



## Science Mom Lesson 64

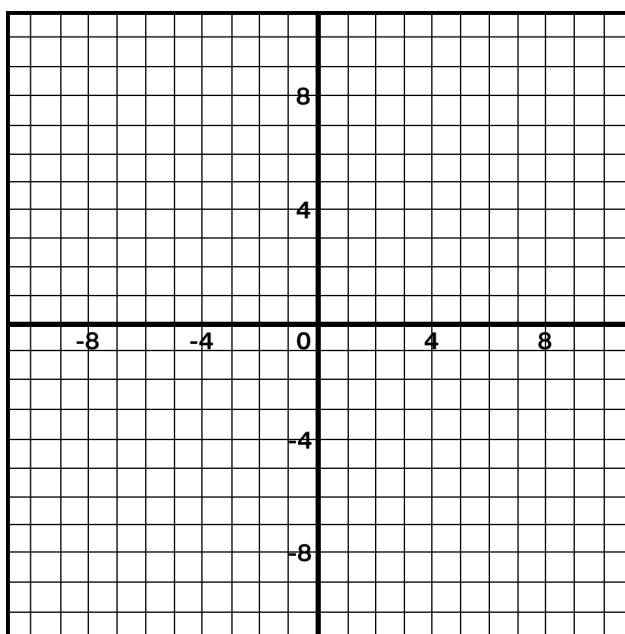
## Unit 8.3, Lesson 10: Practice Problems

Name \_\_\_\_\_

1. Select all of the ordered pairs  $(x, y)$  that are solutions to the linear equation  $2x + 3y = 6$ .

 (0, 2) (0, 6) (2, 3) (3, -2) (3, 0) (6, -2)

2. The graph of a linear equation passes through the points  $(-4, 1)$  and  $(4, 6)$ . Which of these points are also solutions to this equation? Use the graph it helps you with your thinking.

 (0, 3.5) (12, 11) (8, 5) (-6, 0)

3. Here is a linear equation:  $y = \frac{1}{4}x + \frac{5}{4}$ .

Are  $(1, 1.5)$  and  $(12, 4)$  solutions to the equation?

Explain how you know.

4. Here is a linear equation:  $y = \frac{1}{4}x + 2$ .

What is the  $x$ -intercept of the graph of the equation? Explain your thinking.

**Unit 8.3, Lesson 11: Practice Problems**

Name \_\_\_\_\_

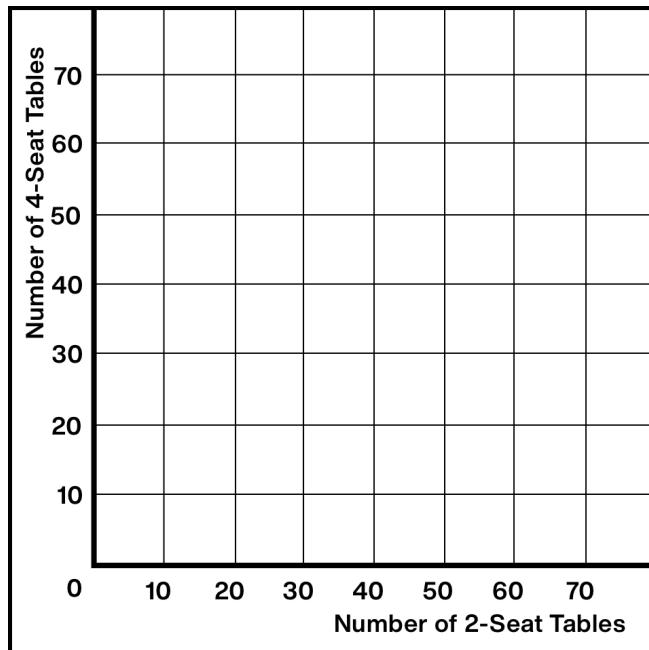
The owner of a restaurant is ordering tables and chairs. She wants to have only tables for 2 and tables for 4.

The total number of people that can be seated in the restaurant is 120.

- 1.1 Complete the table with possible combinations of 2 -seat tables and 4 -seat tables that will seat 120 customers.

Tables for 2	Tables for 4

- 1.2 Write an equation that represents the number of 2 -seat tables,  $x$ , and the number of 4 -seat tables,  $y$ , she should order.
- 1.3 Draw a graph of this situation.

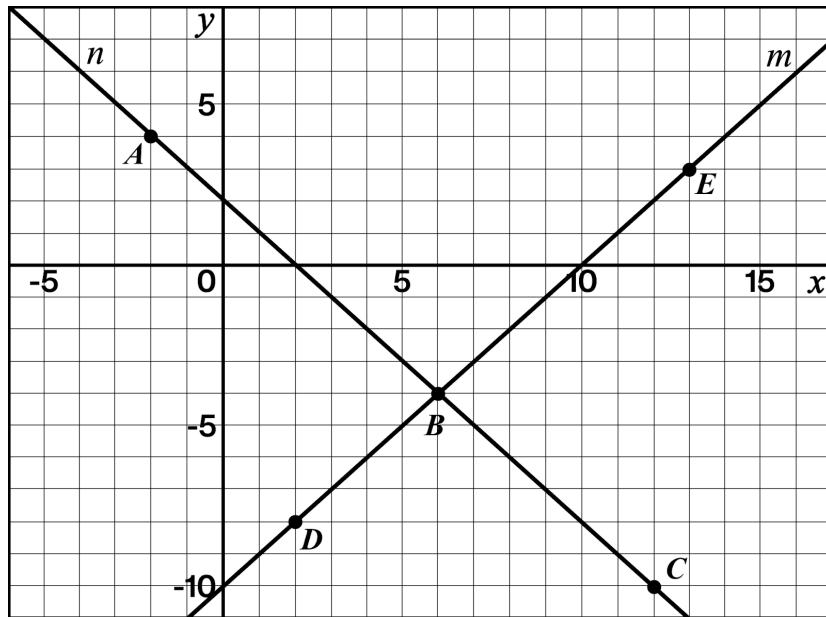


- 1.4 What is the slope of the line on your graph?
- 1.5 Circle the  $x$ - and  $y$ -intercepts on your graph. Interpret the meaning of each intercept.

## Unit 8.4, Lesson 9: Practice Problems

Name \_\_\_\_\_

Use this graph to answer the questions.



1.1 Which line,  $m$  or  $n$ , goes with each statement?

- a. A set of points where the coordinates of each point have a sum of 2.
- b. A set of points where the  $y$ -coordinate of each point is 10 less than its  $x$ -coordinate.

1.2 List all of the labeled points on the graph that go with each statement about their coordinates:

- a. Two numbers with a sum of 2.
- b. Two numbers where the  $y$ -coordinate is 10 less than the  $x$ -coordinate.
- c. Two numbers with a sum of 2 and where the  $y$ -coordinate of each point is 10 less than its  $x$ -coordinate.

Here is an equation:  $4x - 4 = 4x + \underline{\hspace{2cm}}$ .

Fill in the blanks to make the following statements true.

2.1 True for no values of  $x$ .

$$4x - 4 = 4x + \underline{\hspace{2cm}}$$

2.2 True for all values of  $x$ .

$$4x - 4 = 4x + \underline{\hspace{2cm}}$$

2.3 True for one value of  $x$ .

$$4x - 4 = 4x + \underline{\hspace{2cm}}$$



## Science Mom Lesson 67

## Unit 8.4, Lesson 10: Practice Problems

Name \_\_\_\_\_

1. Jayden has \$11 and begins saving \$5 each week towards buying a new phone. At the same time that Jayden begins saving, Aditi has \$60 and begins spending \$2 per week on supplies for her art class.

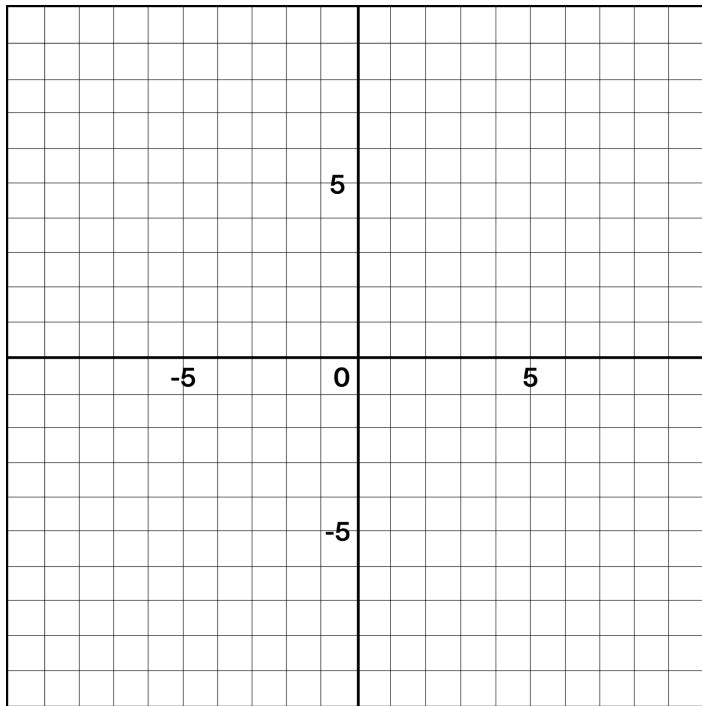
Is there a week when they have the same amount of money? How much do they have at that time?

2. Find  $x$ - and  $y$ -values that make both  $y = -\frac{2}{3}x + 3$  and  $y = 2x - 5$  true.

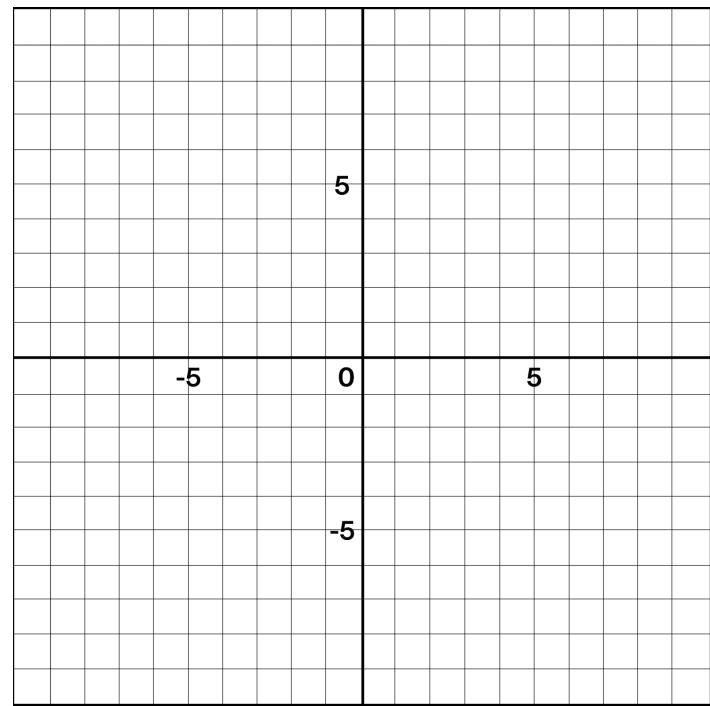
3. The point where the graphs of two equations intersect has  $y$ -coordinate 2. One equation is  $y = -3x + 5$ .

Find the other equation if its graph has a slope of 1.

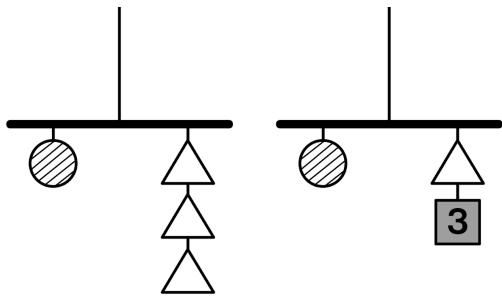
Use the graph if it helps you with your thinking.



Use the graph if it helps you with your thinking.



The hangers and the graph represent the same system of equations.

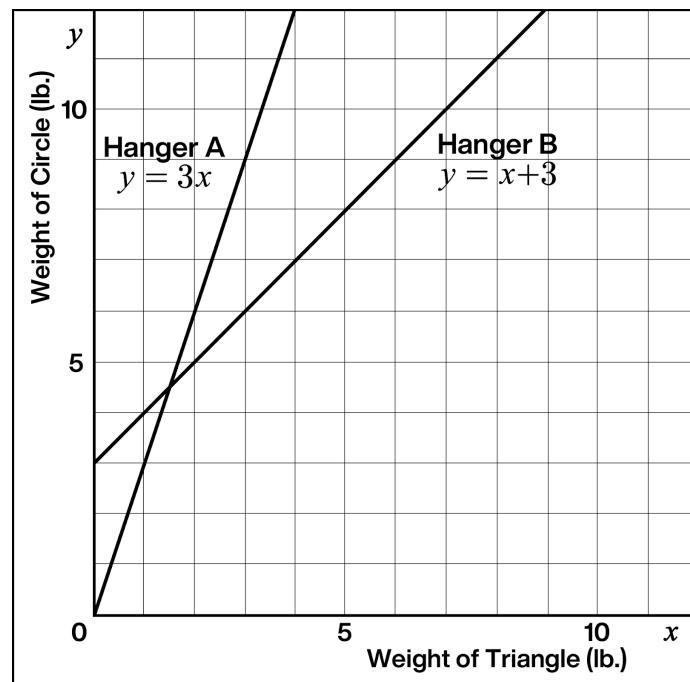


Hanger A

$$y = 3x$$

Hanger B

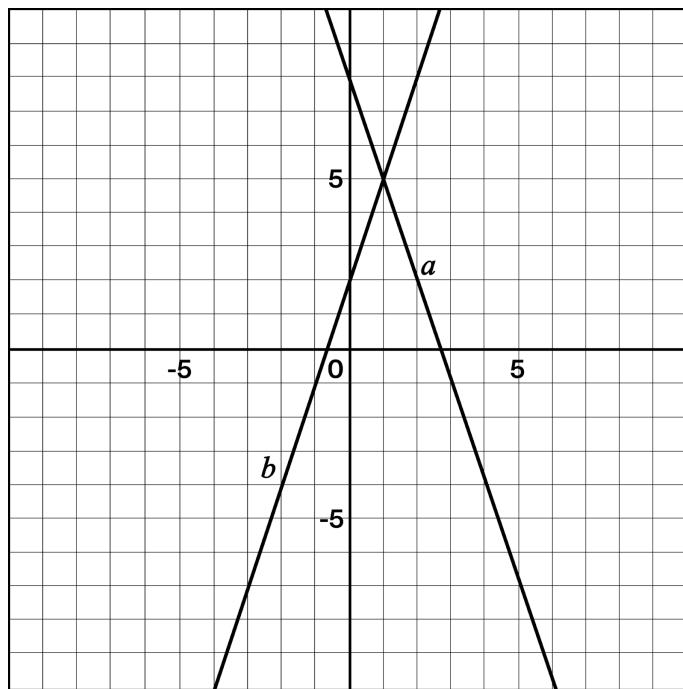
$$y = x + 3$$



- 1.1 Find the solution to the system of equations.

