (0.1)$
- ☐ **C.** $5 \cdot (0.1) \cdot 8 \cdot (0.1)$
- ☐ **D.** $5 \cdot (0.01) \cdot 8 \cdot (0.01)$
- ☐ **E.** $5 \cdot \frac{1}{10} \cdot 8 \cdot \frac{1}{10}$
- ☐ **F.** $5 \cdot 8 \cdot \frac{1}{10} \cdot \frac{1}{10}$
- ☐ **G.** $5 \cdot 8 \cdot \frac{1}{10}$
- ☐ **H.** $\frac{5}{10} \cdot \frac{8}{10}$

2. Determine the product. Use your work from parts a–d to answer part e. Show your thinking.

a $15 \cdot (0.1)$

b $38 \cdot \frac{1}{10}$

c $3.1 \cdot 0.1$

d $1.84 \cdot \frac{1}{10}$

e What happens to the decimal point of the original number when you multiply it by $\frac{1}{10}$? Explain your thinking.

3. Determine the product. Show your thinking.

a $151 \cdot \frac{1}{100}$

b $8.3 \cdot (0.01)$

c $1.95 \cdot \frac{1}{100}$

d $9.436 \cdot (0.01)$

Name: Date: Period:

4. Which expressions have the same value as $(0.316) \cdot (0.9)$. Select *all* that apply.

- ☐ **A.** 0.02844
- ☐ **B.** $316 \cdot 9 \cdot (0.0001)$
- ☐ **C.** $316 \cdot \frac{1}{1{,}000} \cdot 9 \cdot \frac{1}{10}$
- ☐ **D.** $316 \cdot \frac{1}{1{,}000} \cdot 9 \cdot \frac{1}{100}$
- ☐ **E.** $316 \cdot 9 \cdot \frac{1}{1{,}0000}$

5. Calculate the value of each expression by first writing the decimal factors as fractions, and then writing their product as a decimal. Show your thinking.

a $(5.7) \cdot 3$

b $(0.8) \cdot (6.4)$

c $(0.1) \cdot (0.23)$

d $(0.48) \cdot (0.29)$

6. Calculate the value of each expression by first writing the decimal factors as fractions, and then writing their product as a decimal.
Show your thinking.

a $(1.6) \cdot (0.006)$

b $(0.007) \cdot (0.038)$

7. Noah calculated the value of the expression $(0.18) \cdot (0.09)$ by first writing the decimal factors as fractions, and then writing their product as a decimal. Noah's work is shown: $\frac{18}{100} \cdot \frac{9}{10} = \frac{162}{1000} = 0.162$. Is Noah correct? Explain your thinking.

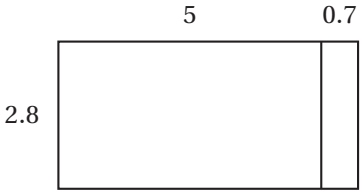
8. Tyler explains what happens to a decimal point of a number that is multiplied by 0.01. "When I multiply by the decimal 0.01, move the decimal point two places to the right because multiplying by $\frac{1}{100}$ is the same as dividing by 100." Is Tyler correct? Explain your thinking.

Name: ..... Date: ..... Period: .....

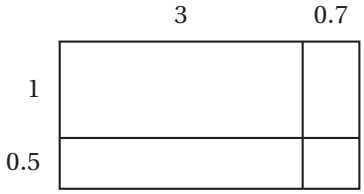
Additional Practice 5.07

1. Write a multiplication expression that represents each area diagram.

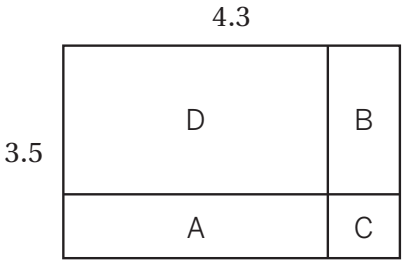
a



b



2. The rectangle has an area in square units and has been partitioned into four smaller rectangles. For each expression, write the name of the smaller rectangle whose area matches each expression. Then determine the area of each smaller rectangle.



a $(0.3) \cdot 3$

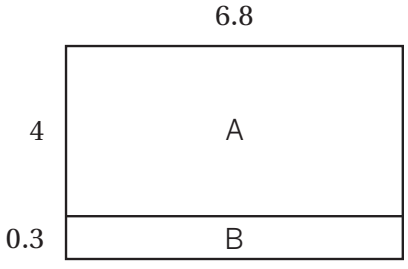
b $3 \cdot 4$

c $(0.3) \cdot (0.5)$

d $4 \cdot (0.5)$

e Determine the total area of the rectangle.

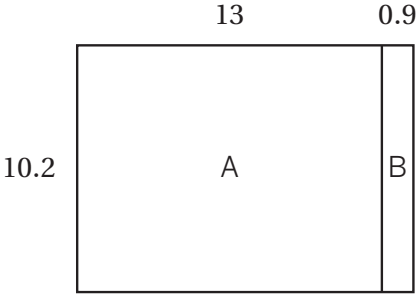
3. The area diagram represents $(6.8) \cdot (4.3)$.



a Determine the areas of Rectangles A and B.

b What is the area of the larger 6.8 by 4.3 rectangle?

4. The area diagram represents $(13.9) \cdot (10.2)$.



a Determine the areas of Rectangles A and B.

b What is the area of the larger 13.9 by 10.2 rectangle?

Name: Date: Period:

5. Consider the expression $(0.24) \cdot (0.13)$.

a Draw an area diagram to represent this expression.

b Use a vertical calculation to determine the product.

6. Consider the expression $(3.5) \cdot (1.1)$.

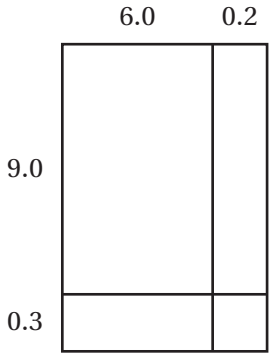
a Draw an area diagram to represent this expression.

b Use a vertical calculation to determine the product.

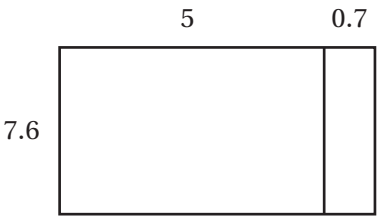
7. Tyler drew an area diagram to represent the expression $(6.2) \cdot (9.3)$.

a Tyler's teacher told him that there is another way he could use an area diagram to represent the same expression. Draw another area diagram that Tyler could use.

b Use a vertical calculation to determine the product.



8. Bard drew this area diagram to represent the expression $(5.7) \cdot (7.6)$, and claimed to be able to use it to determine the area of the rectangle. Kiran said Bard's area diagram is not correct because it only shows two partitioned rectangles, when instead it should show four partitioned rectangles. Who is correct? Explain your thinking.



Name: ..... Date: ..... Period: .....

Additional Practice 5.08

1. Evaluate each expression.

a $3 \cdot (0.5)$

b $(6.2) \cdot 3$

c $2 \cdot (16.3)$

d $(0.9) \cdot 5$

2. A pound of turkey lunch meat at the deli costs $\$7.49$ per pound. Lin wants to purchase 2.25 lb of turkey for the week. Determine how much Lin will pay, rounded to the nearest cent. Show your thinking.