- 1.2 What does the solution tell you about the weight of a triangle and the weight of a circle to balance the hanger?

Here is a graph of a system of equations.



- 1.1 Describe how to find the solution to the corresponding system of equations for the two lines by looking at the graph.
  
  
  
  
  
- 1.2 Write an equation for each line.
  
  
  
  
  
- 1.3 Describe how to find the solution to the corresponding system by using the equations.



## Science Mom Lesson 70

## Unit 8.4, Lesson 13: Practice Problems

Name \_\_\_\_\_

1. Solve this system of equations:

$$\begin{cases} y=6x \\ 4x+y=7 \end{cases}$$

2. Solve this system of equations:

$$\begin{cases} y=3x \\ x=-2y+70 \end{cases}$$

3. Which equation, together with  $y = -1.5x + 3$ , makes a system with one solution?

- $y = -1.5x + 6$
- $y = -1.5x$
- $2y = -3x + 6$
- $y = -2x + 3$

This system of equations has no solution:

$$\begin{cases} x-6y=4 \\ 3x-18y=4 \end{cases}$$

4.1 Change one number to make a new system with one solution.

4.2 Change one number to make a new system with an infinite number of solutions.

## Unit 8.4, Lesson 14: Practice Problems

Name \_\_\_\_\_

1. Circle the story that can be represented by the system of equations below? Explain your reasoning.

$$\begin{cases} y = x + 6 \\ x + y = 100 \end{cases}$$

**Story A**

Evan and his younger cousin measure their heights.

They notice that Evan is 6 inches taller, and their heights add up to exactly 100 inches.

**Story B**

Angel's teacher writes a test worth 100 points.

There are 6 more multiple choice questions than short answer questions.

Yolanda and Neel play a game in which they earn the same number of points for each goal and lose the same number of points for each penalty.

- Yolanda makes 6 goals and 3 penalties, ending the game with 6 points.
  - Neel earns 8 goals and 9 penalties, and ends the game with -22 points.
- 2.1 Write a system of equations that describes Yolanda's and Neel's outcomes. Use  $x$  to represent the number of points for a goal and  $y$  to represent the number of points for a penalty.
- 2.2 Solve the system to determine the number of points each goal and each penalty are worth.

**Unit 8.5, Lesson 1: Practice Problems**

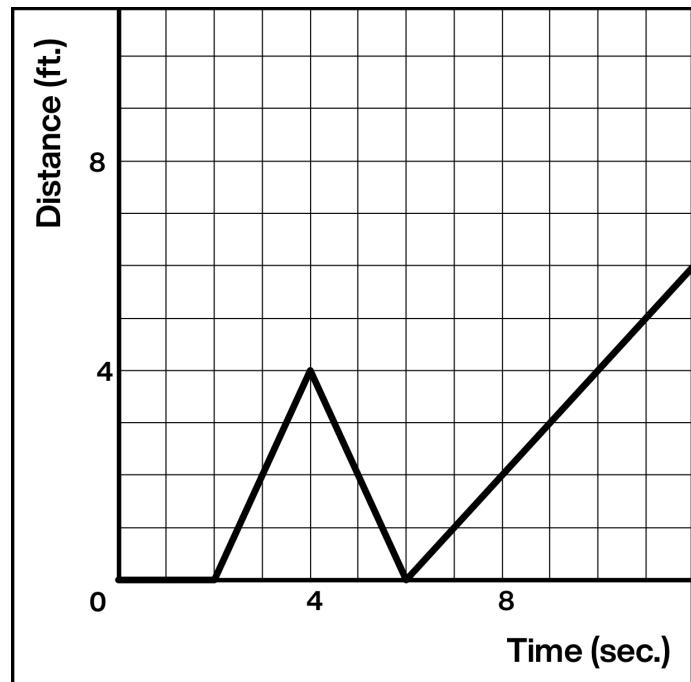
Name \_\_\_\_\_

This graph represents a turtle walking across the sand.

- 1.1 What story does the graph tell about the turtle's journey?

- 1.2 How far was the turtle from the water after 8 seconds?

- 1.3 After how many seconds is the turtle's distance 2 feet from the water?



2. For what value of  $x$  do the expressions  $2x + 3$  and  $3x - 6$  have the same value?

3. Solve this system of equations:

$$\begin{cases} y = x - 4 \\ y = 6x - 10 \end{cases}$$



## Science Mom Lesson 73

## Unit 8.5, Lesson 2: Practice Problems

Name \_\_\_\_\_

1. Complete the table based on the following rule:  
Divide by 4. Add 2.

Input	Output
0	
2	
4	
6	
8	
10	

2. Complete the table based on the following rule:  
If odd, write 1. If even, write 0.

Input	Output
1	
2	
3	
7	
12	
73	

3. Use -6 as the input for each of the rules below.

Rule	Input	Output
Square the input	-6	
Divide by 3	-6	
Write $\pi$	-6	

4. Recall this image from today's lesson.

What makes a rule a function or not?

Rule #1: Function	
Input	Output
35	25
723	713
-4	-14
53	43
723	713

Rule #2: Function	
Input	Output
15	7
18	7
262	7
-3	7
82.3	7

Rule #3: Function	
Input	Output
hi	J
my	Z
name	F
is	T
Arturo	P

Rule #4: Not a Function	
Input	Output
H	Hailey
J	Jada
M	Mai
H	Hamza
M	Madison



## Science Mom Lesson 74

## Unit 8.5, Lesson 3: Practice Problems

Name \_\_\_\_\_

A group of students are timed while sprinting 100 meters.

- 1.1 Consider the table.

Time (sec.)	Speed (m/s)
13.8	7.246
15.9	6.289
16.3	6.135
17.1	5.848
18.2	5.495
18.3	5.464

- 1.2 Consider the table.

Time (sec.)	Distance (m)
13.8	100
15.9	100
16.3	100
17.1	100
18.2	100
18.3	100

- 1.3 Consider the table.

Distance (m)	Time (sec.)
100	13.8
100	15.9
100	16.3
100	17.1
100	18.2
100	18.3

Is speed a function of time?

Is distance a function of time?

Is time a function of distance?

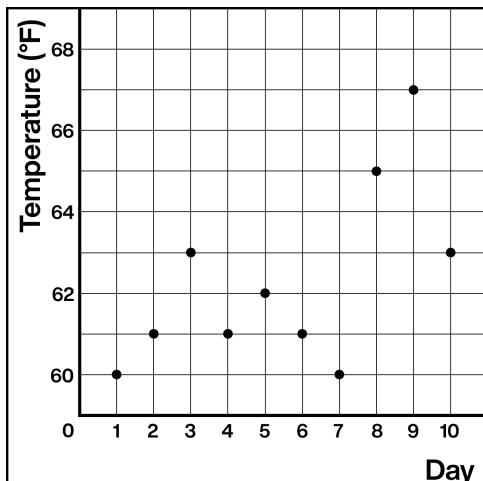
- 1.4 How did you decide which relationships were functions?

2. This graph represents the high temperatures in a city over a 10-day period.

Consider the graph on the right.

Is temperature a function of day?

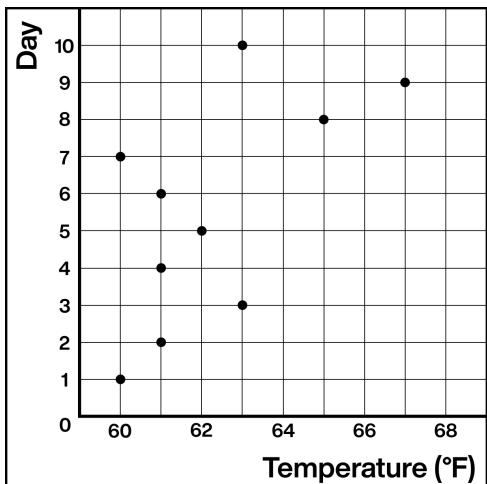
Explain your thinking.



**Unit 8.5, Lesson 4: Practice Problems**

Name \_\_\_\_\_

1. The graph and the table show the high temperatures in a city over a 10-day period.



Temperature (°F)	60	60	61	61	61	62	63	63	65	67
Day	1	7	2	4	6	5	3	10	8	9

Is the day a function of the high temperature?

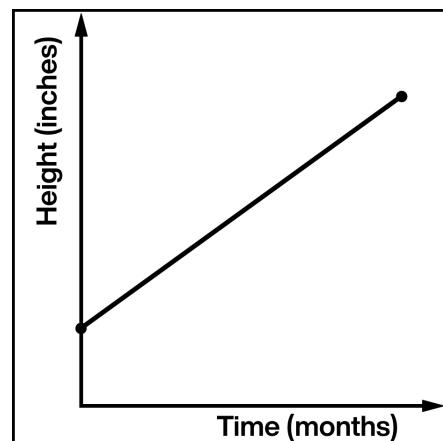
Explain your thinking.

Rafael earns \$10.50 per hour helping his neighbor with their chores.

- 2.1 Is the amount he earns a function of the number of hours he works? Explain your thinking.
- 2.2 Is the number of hours he works a function of the amount he earns? Explain your thinking.
- 2.3 Write an equation that describes the situation. Use  $x$  to represent the independent variable and  $y$  to represent the dependent variable.
- 2.4 How much will Rafael earn if he works 3 hours each weekday next week?

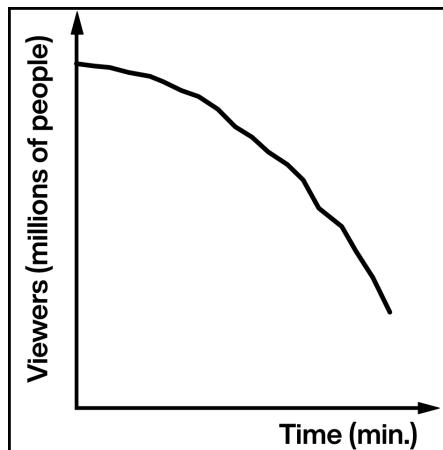
- 1.1 This graph represents the height of a plant over a period of one month.

Tell a story of the plant's height.



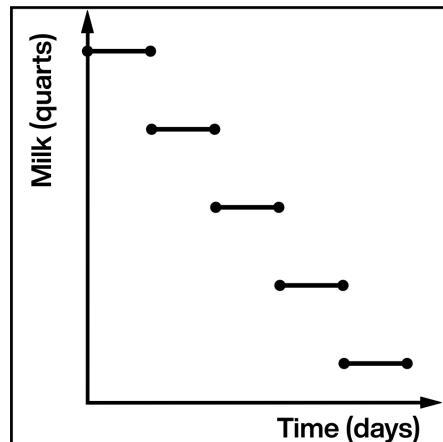
- 1.2 This graph represents the number of viewers of a short video vs. time.

Tell a story of the video's viewership.



- 1.3 This graph represents the amount of milk in a bottle in the fridge.

Tell a story of the amount of milk in the bottle.

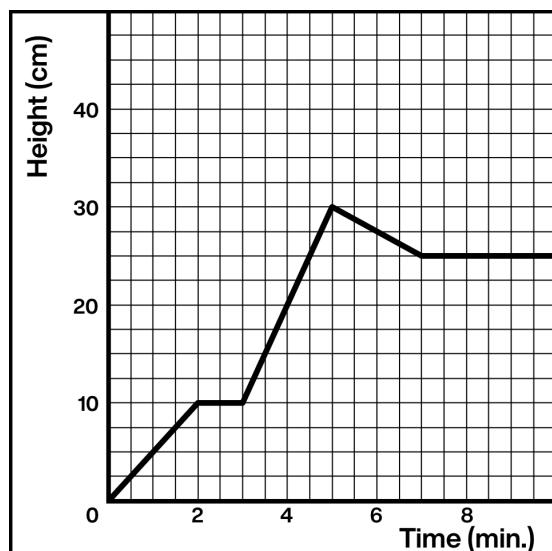


## Unit 8.5, Lesson 6: Practice Problems

Name \_\_\_\_\_

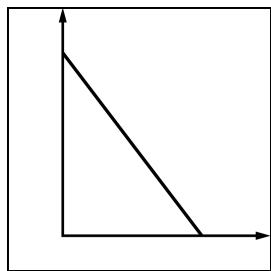
1. Koharu fills her aquarium with water. The graph shows the height of water in the aquarium vs. time.

Tell a story about how Koharu fills the aquarium based on what you see. Include specific heights and times.

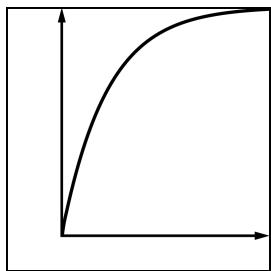


- 2.1 An ice cube has just fully melted in a glass. The temperature of the water in the glass is measured over time. Select the graph that best matches the story.

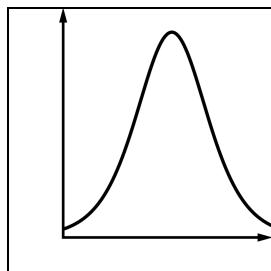
A.



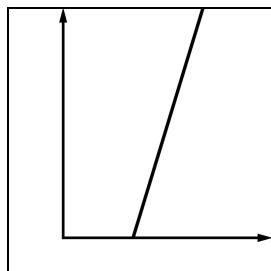
B.



C.

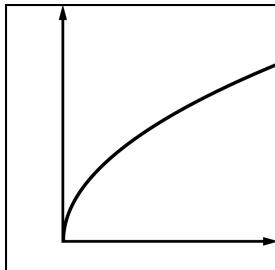


D.

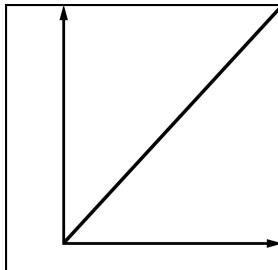


- 2.2 One person knows a secret. That person tells two people who each tell two people. The pattern continues. The number of people who know the secret is measured over time. Select the graph that best matches the story.

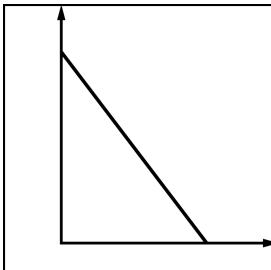
A.



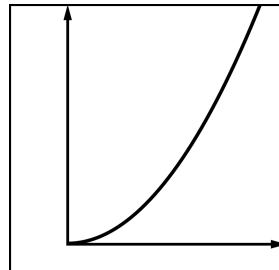
B.



C.



D.



## Unit 8.5, Lesson 7: Practice Problems

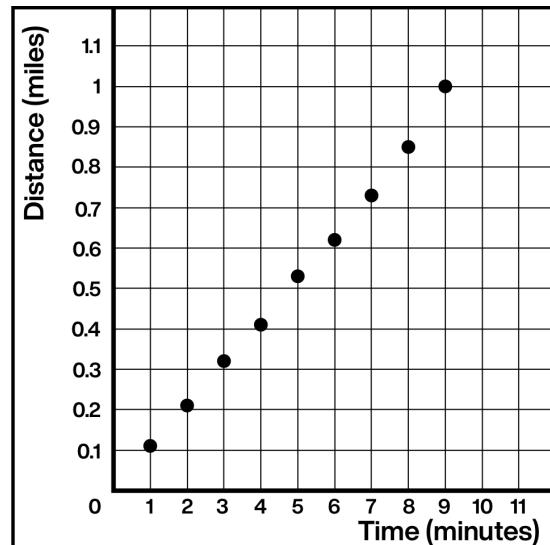
Name \_\_\_\_\_

- 1.1 Yosef is training for a 1-mile race. Yosef's progress is shown by the graph.

Is Yosef's distance a function of time?  
Explain your thinking.

- 1.2 Demetrius is training for the same 1-mile race. He ran at a constant speed of 7.5 miles per hour.

Who finished the mile first?



- 1.3 Draw a line on the graph to represent Demetrius's mile.

The table and equation below represent two different functions with independent variable  $a$ .

**Equation:**  $b = 4a - 5$

- 2.1 When  $a = 10$ , what are the values of  $b$  and  $c$ ?

$b =$  \_\_\_\_\_       $c =$  \_\_\_\_\_

- 2.2 Which is larger when  $a = -3$ :  $b$  or  $c$ ?

Explain your answer or why there is not enough information.

$a$	$c$
-3	-20
0	7
2	3
5	21
10	19
12	45

- 2.3 Which is larger when  $a = 6$ :  $b$  or  $c$ ?

Explain your answer or why there is not enough information.

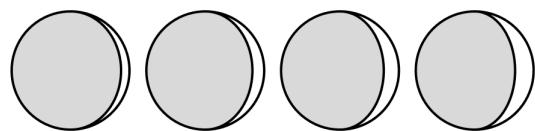


## Science Mom Lesson 79

## Unit 8.5, Lesson 9: Practice Problems

Name \_\_\_\_\_

On the first day after the new moon, 2% of the moon's surface is illuminated. On the second day, 6% of the moon's surface is illuminated.



- 1.1 Use a linear model to fill out the table below.

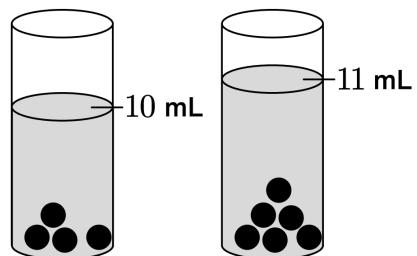
Day Number	Illumination
1	2%
2	6%
...	...
	50%
	100%

- 1.2 The moon's surface is actually 100% illuminated on day 14. How appropriate is it to use a linear model for this data?

In science class, Farah uses a graduated cylinder with water in it to measure the volume of some marbles.

After dropping in 4 marbles, the height is 10 mL.

After dropping in 6 marbles, the height is 11 mL.



- 2.1 How much does the height increase for each marble? \_\_\_\_\_

How much water was in the cylinder before any marbles were dropped in? \_\_\_\_\_

- 2.2 What should be the height of the water after 13 marbles are dropped in? \_\_\_\_\_

**Unit 8.6, Lesson 1: Practice Problems**

Name \_\_\_\_\_

Here is data on the number of cases of whooping cough from 1939 to 1955.

**Sorted by Year**

Year	Number of Cases
1944	109 873
1945	133 792
1946	109 860
1947	156 517
1948	74 715
1949	64 479
1950	120 718
1951	68 687
1952	45 030
1953	37 129
1954	60 866
1955	62 786

**Sorted by Number of Cases**

Year	Number of Cases
1953	37 129
1952	45 030
1954	60 866
1955	62 786
1949	64 479
1951	68 687
1948	74 715
1946	109 860
1944	109 873
1950	120 718
1945	133 792
1947	156 517

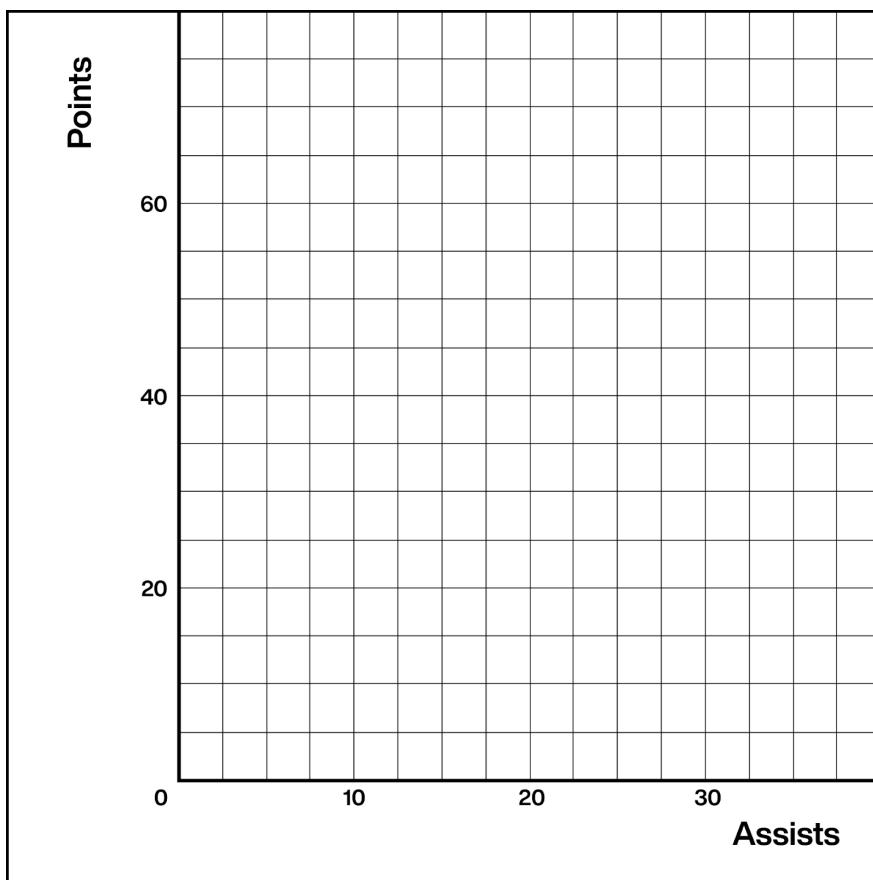
- 1.1 Select a column you prefer the table to be sorted by. What is a question that could be asked when the table is sorted by this column?
  
  
  
  
  
- 1.2 Which years in this period of time had more than 100 000 cases of whooping cough?
  
  
  
  
  
- 1.3 Based on this data, would you expect 1956 to have closer to 50 000 cases or 100 000 cases? Explain your thinking.

## Unit 8.6, Lesson 2: Practice Problems

Name \_\_\_\_\_

1. In hockey, a player gets credited with a "point" in their statistics when they get an assist or goal. The table shows the number of assists and the number of points for 14 hockey players after a season.

Create a scatter plot of the data.



Assists	Points
22	28
16	18
19	29
13	26
9	13
16	22
8	18
12	13
12	17
37	50
7	12
17	34
27	58
18	34

2. Select **all** the representations that are appropriate for comparing bite strength to weight for different carnivores.

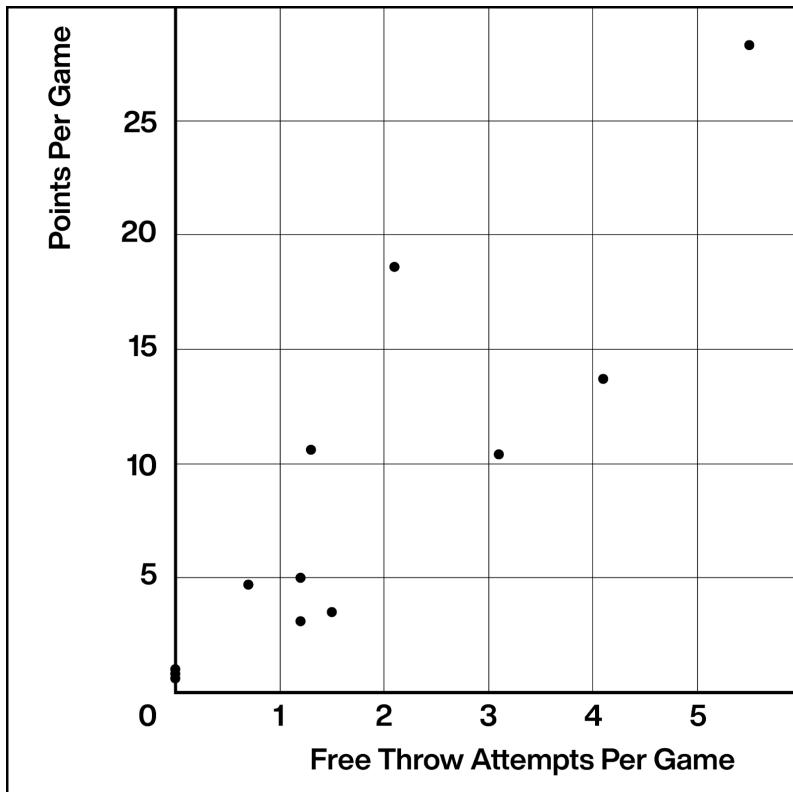
- Histogram
- Scatter plot
- Dot plot
- Table
- Box plot

## Unit 8.6, Lesson 3: Practice Problems

Name \_\_\_\_\_

Here is a table and a scatter plot that compares points per game to free throw attempts for a basketball team during a tournament.

- 1.1 Circle the point that represents the data for Player E.



Player	Free Throw Attempts	Points
Player A	5.5	28.3
Player B	2.1	18.6
Player C	4.1	13.7
Player D	1.6	10.6
Player E	3.1	10.4
Player F	1.2	5
Player G	0.7	4.7
Player H	1.5	3.5
Player I	1.2	3.1
Player J	0	1
Player K	0	0.8
Player L	0	0.6

- 1.2 What does the point (2.1, 18.6) represent?

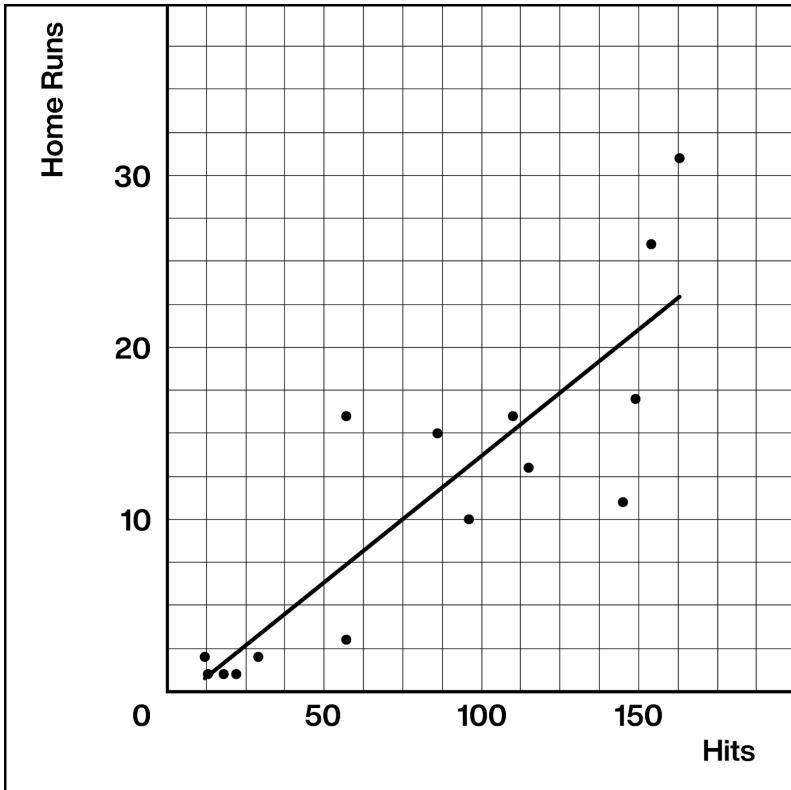
- 1.3 In this same tournament, Player O from another team scored 14.3 points per game with 4.8 free throw attempts per game. Plot this point on the scatter plot above.

## Unit 8.6, Lesson 4: Practice Problems

Name \_\_\_\_\_

This scatter plot shows the number of hits and home runs for 15 baseball players last season.

The model  $y = 0.15x - 1.5$  is also graphed.



Hits	Home Runs	Predicted Home Runs
12	2	0.3
22	1	1.8
154	26	21.6
145	11	20.3
110	16	15
57	3	7.1
149	17	20.9
29	2	2.9
13	1	0.5
18	1	1.2
86	15	11.4
163	31	23
115	13	15.8
57	16	7.1
96	10	12.9

- 1.1 How many home runs did the player with 154 hits have?