3. Use vertical calculations to determine each product. Show your thinking.

a $(3.4) \cdot (7.6)$

b $(1.2) \cdot (9.9)$

4. Use vertical calculations to determine each product. Show your thinking.

a $(0.54) \cdot (0.8)$

b $(8.79) \cdot (6.04)$

5. Which weighs more and by how much: A dog that weighs 5.4 kg or a cat that weighs 10.25 lb? Use the conversion 1 kg $= 2.2$ lb. Show your thinking.

6. A pound of strawberries costs $\$4.29$ and a pound of bananas costs $\$0.69$. What is the combined cost of 1.5 lb of strawberries and 0.8 lb of bananas? Round your answer to the nearest cent. Show your thinking.

7. Four polygons with their dimensions are given.

- A parallelogram with a base of 6.437 cm and a height of 5.5 cm.
- A square with side lengths of 5.91 cm.
- A triangle with a base of 17.8 cm and a height of 4.3 cm.
- A rectangle that is 14.25 cm wide and 2.5 cm long.

Noah says that the square has the greatest area. Is Noah correct? Explain your thinking.

8. There are 2.75 g of sugar in 1 oz of applesauce. Shawn says this means that there are 165 g of sugar in 6 oz of applesauce. Do you agree or disagree with Shawn? Explain your thinking.

Name: ..... Date: ..... Period: .....

Additional Practice 5.10

1. Use long division to match each fraction and decimal.

Fraction	Decimal
a. $\frac{1}{4}$	..... 0.8
b. $\frac{4}{5}$	..... 0.3
c. $\frac{3}{10}$	..... 0.5
d. $\frac{4}{8}$	..... 0.25

2. Use long division to show that the fraction and decimal in each pair are equal.

a $\frac{7}{10}$ and 0.7 **b** $\frac{9}{50}$ and 0.18 **c** $\frac{12}{25}$ and 0.48

3. Use long division to determine each quotient. Write your answer as a decimal.

a $26 \div 5$

b $75 \div 8$

c $79 \div 4$

4. Use long division to determine each quotient. Write your answer as a decimal.

a $324 \div 5$

b $509 \div 8$

c $951 \div 6$

5. Use long division to determine each quotient. Write your answer as a decimal.

a $240 \div 32$

b $1{,}650 \div 16$

c $8{,}415 \div 20$

6. Complete the table by using long division to determine the salinity of the water sources. Show your thinking and express any remainders as decimals.

Water source	Salt (g)	Water (liters)	Salinity (g/l)
Indian Ocean	1,235	38	
Pacific Ocean	1,352	40	
Arctic Ocean	658	20	

7. Mai reasoned, "$\frac{22}{25}$ is equivalent to $\frac{44}{50}$ and to $\frac{88}{100}$, so the decimal of $\frac{22}{25}$ is 0.88."

a Use long division to show that Mai is correct.

b Use long division to determine whether the decimal of $\frac{44}{50}$ is also 0.88.

8. Noah calculated $1{,}124 \div 20$. Priya said he made a mistake using long division. Is Priya correct? Explain your thinking.

Noah's work:

$$
\begin{array}{r}
5.62 \\
20\overline{)1124.00} \\
-\ 100 \\
\hline
124 \\
-\ 120 \\
\hline
40 \\
-\ 40 \\
\hline
0
\end{array}
$$

Name: ..... Date: ..... Period: .....

Additional Practice 5.11

1. Without evaluating, which expression(s) have the same value as $35 \div 10$? Select *all* that apply.

- ☐ **A.** $0.35 \div 10$
- ☐ **B.** $3.5 \div 1$
- ☐ **C.** $350 \div 100$
- ☐ **D.** $350 \div 1{,}000$
- ☐ **E.** $3{,}500 \div 100$

2. Without evaluating, which expression(s) have the same value as $2{,}100 \div 30$? Select *all* that apply.

- ☐ **A.** $210 \div 0.3$
- ☐ **B.** $21 \div 3$
- ☐ **C.** $2.1 \div 0.03$
- ☐ **D.** $21 \div 0.3$
- ☐ **E.** $210 \div 3$

3. Evaluate the expression $\left(5{,}607 \cdot \frac{1}{10}\right) \div 5$. Show your thinking.

4. Evaluate the expression $\left(42{,}959 \cdot \frac{1}{10}\right) \div 7$. Show your thinking.

5. Use long division to determine each quotient. Show your thinking.

a $15.4 \div 28$

b $6.86 \div 2$

c $529 \div 0.5$

6. Consider the expression $84 \div 1.5$.

a Use what you know about related expressions to write a new division expression with a whole number divisor. Explain your thinking.

b Evaluate the expression you wrote for part a. Show your thinking.

7. Tyler paid $\$37.36$ for four 1-lb containers of protein powder. How much is each container of protein powder? Show your thinking.

8. Lin used long division to determine the quotient of $42 \div 1.4$. Her work is shown. Is Lin *correct* or *incorrect*? If she is correct, write a related expression Lin could use to divide. If Lin is incorrect, explain her error and determine the correct quotient.

$$\begin{array}{r} 0.3 \\ 1.4\overline{)4\,2} \\ -\,4\,2 \\ \hline 0 \end{array}$$

Name: ..... Date: ..... Period: .....

Additional Practice 5.12

1. Without evaluating, which expression(s) have the same value as $54.4 \div 1.7$? Select *all* that apply.

- ☐ **A.** $544 \div 17$
- ☐ **B.** $540 \div 17$
- ☐ **C.** $5{,}440 \div 170$
- ☐ **D.** $544 \div 0.17$
- ☐ **E.** $5.44 \div 0.17$

2. Consider the expression $0.0063 \div 0.009$.

a Write two different division expressions that have the same quotient as $0.0063 \div 0.009$.

b Evaluate $0.0063 \div 0.009$. Show your thinking.

3. Bard said, "To determine the value of $5.064 \div 8$, I can divide $5{,}064$ by 80."

a Do you agree with Bard? Explain your thinking.

b Calculate the quotient of $5.064 \div 8$. Show your thinking.

4. Clare said, "To determine the value of $730.2 \div 0.6$, I can divide $7{,}302$ by 6.

a Do you agree with Clare? Explain your thinking.

b Calculate the quotient of $730.2 \div 0.6$.

5. A bag of quarters weighs 8.5 kg. Each quarter weighs 5.67 g. Which is the best estimate for the number of quarters in the bag? Show your thinking.

- **A.** $15{,}000$
- **B.** $1{,}500$
- **C.** 150
- **D.** 15

6. Different brands of water bottles containing 16.9 oz are sold in different quantities for different prices at a local grocery store. Complete the table to determine the unit cost for each brand.

Brand	Price ($)	Quantity	Unit cost ($)
Purely Water	4.40	40	
Spring Water	4.80	32	
Mountain Water	3.12	12	

7. Evaluate each expression. Show your thinking.

a $11.9 \div 1.7$

b $0.036 \div 0.02$

8. Diego says, "To determine the value of $180 \div 1.2$, I can divide $18{,}000$ by 120." Mai says, "To determine the value of $180 \div 1.2$, I can divide $1{,}800$ by 12. "

a Who is correct? Explain your thinking.

b Calculate the quotient of $180 \div 1.2$. Show your thinking.