How many was he predicted to have?

- 1.2 One player most outperformed the predicted number of home runs.

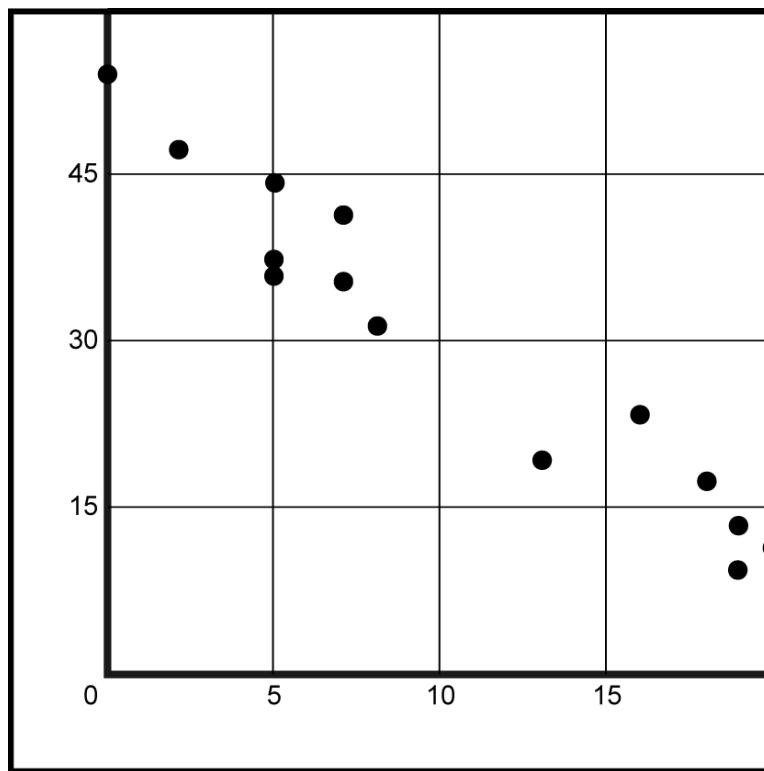
How many hits did this player have?

- 1.3 A new player hit many fewer home runs than the model predicted.

Sketch or describe where his point could be on the graph.

For this data, the inputs are the horizontal values and the outputs are the vertical values.

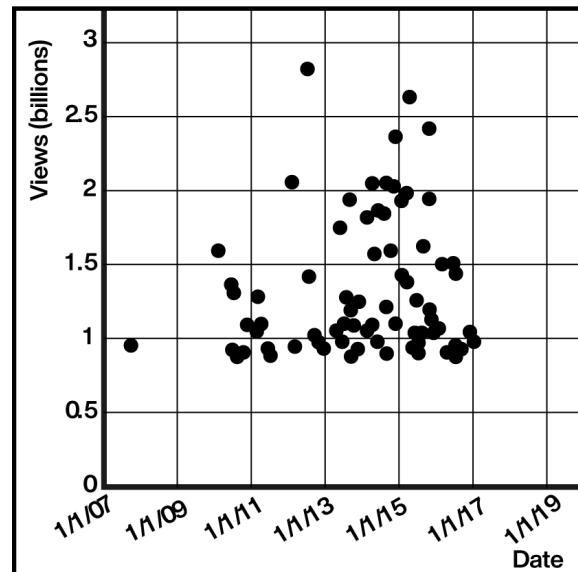
- 1.1 Use a ruler to draw a line of best fit.



- 1.2 Use your line of fit to estimate what you would expect the output value to be when the input is 10.

Here is a scatter plot that shows the most popular videos in a 10-year span.

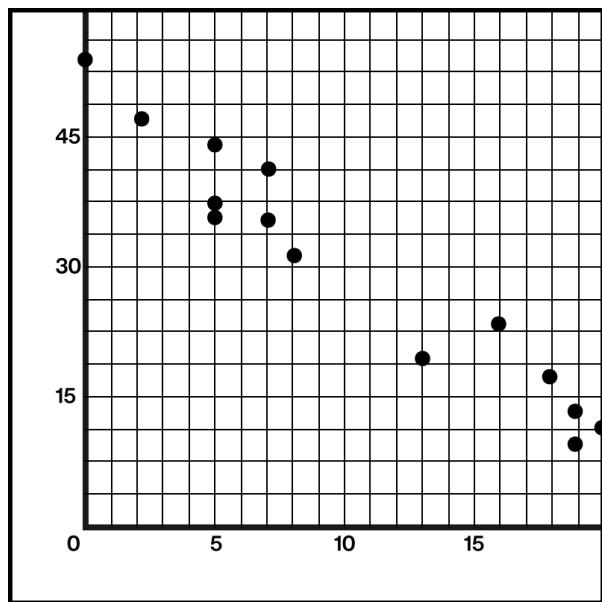
- 2.1 Estimate the number of views for the most popular video in this 10-year span.
- 2.2 Estimate when the fourth most popular video was released.



## Unit 8.6, Lesson 6: Practice Problems

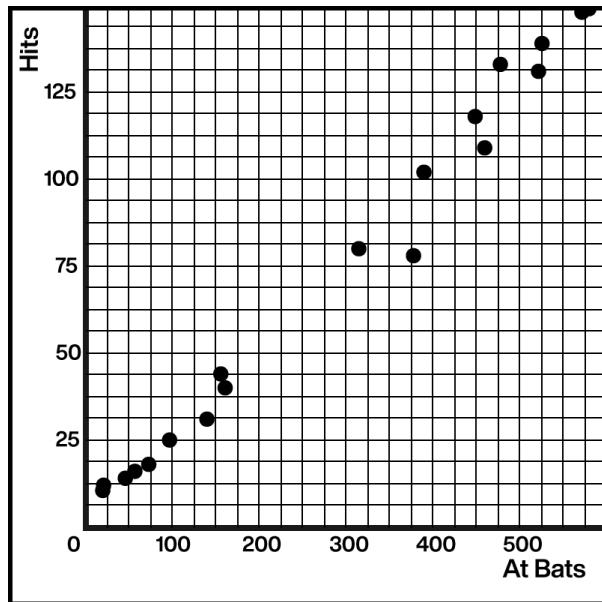
Name \_\_\_\_\_

1. Which statement is true about the data in the scatter plot?
- A. As  $x$  increases,  $y$  tends to increase.
  - B. As  $x$  increases,  $y$  tends to decrease.
  - C. As  $x$  increases,  $y$  tends to stay unchanged.
  - D.  $x$  and  $y$  are unrelated.



2. Here is a scatter plot that compares hits to at bats for players on a baseball team.

Describe the relationship between the number of at bats and the number of hits using the data in the scatter plot.

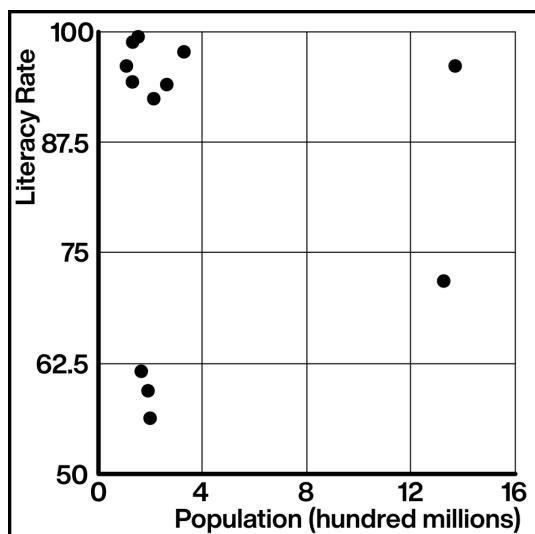


## Unit 8.6, Lesson 7: Practice Problems

Name \_\_\_\_\_

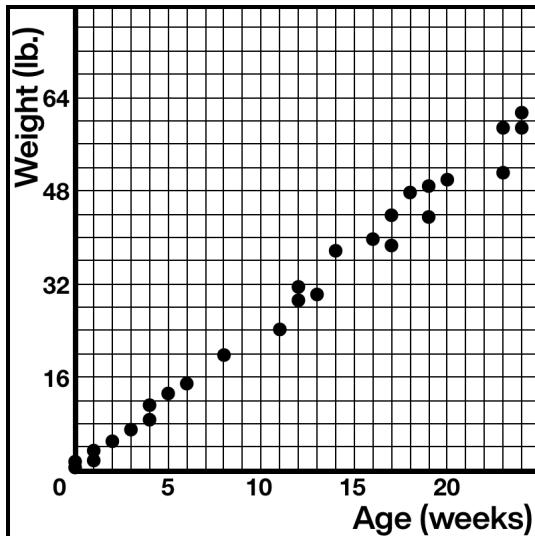
1. The literacy rate and population for 12 countries with more than 100 million people are shown in the scatter plot.

Circle any clusters in the data.



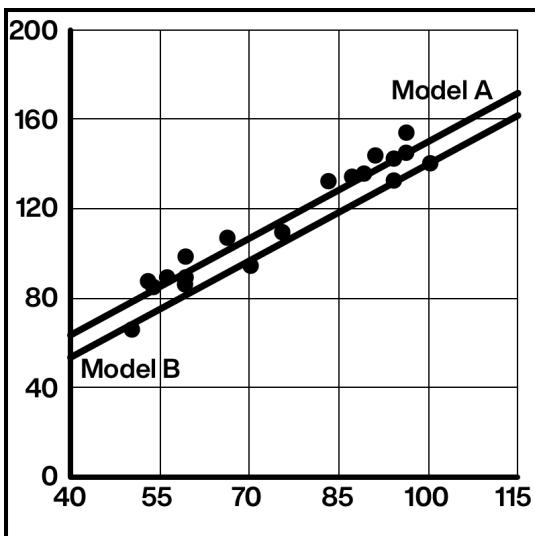
2. Select **all** of the following that describe the association in this scatter plot:

- Linear association
- Non-linear association
- Positive association
- Negative association
- No association



3. Two different models are graphed for the same data.

Which model more closely matches the data?  
Explain your thinking.





## Science Mom Lesson 87

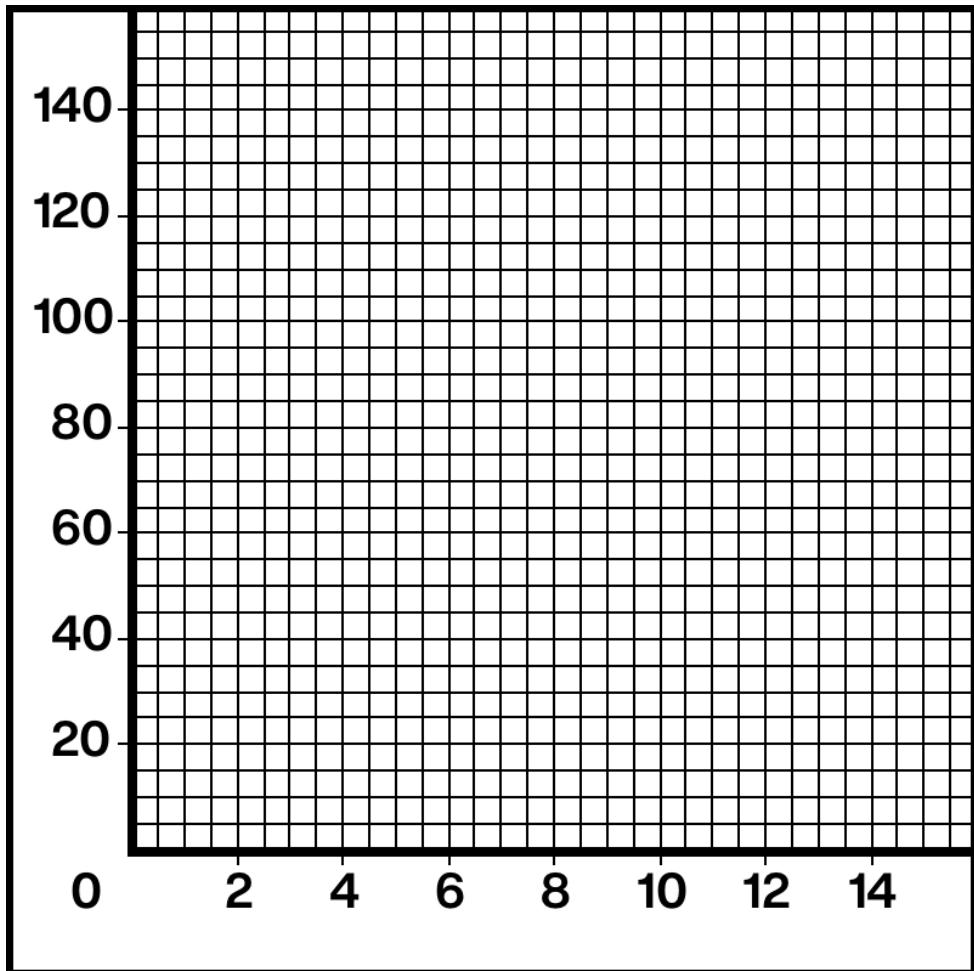
## Unit 8.6, Lesson 8: Practice Problems

Name \_\_\_\_\_

Different stores across the country sell a book for different prices.

The table shows the price of the book (in dollars) and the number of books sold at that price.

- 1.1 Draw a scatter plot of this data.



Price (dollars)	Number Sold
11.25	53
10.50	60
12.10	30
8.45	81
9.25	70
9.75	80
7.25	120
12	37
9.99	130
7.99	100
8.75	90

- 1.2 Label the horizontal and vertical axes on the graph above.

- 1.3 Are there any outliers? Explain your thinking.

- 1.4 Is there a relationship between the variables? Explain your thinking.

- 1.5 Draw an "X" over any outliers. Then draw a line that you think is a good fit for the data.

**Unit 8.6, Lesson 9: Practice Problems**

Name \_\_\_\_\_

Here is some data from the result of a survey about who watches the news on a daily basis.

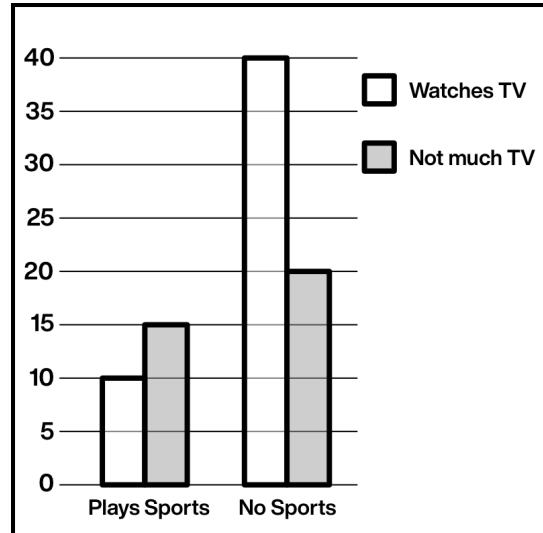
	Watches the News Daily	Does Not Watch the News Daily
Younger Than 18	30	80
18 or Older	10	5

1.1 What do you notice and wonder?

1.2 In total, how many people responded that they watch the news daily?

2.1 Complete the two-way table below based on the information in the bar graph.

	Watches TV	Not Much TV	Total
Plays Sports			
No Sports			
Total			



2.2 Select **all** of the true statements that can be made about the data shown in the bar graph.

- More people do not play sports than do.
- More people watch TV than watch not much TV.
- 10 people watch TV but don't play sports.
- There are no people who watch TV and play sports.

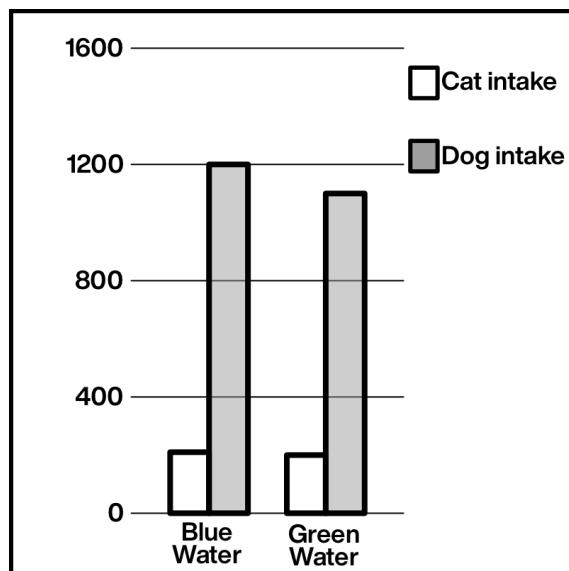
## Unit 8.6, Lesson 10: Practice Problems

Name \_\_\_\_\_

1. A scientist wants to know if the color of water affects how much animals drink.

The average amount of water each animal drinks was recorded in milliliters for a week and then graphed.

	Cat Intake (mL)	Dog Intake (mL)	Total (mL)
Blue Water	210	1200	1410
Green Water	200	1100	1300
<b>Total</b>	<b>410</b>	<b>2300</b>	<b>2710</b>



Is there evidence to suggest an association between water color and how much animals drink? Explain your thinking.

2. A farmer brings produce to the farmer's market and records whether people buy lettuce, apples, both, or something else.

Complete the table to show the relative frequencies for each row.

Use this table to decide if there is an association between buying lettuce and buying apples.

	Bought Apples	Did Not Buy Apples
Bought Lettuce	14	58
Did Not Buy Lettuce	8	29

	Bought Apples	Did Not Buy Apples	Total
Bought Lettuce	%	%	%
Did Not Buy Lettuce	%	%	%

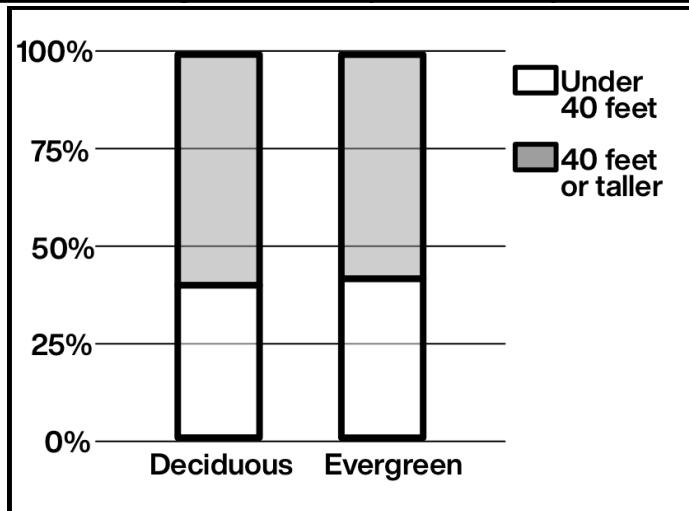
## Unit 8.6, Lesson 11: Practice Problems

Name \_\_\_\_\_

1. An ecologist is studying a forest with a mixture of tree types. Since the average tree height in the area is 40 feet, he measures the height of the tree against that. He also records the type of tree. The results are shown in the table and the segmented bar graph.

Is there evidence of an association between tree height and tree type? Explain your thinking.

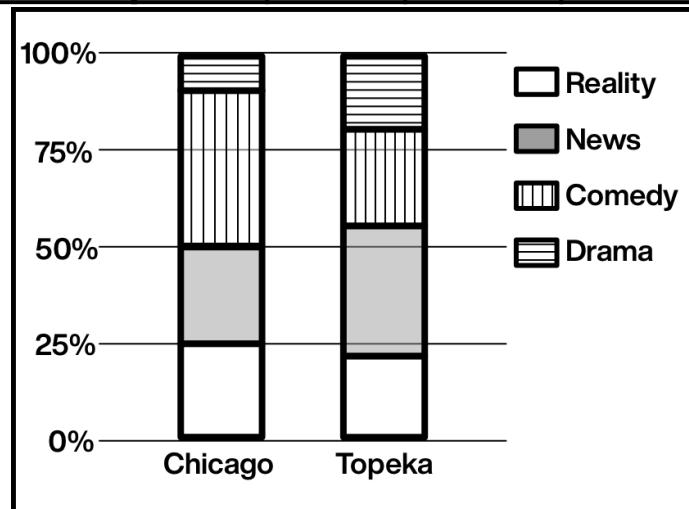
	Under 40 Feet	40 Feet or Taller	Total
Deciduous	45	30	75
Evergreen	14	10	24
Total	59	40	99



2. Workers at an advertising agency are interested in people's TV-viewing habits. They take a survey of people in two cities to try to find patterns in the types of shows they watch. The results are recorded in the table and shown in the segmented bar graph.

Is there evidence of different viewing habits? Explain your thinking

	Reality	News	Comedy	Drama
Chicago	50	40	90	20
Topeka	45	70	40	45



## Warm-Up

Select all the expressions that are equivalent to  $3x - 4 + 2x - 6$ .

$x - 2$

$5x - 2$

$5(x - 2)$

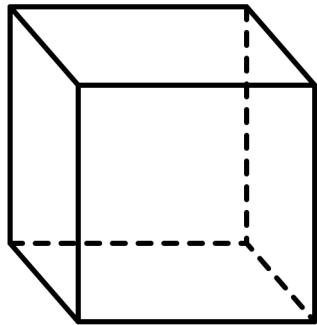
$5x + 10$

$5x - 10$

## Practice

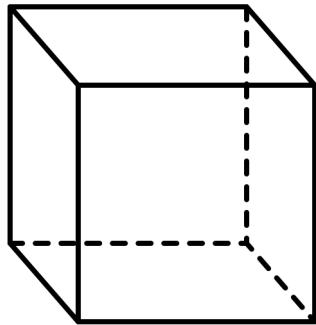
Explain or show how to slice each cube in order to make the described cross section.

- 1.1 Cross section: **Square**



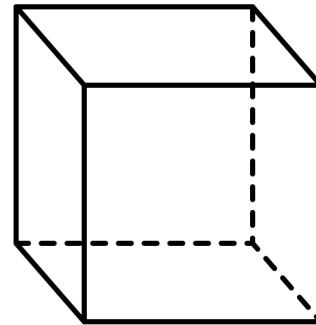
Explain or show your thinking.

- 1.2 Cross section: **Triangle**



Explain or show your thinking.

- 1.3 Cross section: **Rectangle**

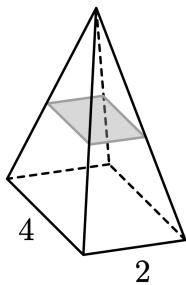


Explain or show your thinking.

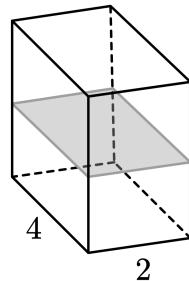
Here is a pyramid and a rectangular prism with the same base and the same height.

Each figure is sliced parallel to the base.

- 2.1 What will happen to the area of the cross section as you slice the pyramid closer to the base?



- 2.2 What will happen to the area of the cross section as you slice the prism closer to the base?



**Warm-Up**

Select **all** of the expressions that are equivalent to  $3(x - 2) + 5$ .

$3x + 3$

$3(x - 1)$

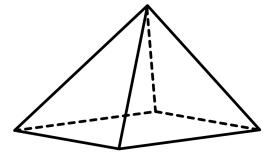
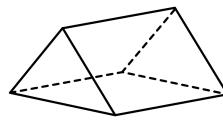
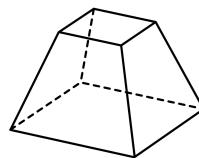
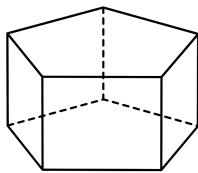
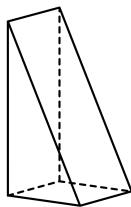
$3x - 1$

$-1 + 3x$

$1 - 3x$

**Practice**

1.1 Circle all the prisms.

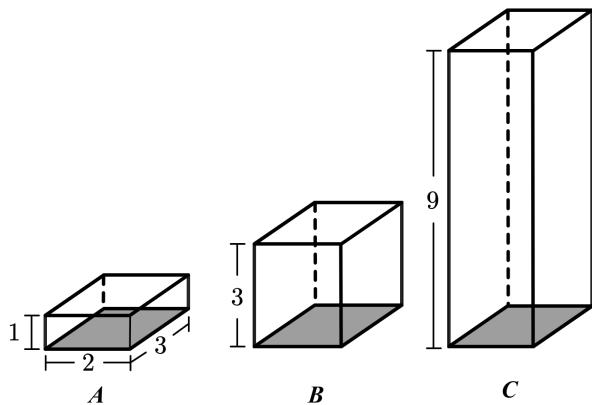


1.2 For each prism, shade one of the bases.

2. Here are three prisms with the same base.

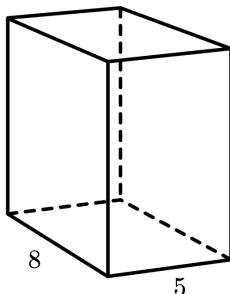
Determine the volume of each prism.

Prism	Volume (cubic units)
A	
B	
C	

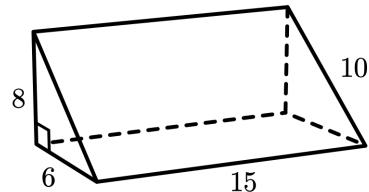


Determine the volume of each prism. Explain or show your thinking.

3.1



3.2



## Warm-Up

Write each fraction as a decimal.

$$\frac{1}{2} =$$

$$\frac{1}{4} =$$

$$\frac{3}{4} =$$

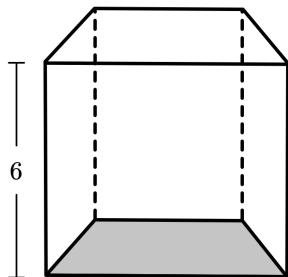
$$\frac{1}{5} =$$

## Practice

1. The volume of each of these trapezoidal prisms is 24 cubic units.

What is the area each prism's base?

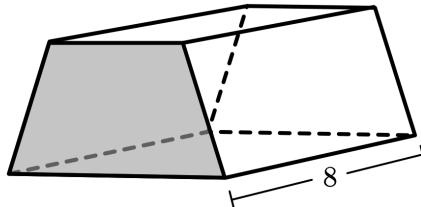
**Prism 1**



Volume: 24 cubic units

Area of the base:

**Prism 2**

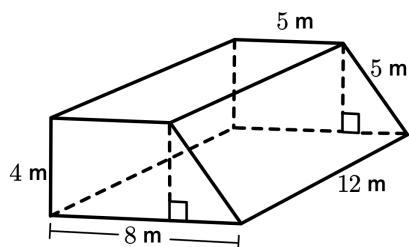


Volume: 24 cubic units

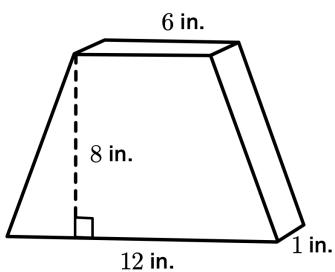
Area of the base:

Determine the volume of each prism. Explain your thinking.

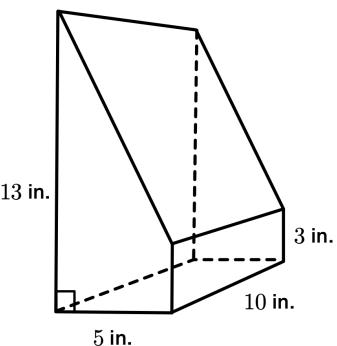
2.1



2.2



2.3



## Warm-Up

Write each fraction as a percentage.

$\frac{1}{4} =$

$\frac{1}{5} =$

$\frac{3}{5} =$

$\frac{3}{10} =$

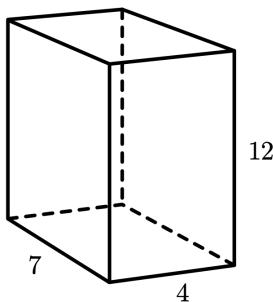
## Practice

1. Select **all** the situations where knowing the surface area of an object would be useful.

- The amount of paint needed to paint a room
- The amount of water needed to fill an aquarium
- How much wrapping paper a gift will need
- How many watermelons fit in a box for shipping
- The amount of gasoline left in the tank of a vehicle

Determine the surface area and volume of each prism. Show all of your thinking.