Name: ..... Date: ..... Period: .....

Additional Practice 5.16

1. Circle the expression that has a greater value.

9% of 180 1.8% of 90 They have the same value.

Problems 2–5. Alicia sells art prints on her online shop. Every week, she sells $\$550$ of art prints. She tries to spend no more than 6% of her weekly art print sales on art supplies.

2. Write an expression to represent how much money Alicia spends on art supplies every week.

3. How much money, at most, does Alicia spend on art supplies each week?

4. Alicia puts 11% of her weekly art print sales into a savings account for an upcoming art fair. How much money does Alicia save each week?

5. Alicia recently had to spend $\$99.00$ to renew her website hosting platform. What percent of her weekly art print sales did she spend on website maintenance?

A. 0.18%

B. 9%

C. 18%

D. 90%

Problems 6–7. Capri is remodeling their kitchen. They went to the hardware store and purchased these items.

Items	Cost ($)
Hammer	13.57
Wood	27.25
Nails	5.25
Screwdriver	9.50
Paint	12.66
Paintbrush	4.80
Floor tiles	35.97
Total	**109.00**

6. Floor tiles are the most expensive item. What percent of the total cost are the floor tiles?

A. 30%

B. 31%

C. 32%

D. 33%

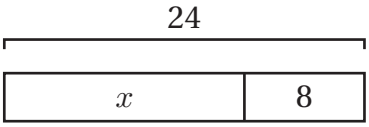
7. What percentage of the total hardware store bill is wood? Show or explain your thinking.

Name: ..... Date: ..... Period: .....

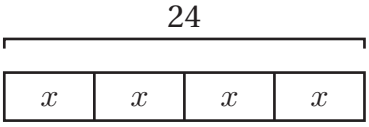
Additional Practice 6.01

1. Determine the value of x in each tape diagram.

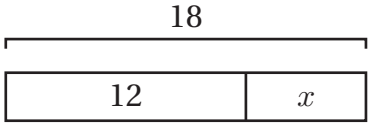
a



b

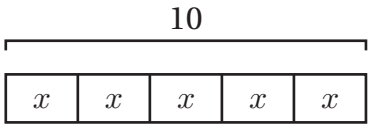


2. Which equations could represent the tape diagram? Select *all* that apply.



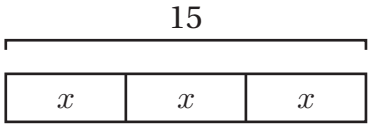
- ☐ **A.** $12 - x = 18$
- ☐ **B.** $12 + x = 18$
- ☐ **C.** $12 = 18 + x$
- ☐ **D.** $x = 18 + 12$
- ☐ **E.** $18 - x = 12$

3. Which equations could represent the tape diagram? Select *all* that apply.



- ☐ **A.** $x + x + x + x + x = 10$
- ☐ **B.** $x = 10 \div 5$
- ☐ **C.** $5 \div 10 = x$
- ☐ **D.** $5 \cdot x = 10$
- ☐ **E.** $10 + 10 + 10 + 10 + 10 = x$
- ☐ **F.** $10 = x \cdot 5$

4. Consider the tape diagram shown.



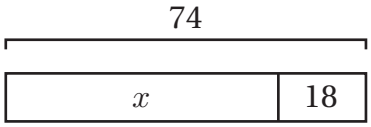
a Write an addition equation that represents the tape diagram.

b Write a multiplication equation that represents the tape diagram.

c Write a division equation that represents the tape diagram.

Name: ..... Date: ..... Period: .....

5. Consider the tape diagram shown

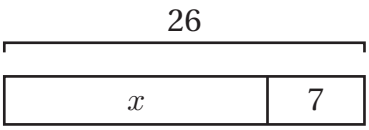


a Write an addition equation that represents the tape diagram.

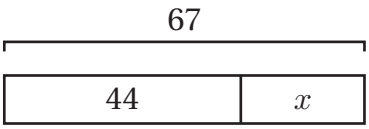
b Write a subtraction equation that represents the tape diagram.

6. Determine the value of x in each tape diagram.

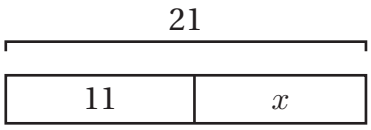
a



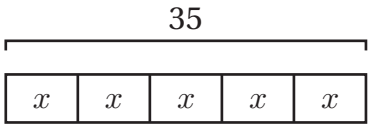
b



7. Consider the tape diagram shown. How does the diagram show that $x + 11$ has the same value as 21?



8. Consider the tape diagram shown. Diego says there are many equations that represents this tape diagram, such as $x + x + x + x + x = 35$. Is Diego correct? Explain your thinking.

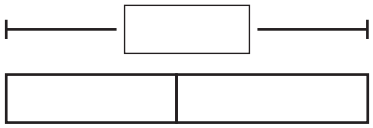


Name: ..... Date: ..... Period: .....

Additional Practice 6.02

Problems 1–4: Willow and her friend made 34 ounces of hot chocolate. Willow drank 16 ounces of the hot chocolate. There are x ounces of hot chocolate left.

1. Draw a tape diagram to represent the situation.



2. Select *all* the equations that could represent this situation.

- ☐ **A.** $34 + 16 = x$
- ☐ **B.** $34 - 16 = x$
- ☐ **C.** $16x = 34$
- ☐ **D.** $x + 16 = 34$
- ☐ **E.** $34 \div 16 = x$

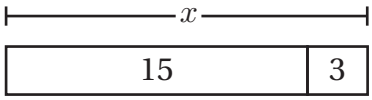
3. Determine the solution to one of the equations you selected in Problem 2.

4. Explain the solution's meaning in this situation.

Name: ..... Date: ..... Period: .....

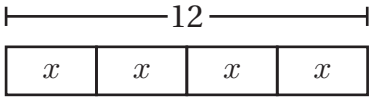
5. Match each equation to the tape diagram that represents it.

a



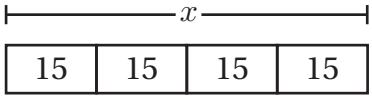
..... $18 - 3 = x$

b



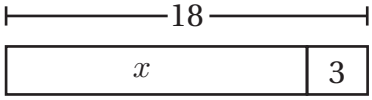
..... $15 + 3 = x$

c



..... $x \div 4 = 15$

d

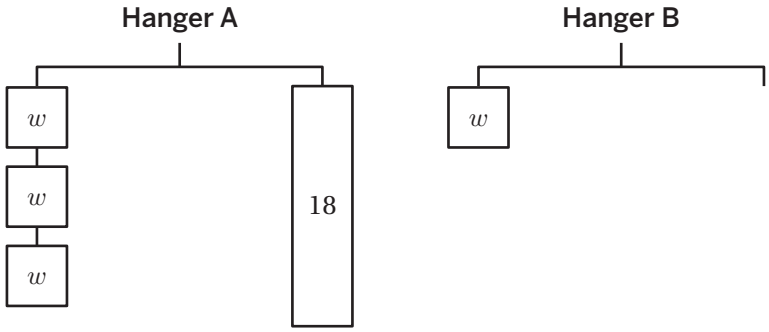


..... $4x = 12$

Name: ..... Date: ..... Period: .....

Additional Practice 6.03

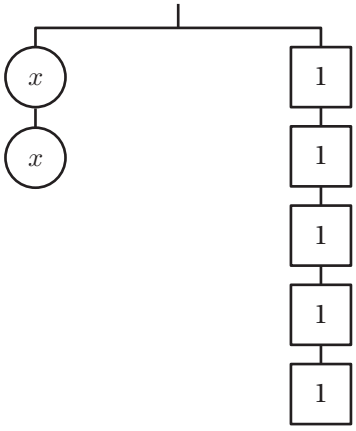
Refer to Hangers A and B to complete Problems 1 and 2.



1. Hanger A is balanced. Write an equation that represents Hanger A.

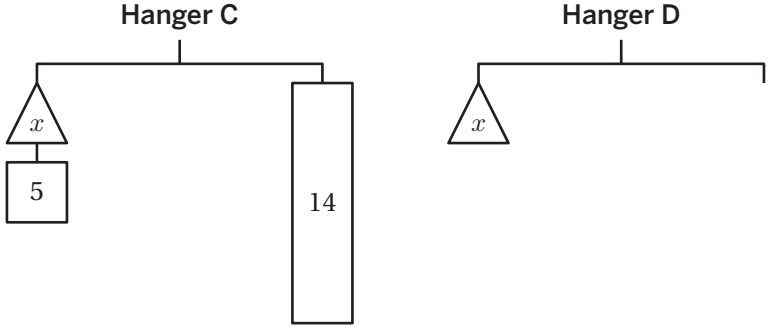
2. Balance Hanger B by completing the right side of the hanger. Then write an equation to represent the balanced hanger.

3. Which equations match the hanger diagram? Select *all* that apply.



- ☐ **A.** $2x = 1 + 1 + 1 + 1 + 1$
- ☐ **B.** $x + x = 1$
- ☐ **C.** $x + 3 = 5$
- ☐ **D.** $x + x = 5$
- ☐ **E.** $2x = 5$

4. Refer to Hangers C and D.



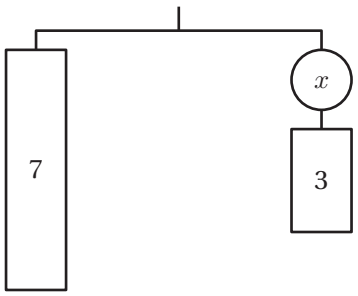
a Hanger C is balanced. Write an equation that represents Hanger C.

b Balance Hanger D by completing the right side of the hanger. Then write an equation to represent the balanced hanger.

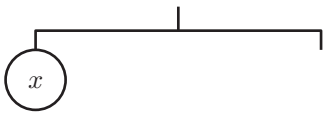
Name: Date: Period:

Hangers E and G are balanced. Refer to Hangers E, F, G, and H as you complete Problems 5–7.

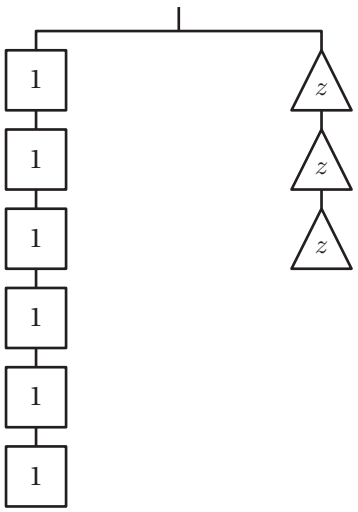
Hanger E



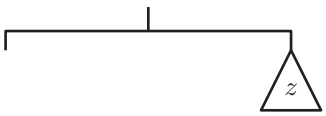
Hanger F



Hanger G



Hanger H



5. Write equations that represent Hangers E and G.

Hanger E: **Hanger G:**

6. Balance Hangers F and H by completing the empty sides of the hangers. Then write equations that represent Hanger F and Hanger H.

Hanger F: **Hanger H:**

7. Shawn wants to create a balance hanger by using only x and z. Write an equation that Shawn could use. Explain your thinking.

Name: ..... Date: ..... Period: .....

Additional Practice 6.04

1. Write whether each equation is *true* or *false*.

a $11 + 17 = 14 + 14$

b $4 \cdot 6 = 25$

c $4\frac{1}{3} - 1\frac{2}{3} = 2\frac{1}{3}$

d $6 = 36 \div 6$

2. Match each equation with its solution.

Equation	Solution
a $6.8 - e = 0.8$	..... $\frac{8}{3}$
b $2a = 6.8$	..... 13.6
c $\frac{3}{8} \cdot f = 1$	..... $1\frac{3}{8}$
d $c \div 2 = 6.8$	 6
e $g \div \frac{3}{8} = 1$	..... 4.8
f $b + 2 = 6.8$	..... $\frac{3}{8}$
g $d + \frac{5}{8} = 2$	..... 3.4

3. A bottle of ketchup had 44 oz in it. After a family used k ounces, 18 oz was left.

a Write an equation to represent this scenario.

b If you substitute 24 or 26 as the value for k, does either value make the equation true? Explain your thinking.

4. Clare split 144 beads among x friends. Each friend received 18 beads.

a Write an equation to represent this scenario.

b If you substitute 7 or 8 as the value for x, does either value make the equation true? Explain your thinking.

5. A group of five friends earn a total of $\$50$ raking leaves in their neighborhood. Each friend earns the same amount of money, x dollars. Which equation represents this scenario?

A. $5 + 50 = x$

B. $5 \cdot 50 = x$

C. $5 \cdot x = 50$

D. $x - 5 = 50$

6. A soccer team played 18 games in their season. The team won x games and lost 4 games. Select *all* the equations that represent this scenario.

☐ **A.** $18 = x - 4$

☐ **B.** $4 + x = 18$

☐ **C.** $x = 18 - 4$

☐ **D.** $18 - x = 4$

☐ **E.** $4 = 18 + x$

7. Is $x = 24$ a solution to the equation $\frac{3}{4}x = 18$? Explain your thinking.

8. Noah says that $x = 7.5$ is a solution to the equation $x + 6.1 = 13.4$. Is Noah correct? Explain your thinking.

Name: ..... Date: ..... Period: .....

Additional Practice 6.05

Problems 1–3: Izzy reads 2.5 books each month. After x months, Izzy has read 12.5 books.

1. Write an equation that could represent this situation.

2. Describe the meaning of the x in the situation.

3. How many months did it take for Izzy to read 12.5 books?

Problems 4–5: Here is an equation:

$$y + 3 = 27$$

4. Write a situation that the equation could represent.

5. Describe the meaning of the y in your situation.

6. Arti buys 7 lemons to make a lemon custard pie. When he makes the pie, he finds that each lemon has 6 seeds. Select *all* the equations that represent the total number of lemon seeds, s.

- ☐ **A.** $s = 6 \div 7$
- ☐ **B.** $7s = 6$
- ☐ **C.** $7 + 60 = s$
- ☐ **D.** $s = 7 \cdot 6$
- ☐ **E.** $s \div 7 = 6$

7. Eloise bought a w-pound bag of bird seed at the store. Each week, Eloise puts 0.25 pounds of seeds in her bird feeder. The bag of bird seed lasted 14 weeks. Select *all* the equations that represents the total weight of the bird seed bag, w.