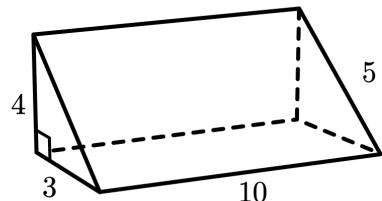
2.1



Volume:

Surface area:

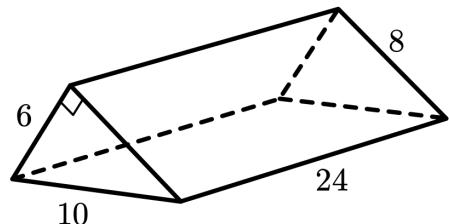
2.2



Volume:

Surface area:

2.3



Volume:

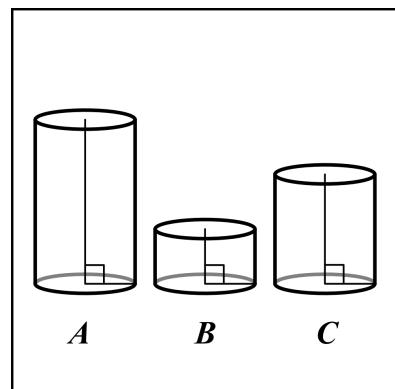
Surface area:

## Unit 8.5, Lesson 10: Practice Problems

Name \_\_\_\_\_

1. Cylinder  $A$ ,  $B$ , and  $C$  have the same radius.

Order the cylinders from least volume to greatest volume.

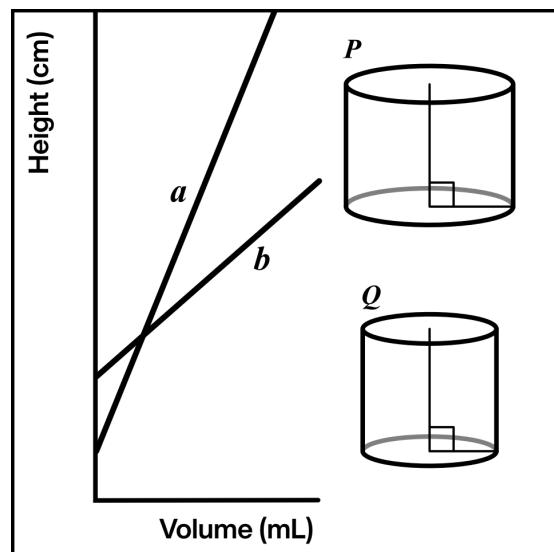


2. Two cylinders,  $P$  and  $Q$ , each started with different amounts of water.

The graph shows the height of the water as the volume of water in each cylinder increased.

Match lines  $a$  and  $b$  to cylinders  $P$  and  $Q$ .

Cylinder	Line
$P$	
$Q$	



3. Write the letter of the circle described next to the area of that circle.

- Circle  $A$  has a radius of 4 units.
- Circle  $B$  has a radius of 10 units.
- Circle  $C$  has a diameter of 16 units.

Area: About 314 square units Circle: \_\_\_\_\_

Area:  $64\pi$  square units Circle: \_\_\_\_\_

Area:  $16\pi$  square units Circle: \_\_\_\_\_

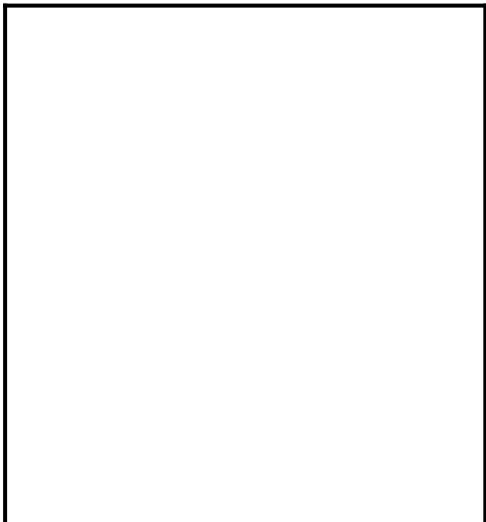
## Unit 8.5, Lesson 11: Practice Problems

Name \_\_\_\_\_

- 1.1 Sketch a cylinder in the space on the right.

Label the radius of the cylinder 3 and the height 10.

Then shade the base shape of the cylinder.



Here are two containers that hold oatmeal.

Container A is a rectangular prism.

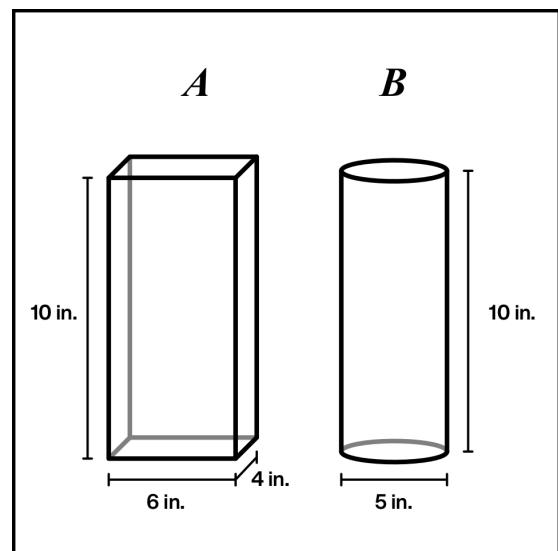
Container B is a cylinder.

- 2.1 The diameter of container B is 5 inches.

What is the radius of the container?

- 2.2 Which container's base has a larger area?

Explain your thinking.



- 2.3 Which has a larger volume, container A or B?

Explain your thinking.

- 1.1 A cylinder has a radius of 3 centimeters and a height of 5 centimeters.

What is the volume of the cylinder? Express your answer in terms of  $\pi$ .

- 1.2 What is the volume of the cylinder from problem 1.1 with three times the height?

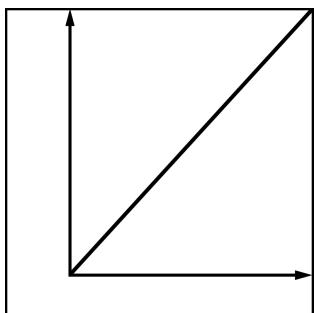
Express your answer in terms of  $\pi$ .

- 1.3 What is the volume of the cylinder from problem 1.1 with three times the radius?

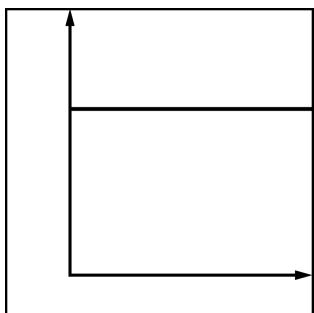
Express your answer in terms of  $\pi$ .

2. Which graph could represent the volume of water in a cylinder as a function of its height?

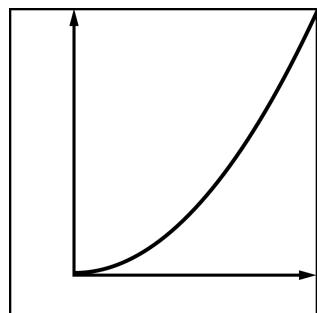
A.



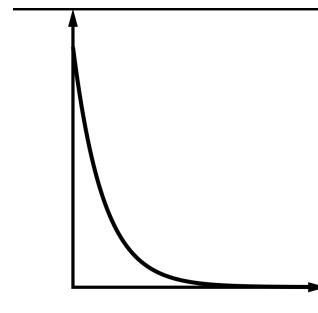
B.



C.



D.



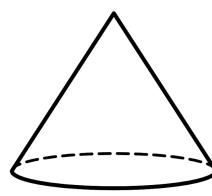
Explain your choice.

## Unit 8.5, Lesson 13: Practice Problems

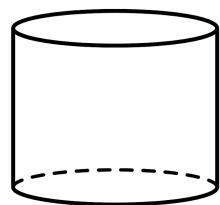
Name \_\_\_\_\_

- 1.1 The volume of this cone is  $36\pi$  cubic units.

What is the volume of a cylinder with the same radius and the same height? Express your answer in terms of  $\pi$ .



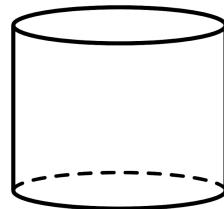
$$V = 36\pi$$



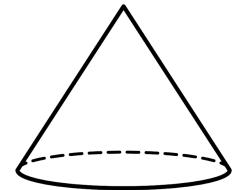
$$V = ?$$

- 1.2 The volume of this cylinder is  $175\pi$  cubic units.

What is the volume of a cone with the same radius and the same height? Express your answer in terms of  $\pi$ .



$$V = 175\pi$$



$$V = ?$$

2. A cylinder and a cone have the same height and radius. The height of each is 5 centimeters, and the radius is 2 centimeters.

Calculate the volume of the cylinder **and** the cone (rounded to the nearest tenth). Use 3.14 as an approximation for  $\pi$ .

Cylinder volume: \_\_\_\_\_

Cone volume: \_\_\_\_\_



## Science Mom Lesson 99

## Unit 8.5, Lesson 15: Practice Problems

Name \_\_\_\_\_

1. Write the letter of the sphere described next to the volume of that sphere.

- Sphere A : Radius of 4 cm

Volume:  $288\pi \text{ cm}^3$  Sphere: \_\_\_\_\_

- Sphere B : Diameter of 6 cm

Volume:  $36\pi \text{ cm}^3$  Sphere: \_\_\_\_\_

- Sphere C : Radius of 6 cm

Volume:  $\frac{256}{3}\pi \text{ cm}^3$  Sphere: \_\_\_\_\_

- 2.1 Calculate the volume of a **sphere** with a diameter of 6 inches.

Give your answer both in terms of  $\pi$  and by using 3.14 to approximate  $\pi$ .

In terms of  $\pi$ : \_\_\_\_\_

Using 3.14 as an approximation: \_\_\_\_\_

- 2.2 Calculate the volume of a **cylinder** with a height of 6 inches and a diameter of 6 inches.

Give your answer both in terms of  $\pi$  and by using 3.14 to approximate  $\pi$ .

In terms of  $\pi$ : \_\_\_\_\_

Using 3.14 as an approximation: \_\_\_\_\_

- 2.3 Calculate the volume of a **cone** with a height of 6 inches and a diameter of 6 inches.

Give your answer both in terms of  $\pi$  and by using 3.14 to approximate  $\pi$ .

In terms of  $\pi$ : \_\_\_\_\_

Using 3.14 as an approximation: \_\_\_\_\_

- 2.4 On the previous three problems, you found the volumes of three shapes with the same height and diameter. How are these three volumes related?

## Warm-Up

Write each decimal or percentage as a fraction.

$0.25 =$

$40\% =$

$1\% =$

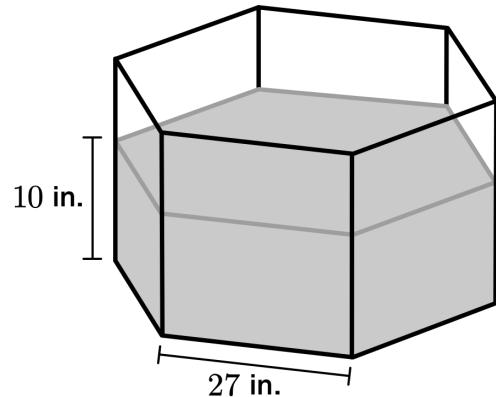
$0.8 =$

## Practice

Polina is designing a new sandbox for her local playground.

- 1.1 Polina knows she needs 1 894 cubic inches of sand to fill the sandbox up 10 inches.

What is the area of the sandbox's base?



- 1.2 If Polina wanted to fill the sandbox up 3 more inches to the top, how much more sand would she need?

- 1.3 How many pieces of wood does Polina need to construct the sandbox? Describe or draw the shape of each piece of wood. Assume all the walls are the same shape and size, and the sandbox has no cover.

- 1.4 Polina wants to paint the sandbox blue. Determine which sides she should paint and how many square inches of paint she will need for those sides.



## Science Mom Lesson 102

## Unit 8.7, Lesson 1: Practice Problems

Name \_\_\_\_\_

1. Write each expression using an exponent.

Expression	Expression With Exponent
$3 \cdot 3 \cdot 3 \cdot 3$	$3^4$
$7 \cdot 7 \cdot 7 \cdot 7 \cdot 7$	
$\left(\frac{4}{5}\right) \cdot \left(\frac{4}{5}\right) \cdot \left(\frac{4}{5}\right) \cdot \left(\frac{4}{5}\right) \cdot \left(\frac{4}{5}\right)$	
$9.3 \cdot 9.3 \cdot 9.3 \cdot 9.3 \cdot 9.3 \cdot 9.3 \cdot 9.3 \cdot 9.3$	

2. Evaluate each expression.

Expression	Value
$2^5$	
$3^3$	
$4^3$	
$6^2$	
$\left(\frac{1}{2}\right)^4$	
$\left(\frac{1}{3}\right)^2$	

3. Write an expression using an exponent to represent the following:

Adnan starts with two coins on Day 1. The number of coins doubles every day.

How many coins will he have on Day 8?

**Unit 8.7, Lesson 2: Practice Problems**

Name \_\_\_\_\_

1. Rewrite each expression as a single power.

Expression	Single Power
$6^3 \cdot 6^9$	
$2 \cdot 2^4$	
$3^{10} \cdot 3^7$	
$5^3 \cdot 5^3$	
$12^5 \cdot 12^{12}$	
$7^6 \cdot 7^6 \cdot 7^6$	

2. Write each expression as a single power.

Expression	Single Power
$(3^7)^2$	
$(2^9)^3$	
$(7^6)^3$	
$(11^2)^3$	
$(5^3)^2$	
$(6^5)^7$	



## Science Mom Lesson 104

## Unit 8.7, Lesson 4: Practice Problems

Name \_\_\_\_\_

1. Rewrite each expression as a single power.

Expression	Single Power
$\frac{5^6}{5^3}$	
$(14^3)^6$	
$8^3 \cdot 8^6$	
$\frac{16^6}{2^6}$	
$\frac{21^3 \cdot 21^5}{21^2}$	

2. Rewrite each expression as a single power.

Expression	Single Power
$4^4 \cdot 5^4$	
$6 \cdot 6^8$	
$(12^2)^7 \cdot 12$	
$\frac{3^{10}}{3}$	
$(0.173)^9 \cdot (0.173)^2$	
$\frac{0.87^5}{0.87^3}$	



1. Priya says, "I can figure out  $5^0$  by looking at other powers of 5. If  $5^3$  is 125 and  $5^2$  is 25, then  $5^1$  is 5."