- ☐ **A.** $w = 0.25 \cdot 14$
- ☐ **B.** $w \div 14 = 0.25$
- ☐ **C.** $14 + 0.25 = w$
- ☐ **D.** $14 \div 0.25 = w$
- ☐ **E.** $14w = 0.25$

Problems 8–10: Willow has $\$85$ to spend on paint at an art supply shop. It costs $\$4.25$ per tube of paint. Willow can buy p tubes of paint.

8. Write an equation for the situation.

9. Solve the equation for p.

10. Describe the solutions' meaning.

Name: Date: Period:

Additional Practice 6.06

1. Diego has 21 sheets of paper in his notebook and s sheets have Diego's written class notes. In this scenario, what does the expression $21 - s$ represent?

Problems 2–3: The variable p represents the number of plants in a greenhouse.

2. What does $p + 3$ represent?

3. What does $\frac{1}{3}p$ represent?

4. Kiara wants to make homemade bread for her family and friends. She needs flour and water for a bread recipe. The directions state that the amount of flour should be 6 cups more than the amount of water. Complete the table to show how much water is needed for different amounts of flour.

Flour (cups)	Water (cups)
10	
14	
17	
x	

Problems 5–7: Strawberries cost $\$4.50$ per pound. How much would it cost to buy:

5. 3 pounds of strawberries?

6. 7 pounds of strawberries?

7. x pounds of strawberries?

Problems 8–10: Evaluate the expression $2d + 3$ for each value of d. Use the example provided in the table as a guide.

d	$2d + 3$	Value of d
6	$2(6) + 3$	15

8. $d = 7$

9. $d = 0.6$

10. $d = \frac{1}{2}$

Name: ..... Date: ..... Period: .....

Additional Practice 6.07

Problems 1–3: Here are six expressions.

$3(x + 2)$ $3 + 6x$ $x + x + x + 6$

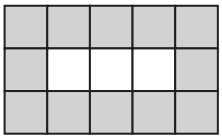
$(3x + 2) + (3x + 2)$ $x + 3$ $(2x + 3) + (x + 3)$

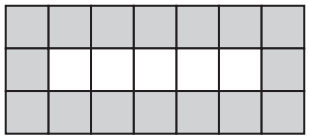
1. Write all of the expressions that are equivalent to $3x + 6$.

2. Create another expression that is equivalent to $3x + 6$.

3. Choose an expression that is not equivalent to $3x + 6$. Explain how you know it is not equivalent.

Problems 4–6: Here are examples of a t-by-1 rectangle.





4. How many border tiles are there in the 3-by-1 rectangle?

5. How many border tiles are in the 5-by-1 rectangle?

6. Tristan wants to create an expression to represent the number of border tiles of a t-by-1 rectangle. Which expression is correct?

A. $t + 6$

B. $2t + 6$

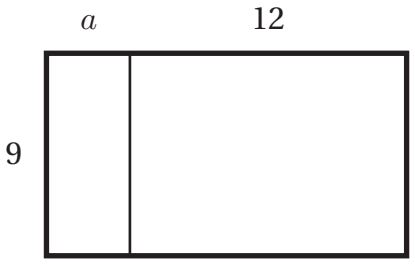
C. $t + 3$

D. $2t + 3$

Name: ..... Date: ..... Period: .....

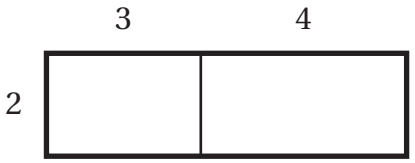
Additional Practice 6.08

1. Select *all* the expressions that represent the area of the largest, outlined rectangle.



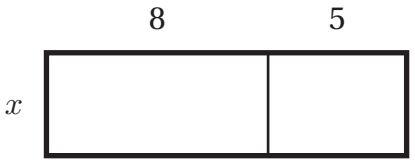
- ☐ **A.** $9a + 108$
- ☐ **B.** $12(a + 9)$
- ☐ **C.** $9 \cdot 12 + 12a$
- ☐ **D.** $9(a + 12)$
- ☐ **E.** $9a + 9 \cdot 12$

2. Select *all* the expressions that represent the area of the largest, outlined rectangle.



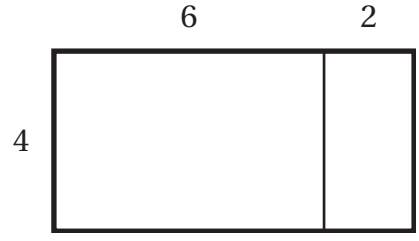
- ☐ **A.** $4 \cdot 2 + 4 \cdot 3$
- ☐ **B.** $2 \cdot 3 + 2 \cdot 4$
- ☐ **C.** $2 \cdot 3 + 4$
- ☐ **D.** $2(4 + 3)$
- ☐ **E.** $3(2 + 4)$

3. Select *all* the expressions that represent the area of the largest, outlined rectangle.



- ☐ **A.** $5x + 8x$
- ☐ **B.** $8x + 40$
- ☐ **C.** $x(5 + 8)$
- ☐ **D.** $5x + 40$
- ☐ **E.** $13x$

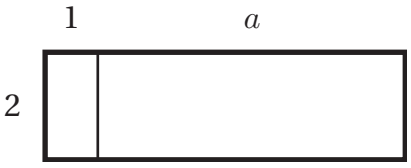
4. Select *all* the expressions that represent the area of the largest, outlined rectangle.



- ☐ **A.** $4 + (6 \cdot 2)$
- ☐ **B.** $4(6) + 4(2)$
- ☐ **C.** $24 + 2 \cdot 4$
- ☐ **D.** $4(2) \cdot 4(6)$
- ☐ **E.** $4(2 + 6)$

Name: ..... Date: ..... Period: .....

5. Refer to the partitioned rectangle shown.



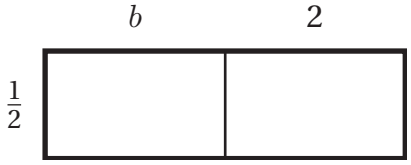
a Write an expression that represents the length of the largest, outlined rectangle.

b Write an expression that represents the width of the largest, outlined rectangle.

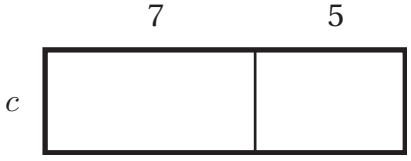
c Write an expression that represents the area of the largest, outlined rectangle as a product of the width and the length.

d Write an expression that represents the area of the largest, outlined rectangle as the sum of the areas of the smaller rectangles.

6. Refer to the partitioned rectangle shown. Bard writes the expression $\frac{1}{2}(b + 2)$ to represent the area of the largest, outlined rectangle. Write another expression that Bard could use to represent the same area.



7. Refer to the partitioned rectangle shown.



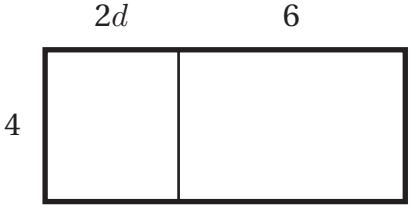
a Write an expression that represents the length of the largest, outlined rectangle.

b Write an expression that represents the width of the largest, outlined rectangle.

c Write an expression that represents the area of the largest, outlined rectangle as a product of the width and the length.

d Write an expression that represents the area of the largest, outlined rectangle as the sum of the areas of the smaller rectangles.

8. Refer to the partitioned rectangle shown. Write *two* different expressions that each represent the total area of the largest, outlined rectangle.



Name: ..... Date: ..... Period: .....

Additional Practice 6.09

1. For each expression, use the Distributive Property to write an equivalent expression.

a $3(x - 4)$

b $(5 - 7) \cdot x$

c $6x + 9$

d $8x + 12y - 4z$

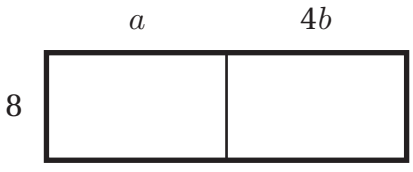
2. Select *all* the expressions that are equivalent to the expression $12x + 24$.

- ☐ **A.** $2(6x + 12)$
- ☐ **B.** $4(4x + 6)$
- ☐ **C.** $6(2x + 4)$
- ☐ **D.** $12(x + 2)$
- ☐ **E.** $24(2x + 1)$

3. Select *all* the expressions that are equivalent to the expression $14a - 28b + 42c$.

- ☐ **A.** $14(a - 2b + 3c)$
- ☐ **B.** $7(2a - 4b + 6c)$
- ☐ **C.** $2(14a - 14b + 21c)$
- ☐ **D.** $14(a - 2b + 6c)$
- ☐ **E.** $7(2a - 4b + 7c)$
- ☐ **F.** $2(7a - 14b + 21c)$

4. Priya writes the area of the partitioned rectangle as the expression $8a + 32b$. Tyler writes the area of the partitioned rectangle as the expression $4(2a + 8b)$.



a Who is correct? Explain your thinking.

b Write two more equivalent expressions that represent the area of the partitioned rectangle.

Name: Date: Period:

5. For each expression, use the Distributive Property to write an equivalent expression.

a $\frac{1}{2}(x + 8)$

b $3x(4 - 5)$

c $4xy + 8x$

6. Use the Distributive Property to write *two* expressions that are equivalent to each expression.

a $10x - 30$

b $8(x - 2)$

c $30x + 15y$

7. Select *all* the expressions that are equivalent to the expression $3(8x + 6)$.

- ☐ **A.** $2(8x + 9)$
- ☐ **B.** $6(4x + 3)$
- ☐ **C.** $6 + 24x$
- ☐ **D.** $11x + 18$
- ☐ **E.** $24x + 18$

8. Clare rewrites the expression $12bc + 8bd$ *as* $b(12c + 8d)$.
Andre rewrites the expression $12bc + 8bd$ *as* $4(3bc + 2bd)$.

a Are Clare and Andre's expressions both equivalent to the expression $12bc + 8bd$? Explain your thinking.

b Write an additional equivalent expression to the expression $12bc + 8bd$.

Name: ..... Date: ..... Period: .....

Additional Practice 6.10

1. Rewrite each expression using exponents.

a $9 \cdot 9 \cdot 9$

b $\frac{1}{2} \cdot \frac{1}{2}$

c $2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2$

2. Evaluate each expression.

a 4^2

b 2^8

c $\left(\frac{1}{3}\right)^2$

3. Which expression is equivalent to 8^2?

A. 6

B. 16

C. 32

D. 64

4. Using what you know about the properties of operations, rewrite each expression using a different operation. Do not evaluate.

a 3^3

b 5^4

c 7^5

5. Select *all* the expressions that are equivalent to the expression 5^4.

- ☐ **A.** 20^2
- ☐ **B.** $5 + 5 + 5 + 5$
- ☐ **C.** 4^5
- ☐ **D.** 625
- ☐ **E.** $5 \cdot 5^3$
- ☐ **F.** 25^2

6. The expression 3^5 is equal to 243. Use this to evaluate each of the following expressions. Show your thinking.

a 3^6

b $3^3 \cdot 3^2$

c 3^4

7. The expression 6^4 is equal to $1{,}296$. Use this to evaluate each of the following expressions. Show your thinking.

a 6^3

b $\frac{6^4}{6^2}$

c $6^2 \cdot 6^2$

8. The population of New York is about 8.4 million. Is this number closer to 10^6 or 10^7? Explain your thinking.

Name: ..... Date: ..... Period: .....

Additional Practice 6.11

1. Evaluate each expression.

a $12 + 3^2$

b $6^2 \cdot 5$

c $35 - 4^2$

d $100 - 7^2$

e $5^2 \div 5$

f $15 \cdot \left(\frac{1}{3}\right)^2$

2. Evaluate each expression.

a $10^3 - 8^2$

b $16 - 10^1$

c $20 + 2^4$

d $3^3 \cdot 5$

e $4 \cdot \left(\frac{1}{2}\right)^2$

f $\left(\frac{1}{6} \cdot 6\right)^6$

3. Determine whether the two expressions in each row are equivalent. Write *equivalent* or *not equivalent*.

Column A	Column B	*Equivalent* or *not equivalent*?
$8^2 + 10$	$10 + 2^6$	
$4^2 + 2^2$	$45 - 5^2$	
$(3 \cdot 4)^2$	$3^2 + 4^2$	
$9^3 + 9^2$	$3^4 \cdot 10$	
$25^2 + 400$	$10^3 - 25$	
$6 \cdot 4^1$	$12 \cdot 2^2$	

4. Kiran says, "I took the number 9 and then multiplied it by the cube of 4." Select *all* the expressions that have the same value as Kiran's result.

- ☐ **A.** $9 \cdot 4^3$
- ☐ **B.** $(9 \cdot 4)^3$
- ☐ **C.** $9 \cdot 3^4$
- ☐ **D.** $9^3 \cdot 4$
- ☐ **E.** 36^3
- ☐ **F.** 576

5. Tyler says, "I added 6 and 7 and then squared the result." Select *all* the expressions that have the same value as Tyler's result.

- ☐ **A.** $6^2 + 7^2$
- ☐ **B.** 13^2
- ☐ **C.** $(6 + 7)^2$
- ☐ **D.** $6^2 + 7$
- ☐ **E.** $6 + 7^2$
- ☐ **F.** 85
- ☐ **G.** 169

6. Shawn says, "I added 50 to the fifth power of 3." Select *all* the expressions that have the same value as Shawn's result.

- ☐ **A.** $3 + (2 \cdot 5) + 50$
- ☐ **B.** $3 + 3^5 + 50$
- ☐ **C.** $3^5 \cdot 50$
- ☐ **D.** $3^5 + 50$
- ☐ **E.** 243
- ☐ **F.** 293

7. Lin says the equation $(9 + 3)^2 = 9^2 + 3^2$ is true because the expressions on both sides of the equal sign are equivalent because they both equal 90. Do you agree or disagree? Explain your thinking.

Name: ..... Date: ..... Period: .....