1.1 What pattern do you notice?

1.2 If this pattern continues, what should be the value of  $5^0$ ? Explain your thinking.

2. Select all the expressions that are equivalent to  $4^{-3}$ .

-12

$2^{-6}$

$\frac{1}{4^3}$

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

12

$\frac{8^{-1}}{2^2}$

**Unit 8.7, Lesson 7: Practice Problems**

Name \_\_\_\_\_

1. Fill in the blank next to each number with the letter of its name.

0.000001 : \_\_\_\_\_

A. One billion

0.001 : \_\_\_\_\_

B. One thousandth

0.01 : \_\_\_\_\_

C. One million

1 000 000 : \_\_\_\_\_

D. One hundredth

1 000 000 000 : \_\_\_\_\_

E. One millionth

2. Write each expression as a multiple of a power of 10 .

Expression	As a Multiple of a Power of 10
42 300	
2 000	
9 200 000	
Four thousand	
80 million	
32 billion	

3. Find three different ways to write the number 437,000 as a multiple of a power of 10 .

Value	As a Multiple of a Power of 10
437 000	
437 000	
437 000	

## Unit 8.7, Lesson 8: Practice Problems

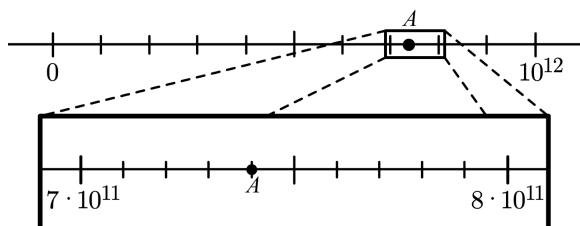
Name \_\_\_\_\_

1. Find three different ways to write the number 5 230 000 as a multiple of a power of 10.

Value	As a Multiple of a Power of 10
5 230 000	
5 230 000	
5 230 000	

2. What number is represented by point A?

Explain your thinking.



3. Rewrite each expression as a single power of 10.

Expression	Single Power of 10
$10^{-3} \cdot 10^{-2}$	
$10^4 \cdot 10^{-1}$	
$\frac{10^5}{10^7}$	
$(10^{-4})^5$	
$10^{-3} \cdot 10^2$	
$\frac{10^{-9}}{10^5}$	

**Unit 8.7, Lesson 9: Practice Problems**

Name \_\_\_\_\_

1. The Sun is roughly  $10^2$  times as wide as Earth.

The star KW Sagittarii is roughly  $10^5$  times as wide as Earth.

About how many times as wide is KW Sagittarii as the Sun? Explain your thinking.

You have 1 000 000 small cubes. Each cube measures 1 inch on a side.

- 2.1 If you stacked all of the cubes on top of one another to make an enormous tower, how high would they reach?

Express your answer in terms of inches, feet and miles.

Note: There are 12 inches in a foot and 5 280 feet in a mile.

Value	Unit
	inches
	feet
	miles

- 2.2 If you arranged all of the cubes on the floor to make a square, what would be the length of each side?
- 2.3 If you arranged all of the cubes on the floor to make a square, would the square fit in your classroom? Explain your thinking.
- 2.4 If you used all of the cubes to make one big cube, what would be the side length of the big cube? Explain your thinking.



## Science Mom Lesson 109

## Unit 8.7, Lesson 10: Practice Problems

Name \_\_\_\_\_

1. Which expressions are equivalent to  $4 \cdot 10^{-3}$ ?

- $4 \cdot \left(\frac{1}{10}\right) \cdot \left(\frac{1}{10}\right) \cdot \left(\frac{1}{10}\right)$         $4 \cdot 0.0001$   
  $4 \cdot (-10) \cdot (-10) \cdot (-10)$        0.004  
  $4 \cdot 0.001$        0.0004

- 2.1 Write each expression as a multiple of a power of 10.

Expression	As a Multiple of a Power of 10
0.04	
0.072	
0.0000325	
Three thousandths	
23 hundredths	
729 thousandths	
41 millionths	

- 2.2 Write each expression in scientific notation.

Expression	Scientific Notation
0.04	
0.072	
0.0000325	
Three thousandths	
23 hundredths	
729 thousandths	
41 millionths	



1. Evaluate each expression. Express your answer in scientific notation.

Expression	Answer (in scientific notation)
$(1.5 \cdot 10^2)(5 \cdot 10^{10})$	
$\frac{4.8 \cdot 10^{-8}}{3 \cdot 10^{-3}}$	
$(5 \cdot 10^8)(4 \cdot 10^3)$	
$(7.2 \cdot 10^3) \div (1.2 \cdot 10^5)$	

- 2.1 Which number is greater?

$$17 \cdot 10^8 \text{ or } 4 \cdot 10^8$$

About how many times greater is one than the other?

- 2.2 Which number is greater?

$$2 \cdot 10^6 \text{ or } 7.839 \cdot 10^6$$

About how many times greater is one than the other?

- 2.3 Which number is greater?

$$42 \cdot 10^7 \text{ or } 8.5 \cdot 10^8$$

About how many times greater is one than the other?



## Science Mom Lesson 111

## Unit 8.7, Lesson 12: Practice Problems

Name \_\_\_\_\_

1. Evaluate each expression. Express your answer in scientific notation.

Expression	Answer (in scientific notation)
$(2 \cdot 10^5) + (6 \cdot 10^5)$	
$(4.1 \cdot 10^7) \cdot 2$	
$3 \cdot (1.5 \cdot 10^{11})$	
$(3 \cdot 10^3)^2$	
$(9 \cdot 10^6) \cdot (3 \cdot 10^6)$	

2. Evaluate each expression. Express your answer in scientific notation.

Expression	Answer (in scientific notation)
$5.3 \cdot 10^4 + 4.7 \cdot 10^4$	
$3.7 \cdot 10^6 - 3.3 \cdot 10^6$	
$4.8 \cdot 10^{-3} + 6.3 \cdot 10^{-3}$	
$6.6 \cdot 10^{-5} - 6.1 \cdot 10^{-5}$	

3. Han found a way to compute complicated expressions more easily. Since  $2 \cdot 5 = 10$ , he looks for pairings of 2s and 5s that he knows equal 10. Apply Han's technique to compute the expressions in the table.

For example:

$$\begin{aligned}3 \cdot 2^4 \cdot 5^5 &= 3 \cdot 2^4 \cdot 5^4 \cdot 5 \\&= (3 \cdot 5) \cdot (2 \cdot 5)^4 \\&= 15 \cdot 10^4 \\&= 150\,000\end{aligned}$$

Expression	Value
$2^4 \cdot 5 \cdot (3 \cdot 5)^3$	
$\frac{2^3 \cdot 5^2 \cdot (2 \cdot 3)^2 \cdot (3 \cdot 5)^2}{3^2}$	

**Unit 8.7, Lesson 13: Practice Problems**

Name \_\_\_\_\_

1. How many bucketloads would it take to bucket out the world's oceans?

Some useful information:

- The world's oceans hold roughly  $1.4 \times 10^9$  cubic kilometers of water.
- A typical bucket holds roughly 20 000 cubic centimeters of water.
- There are  $10^{15}$  cubic centimeters in a cubic kilometer.

Write your answer in scientific notation.

2. Which is larger: the number of meters across the Milky Way or the total number of cells in all humans?

Some useful information:

- The Milky Way is about 100 000 light years across.
- There are about 37 trillion cells in a human body.
- One light year is about  $10^{16}$  meters.
- The world population is about 7 billion.

- Meters across the milky way  
 Total number of cells in all humans

Explain your thinking.

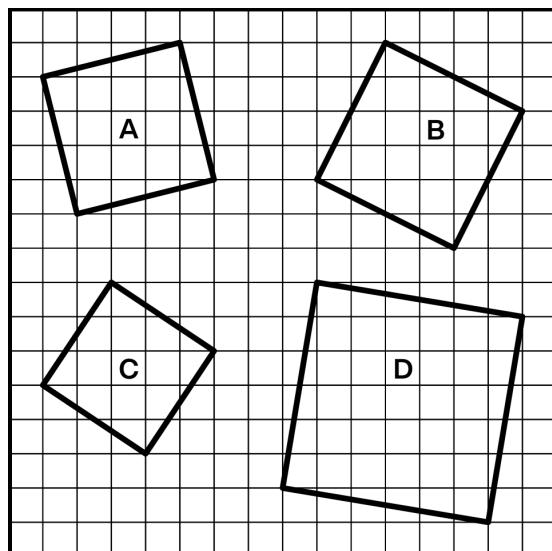
## Unit 8.8, Lesson 1: Practice Problems

Name \_\_\_\_\_

1. Find the area of each square.

Each grid square represents 1 square unit.

Square	Area (square units)
A	
B	
C	
D	



2. The side lengths of five squares are given in the table. Find the area of each square.

Side Length	Area
3 inches	
7 units	
100 cm	
40 inches	
$x$ units	

3. The areas of four squares are given in the table. Find the side length of each square.

Side Length	Area
	81 square inches
	$\frac{4}{25}$ square cm
	0.49 square units
	$m^2$ square units



## Science Mom Lesson 114

## Unit 8.8, Lesson 2: Practice Problems

Name \_\_\_\_\_

1. Square A has an area of 81 square feet.

Select all the expressions that are equal to the side length of this square (in feet).

3

$\frac{81}{2}$

$\sqrt{81}$

$\sqrt{9}$

9

2. The areas of six squares are given in the table. Find the side length of each square.

Area (square units)	Side Length (units)
36	
37	
$\frac{100}{9}$	
$\frac{2}{5}$	
0.0001	
0.11	

3. Here is some information about three squares.

- Square A is smaller than Square B.
- Square B is smaller than Square C.
- The three squares' side lengths are  $\sqrt{26}$ , 4.2, and  $\sqrt{11}$ .

Write each side length next to the appropriate square in the table.

Square	Side Length
A	
B	
C	

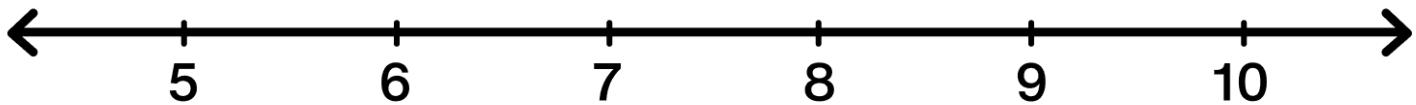
1.1 Explain how you know that  $\sqrt{37}$  is a little more than 6.

1.2 Explain how you know that  $\sqrt{95}$  is a little less than 10.

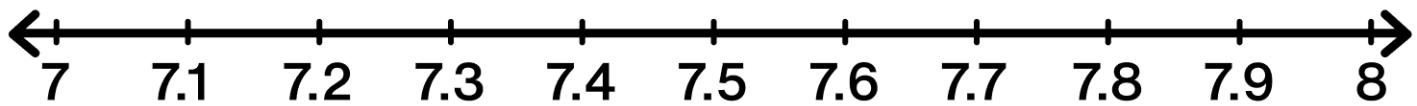
1.3 Explain how you know that  $\sqrt{30}$  is between 5 and 6.

2. Plot and label each number on the number line:

- 6
- $\sqrt{83}$
- $\sqrt{40}$
- $\sqrt{64}$
- 7.5



3. Plot and label two square root values between 7 and 8 on the number line.





## Science Mom Lesson 116

## Unit 8.8, Lesson 5: Practice Problems

Name \_\_\_\_\_

- 1.1 Given these side lengths, what is the volume of each cube?

Side Length	Volume
4 cm	
$\sqrt[3]{11}$ ft.	
$s$ units	

- 1.2 Given these volumes, what is the side length of each cube?

Side Length	Volume
	1 000 cubic cm
	23 cubic ft.
	$v$ cubic units

2. For each expression, write an equivalent expression that doesn't use a cube root symbol.

Expression	Equivalent Expression
$\sqrt[3]{1}$	
$\sqrt[3]{216}$	
$\sqrt[3]{8\ 000}$	
$\sqrt[3]{\frac{1}{64}}$	
$\sqrt[3]{\frac{27}{125}}$	
$\sqrt[3]{0.027}$	
$\sqrt[3]{0.000125}$	

## Unit 8.8, Lesson 6: Practice Problems

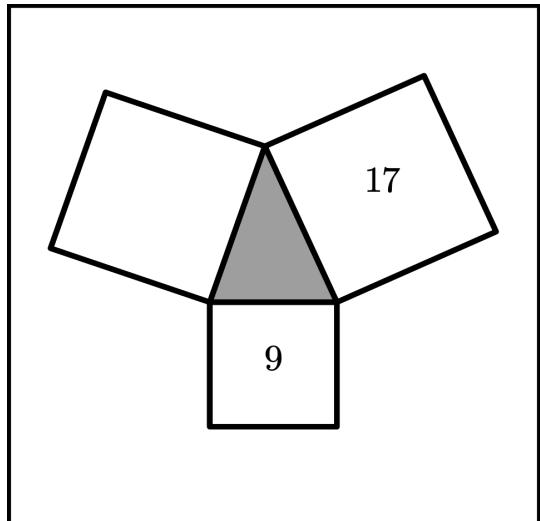
Name \_\_\_\_\_

1. Here is a diagram of a triangle and three squares.

Priya says the area of the large unmarked square is 26 square units because  $9 + 17 = 26$ .

Do you agree?

Explain your thinking.



2. This right angle triangle has side lengths  $m$ ,  $p$ , and  $z$ .

Select all the equations that represent the relationship between  $m$ ,  $p$ , and  $z$ .