Additional Practice 6.12

1. Match each equation with its solution.

	Equation	Solution
a	$5^4 \cdot 5 = 5^x$	..... $\frac{1}{4}$
b	$x^3 - 4 = 60$	 6
c	$\frac{4^3}{4^x} = 16$	 4
d	$\frac{25}{9} = x^2$	..... $\frac{3}{7}$
e	$\left(\frac{1}{2}\right)^2 = x$	 2
f	$39 - x^2 = 3$	 5
g	$2^6 \cdot 2^x = 2^8$	..... $\frac{5}{3}$
h	$\frac{9}{49} = x^2$	 1

2. Determine whether each pair of expressions have the same value. Write *yes* or *no*. If they do not have the same value, determine which expression has the greater value.

a 3^4 and 4^3

b $5 \cdot 5^3$ and 25^2

c 9^1 and 1^9

d $\left(\frac{1}{4}\right)^2$ and $\left(\frac{1}{2}\right)^3$

3. Kiran says the equation $10^3 \cdot 10^2 = 10^{10}/10^5$ is true because the expressions on both sides of the equal sign are equivalent. Do you agree or disagree? Explain your thinking.

4. Which value is the solution to the equation $625 = 5^x$?

A. 3 **B.** 4 **C.** 5 **D.** 6

5. Decide whether each pair of expressions have the same value. Write *yes* or *no*. If they do not have the same value, determine which expression has the greater value.

a $\left(\frac{3}{5}\right)^3$ or $\frac{3}{5^3}$

b $2 \cdot 2^3$ or $4^3 - 6^2$

c $4 \cdot 5^2$ or $4^2 \cdot 5$

d $7^2 - 9$ or $2^5 + 9$

6. Evaluate each expression for the given value of each variable.

a 0.3^x, when x is 3

b $x^2 + 6$, when x is 4

c $2x^2 + 3y$, when x is 5 and y is 6

d $8y + x^2$, when x is 4 and y is 7

7. Clare evaluated the expression $6x^2 - 12$ when x is 2. She says the value of the expression is $1{,}716$. Is Clare correct? Explain your thinking.

Name: ..... Date: ..... Period: .....

Additional Practice 6.13

For Problems 1–4, use the following information. A florist uses daisies and gardenias for a wedding. The florist currently has 500 daisies and 200 gardenias.

1. Assuming the ratio of daisies to gardenias is always the same, complete the table.

Daisies, d	Gardenias, g	Total flowers, t
5		
	16	
		140
250		
	200	
		1,225

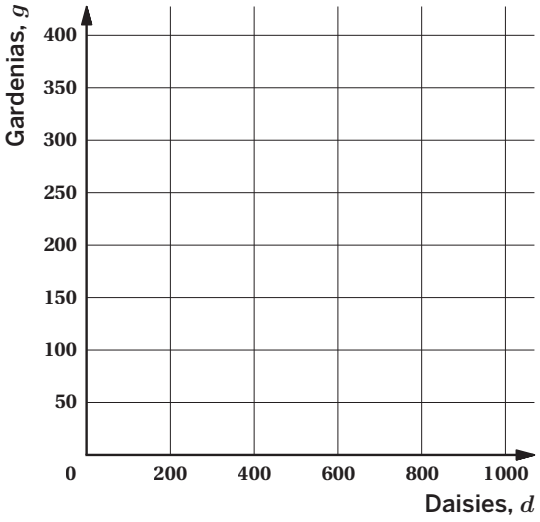
2. Refer to the table.

a Write a fraction that represents the ratio of daisies to the total number of flowers.

b Write an equation that represents the relationship between the number of daisies d as the dependent variable and the total number of flowers t as the independent variable.

c Write an equation that gives the number of daises d if you know the number of gardenias g.

3. Use the points in the table to create a graph that shows the relationship between d and g.



4. Shawn says the equation $g = \frac{5}{2} \cdot d$ will always describe the relationship between d and g, where d is the independent variable. Do you agree or disagree? Explain your thinking.

Name: ..... Date: ..... Period: .....

For Problems 5–8, use the following information. A thrift store is having a 25% off sale.

5. Complete the table to show how much you would pay for items during the sale.

Original price, p ($)	1	2	3	5	8	10	12	15
Sale price, s ($)								

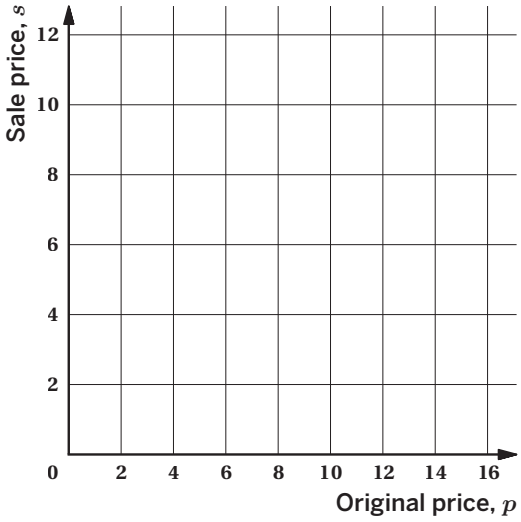
6. Refer to the table.

a What percent of the original price of an item would you pay during the sale?

b Write an equation that relates the sale price s to the original price p.

7. Use the points in the table to create a graph that shows the relationship between p and s.

8. Lin says the variable p is the dependent value because it is used to calculate the value of s. Do you agree or disagree with Lin? Explain your thinking.



Name: ..... Date: ..... Period: .....

Additional Practice 6.14

Han, Elena, and Clare are training for a bike race, and they bike at a constant speed. Use this information for Problems 1–4.

1. Complete the table with the distances biked for certain amounts of time.

Time (hours), t	Han's distance (miles), h	Elena's distance (miles), e	Clare's distance (miles), c
0.25		2.5	
0.5	6		
2			30
3	36	30	45
4			

2. Refer to the table.

a How fast does each person ride, in miles per hour?

Han: **Elena:** **Clare:**

b How long does it take each person to ride one mile?

Han: **Elena:** **Clare:**

3. Write three equations that represent the distance d traveled, in miles, given the time t, in hours.

Han: **Elena:** **Clare:**

4. For your equations for Problem 3, which is the dependent variable and which is the independent variable? Explain your thinking.

Name: ..... Date: ..... Period: .....

Suppose Bard reads 35 pages in an hour. Use this information for Problems 5–8.

5. Assuming Bard reads at a constant rate, complete the table.

Time (hours), t	2	3.2	t			
Pages, p				140	56	p

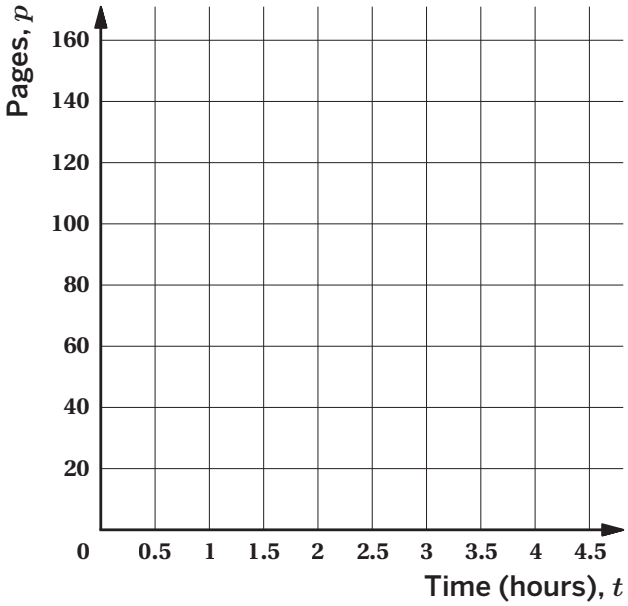
6. Refer to the table.

a Write an equation that relates the number of pages read p to the time t, in hours.

b Identify the independent and dependent variables in your equation.

7. Use the points in the table to create a graph that shows the relationship between time t and the number of pages p Bard reads.

8. Write an equation that Bard can use to determine the time t it will take to read 91 pages.



Name: ..... Date: ..... Period: .....

Additional Practice 6.15

1. Maria is making lemonade for a picnic with friends. The equation $w = l + 6$ represents the relationship between the amount of lemonade concentrate (in cups), l, and water (in cups), w. Which table represents the same relationship?

A.

l	w
8	2
10	4
12	6

B.

l	w
2	8
4	10
6	12

C.

l	w
10	4
8	2
6	0

D.

l	w
6	10
8	8
10	6

Problems 2–4: Sanjeev is buying limes for $\$0.60$ each.

2. Write an equation that represents how much money Sanjeev spends, m, for buying a number of limes, l.

3. Complete the table that represents this situation.

l	m
6	
7	
	$\$5.40$
	$\$6.60$

4. Explain what $l = 9$ and $m = \$5.40$ means in this situation.

5. Sanjeev spends $\$9.00$ on limes. How many limes did he purchase?

A. 12 limes

B. 13 limes

C. 14 limes

D. 15 limes

Name: ..... Date: ..... Period: .....

Additional Practice 6.16

1. Select *all* the expressions that are equivalent to the expression $3a + 6a$.

- ☐ **A.** $4a + 5a$
- ☐ **B.** $a(3 + 6)$
- ☐ **C.** $6a + 3a$
- ☐ **D.** $a \div \frac{1}{18}$
- ☐ **E.** $9a$
- ☐ **F.** $18a$
- ☐ **G.** $3(a + 6a)$
- ☐ **H.** $a \div \frac{1}{9}$

2. Determine the value of b. Show your thinking.

a 45% of b is 225.

b 300% of b is 12.

c 12% of b is 4.8.

3. Solve each equation. Show your thinking.

a $180 = 15c$

b $3\frac{1}{5} + c = 7$

c $c - 17.34 = 29.2$

d $\frac{9}{8} = 2\frac{1}{2}c$

4. Select *all* the expressions that are equal to $5 \cdot 5 \cdot 5 \cdot 5$.

- ☐ **A.** $5 \cdot 4$
- ☐ **B.** $5^2 \cdot 5^2$
- ☐ **C.** $5^3 + 5$
- ☐ **D.** 4^5
- ☐ **E.** 5^4
- ☐ **F.** $5 \cdot 5^3$

Name: Date: Period:

5. Evaluate each expression. Show your thinking.

a $30 - 3^3$

b $5^3 + 16$

c $12^2 - 8^2$

d $8 \cdot \left(\frac{1}{2}\right)^3$

e $2^4 \cdot 2$

f $4^4 \div 4$

6. Select *all* the expressions that are equivalent to the expression $4(3x - 6)$.

- ☐ **A.** $3(4x - 6)$
- ☐ **B.** $2(6x - 12)$
- ☐ **C.** $8(2x - 3)$
- ☐ **D.** $6(2x - 4)$
- ☐ **E.** $12x - 24$

7. Shawn separately baked 6 batches of pretzels, for a total of 72 minutes. Each batch of pretzels baked for b minutes. Select *all* the equations that represent this situation.

- ☐ **A.** $6 \cdot b = 72$
- ☐ **B.** $b - 6 = 72$
- ☐ **C.** $b = 72 \div 6$
- ☐ **D.** $6 \cdot 72 = b$
- ☐ **E.** $72 = b + 6$

8. Priya says the solution to the equation $\frac{6}{5}x = \frac{1}{3}$ is $\frac{2}{5}$. Is Priya correct? Explain your thinking.

Name: ..... Date: ..... Period: .....

Additional Practice 2.01

Problems 1–5: The table shows an original mixture for orange paint, as well as four other mixtures.

1. Select *all* the mixtures that will create the same shade of orange as the original mixture.

- ☐ **A.** Mixture A
- ☐ **B.** Mixture B
- ☐ **C.** Mixture C
- ☐ **D.** Mixture D

Mixture	Yellow Paint (cups)	Red Paint (cups)
Original	9	6
Mixture A	6	8
Mixture B	6	4
Mixture C	3	2
Mixture D	12	18

2. Choose one mixture that creates the same shade of orange as the original. Explain your thinking.

3. Choose a mixture that does *not* have the same shade of orange as the original. Will it be a shade of orange that is more yellow or more red? Explain your thinking.

4. How much red paint would you need to mix with 1 cup of yellow paint to make a mixture that has the same shade of orange as the original mixture? Explain your thinking.

5. Complete the table to create a different mixture that will also have the same shade of orange as the original mixture.

Yellow Paint (cups)	Red Paint (cups)

6. Brenden mixed 4 cups of blue paint with 3 cups of yellow paint to make a perfect color green to paint his bedroom.

Complete the table to show several other ways to make this color.

Yellow Paint (cups)	Red Paint (cups)
3	4
9	
12	
	20

7. Which ratios are equivalent to 3:4 ? Select *all* that apply.

- ☐ **A.** 50:100
- ☐ **B.** 18:24
- ☐ **C.** $\frac{1}{4} : \frac{1}{5}$
- ☐ **D.** 75:100
- ☐ **E.** 4:5
- ☐ **F.** $\frac{1}{3} : \frac{1}{4}$

Name: ..... Date: ..... Period: .....

Additional Practice 2.02

Problems 1—4: Complete the tables so that the relationship is proportional.

1.

x	y
16	4
20	
	9

2.

x	y
1	2.4
4	
	18

3.

x	y
12	36
1	
	0

4.

x	y
0.4	1
1	
	15

5. DesKayaks rents one-person and two-person kayaks for a fee of $10 an hour plus $2.50 per person for gear. The table shows the cost for several groups of people. Is the relationship between the number of people renting kayaks and the fees charged a proportional relationship? Explain your thinking.

Number of People in Group	Total Fees ($)
1	12.50
2	15.00
3	27.50
4	30.00

6. Sabaan's favorite smoothie shop charges $6.20 for 12 ounces of the drink. Complete the table so that it shows a proportional relationship between ounces of a smoothie drink and the cost. Show or explain your thinking.

Smoothie (oz)	Cost ($)
12	6.60
18	
	13.20

7. At an airport in Mexico City, Sara exchanged 300 U.S. dollars to 6,156 Mexican pesos. Complete the table so that it shows a proportional relationship between the U.S. dollar and Mexican pesos. Show or explain your thinking.

U.S. dollars	Mexican pesos
300	6,156
1	
	100,260
≈	1