$m^2 + p^2 = z^2$

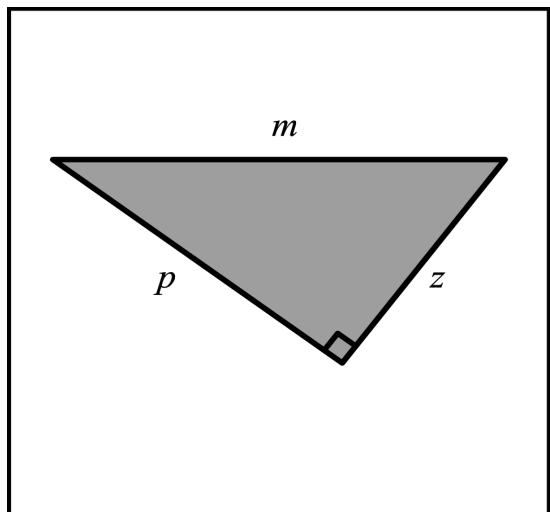
$m^2 = p^2 + z^2$

$m^2 = z^2 + p^2$

$p^2 + m^2 = z^2$

$z^2 + p^2 = m^2$

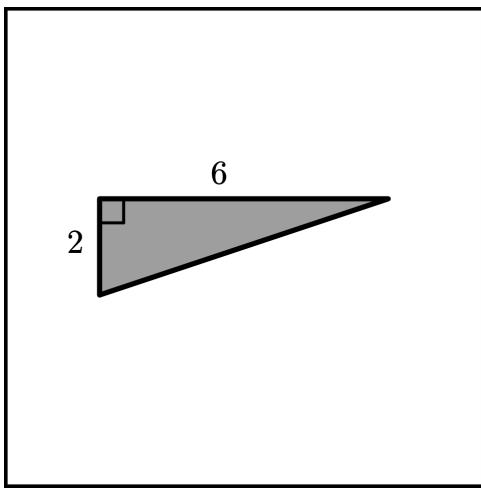
$p^2 + z^2 = m^2$



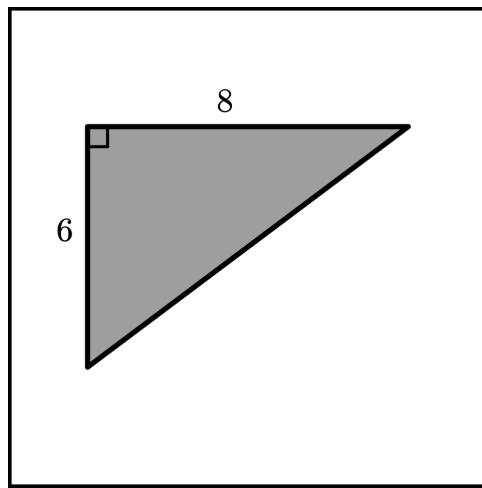
## Unit 8.8, Lesson 7: Practice Problems

Name \_\_\_\_\_

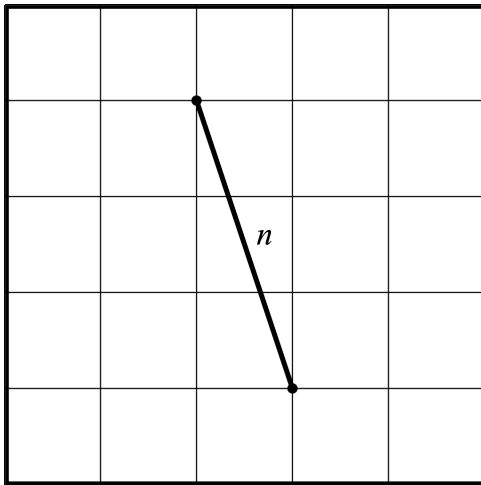
- 1.1 Find the length of the unlabeled side.



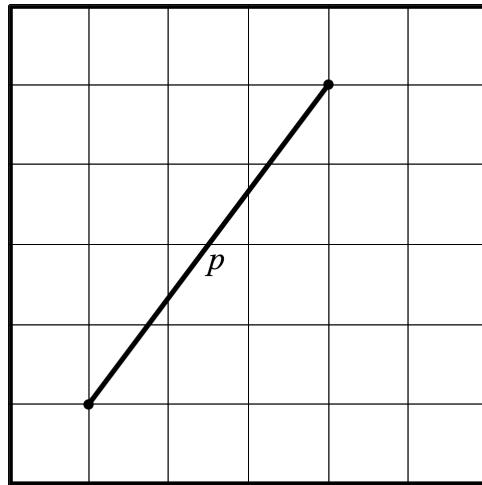
- 1.2 Find the length of the unlabeled side.



- 1.3 This segment is
- $n$
- units long.
- 
- What is the value of
- $n$
- ?



- 1.4 This segment is
- $p$
- units long.
- 
- What is the value of
- $p$
- ?

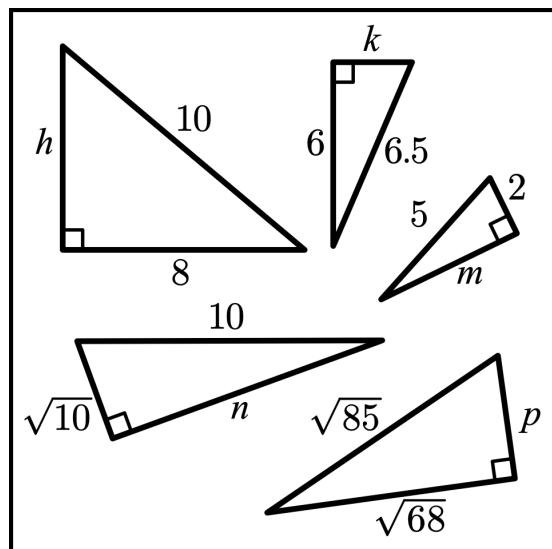


## Unit 8.8, Lesson 8: Practice Problems

Name \_\_\_\_\_

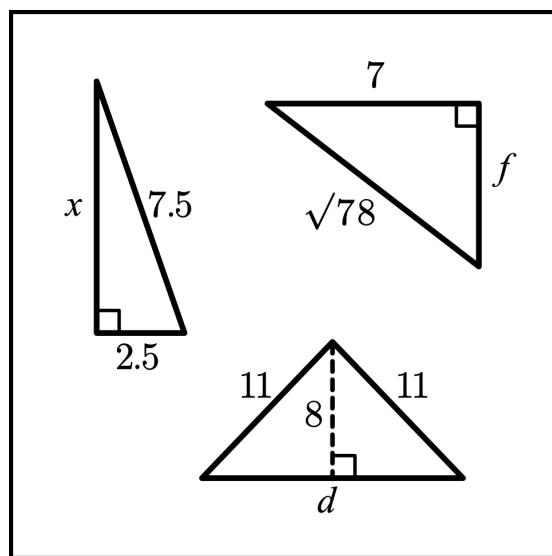
1. Find the exact value of each variable representing a side length in a right triangle.

Side	Length
$h$	
$k$	
$m$	
$n$	
$p$	



2. Find the value of each variable to the nearest tenth.

Side	Length
$x$	
$f$	
$d$	



3. A right triangle has side lengths of  $a$ ,  $b$ , and  $c$  units.

The longest side has a length of  $c$  units.

Complete each equation to show three relations among  $a$ ,  $b$ , and  $c$ .

Equations
$c^2 =$
$a^2 =$
$b^2 =$

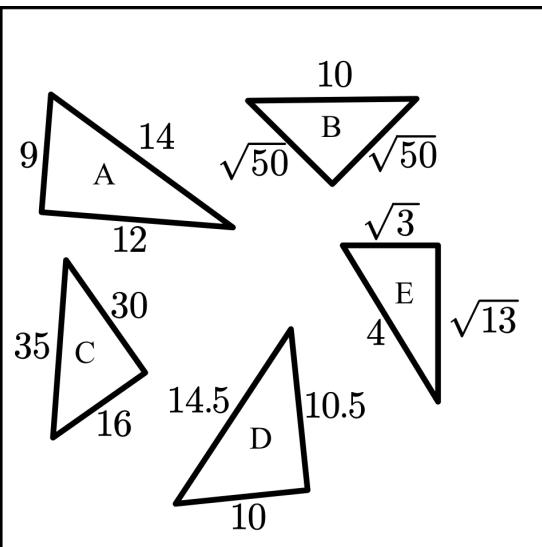
## Unit 8.8, Lesson 9: Practice Problems

Name \_\_\_\_\_

1. Select **all** of the triangles that are definitely right triangles.

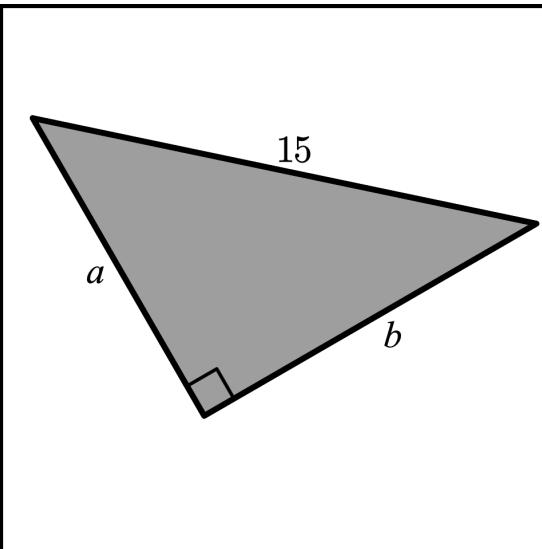
(Note that not all triangles are drawn to scale.)

- A
- B
- C
- D
- E



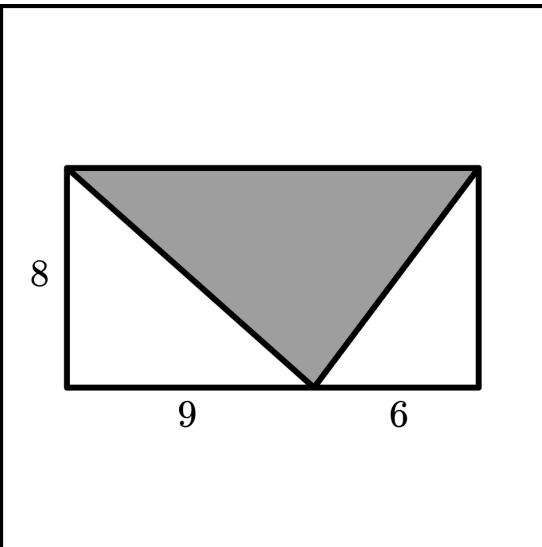
2. A right triangle has a hypotenuse of 15 centimeters. What are possible lengths for the two legs of the triangle?

Leg	Length
$a$	
$b$	



3. Here is a 15 -by- 8 rectangle divided into triangles. Is the shaded triangle a right triangle?

Explain your thinking.

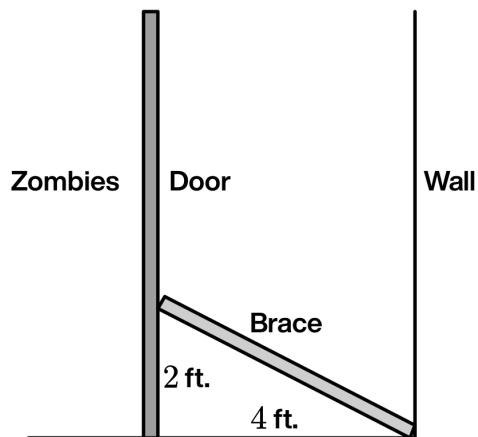


## Unit 8.8, Lesson 10: Practice Problems

Name \_\_\_\_\_

1. A man is trying to zombie proof his house. He wants to cut a length of wood that will brace the door against the wall. The wall is 4 feet away from the door, and he wants the brace to rest 2 feet up the door.

About how long should he cut the brace?



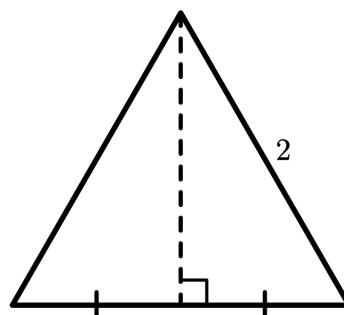
2. At a restaurant, a trash can's opening is rectangular and measures 7 inches by 9 inches. The serving trays measure 12 inches by 16 inches. Jada says it is impossible for a tray to accidentally fall through the trash can opening because the shortest side of a tray is longer than either side of the opening.

Do you agree or disagree with Jada's explanation? Explain your thinking.

3. Here is an equilateral triangle. The length of each side is 2 units. A height is drawn. In an equilateral triangle, a line drawn from one corner to the center of the opposite side represents the height.

3.1 Find the exact height.

3.2 Find the area of the equilateral triangle.



3.3 **Challenge:** Using  $x$  for the length of each side in the equilateral triangle, express its area in terms of  $x$ .

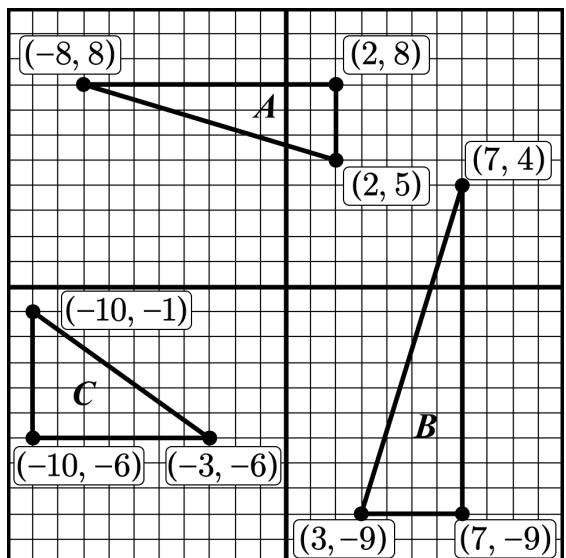
## Unit 8.8, Lesson 11: Practice Problems

Name \_\_\_\_\_

1. Three right triangles are drawn in the coordinate plane, and the coordinates of their vertices are labeled.

For each right triangle, label the lengths of the sides.

Triangle	Smaller Leg	Longer Leg	Hypotenuse
A			
B			
C			



2. Find the distance between each pair of points.

If you get stuck, try plotting the points on graph paper.

Points	Distance Between Points
$P = (0, -11)$ and $Q = (0, 2)$	
$A = (0, 0)$ and $B = (-3, -4)$	
$C = (8, 0)$ and $D = (0, -6)$	

3. Find the distance between each pair of points.

If you get stuck, try plotting the points on graph paper.

Points	Distance Between Points
$K = (5, 0)$ and $L = (-4, 0)$	
$M = (-21, -29)$ and $N = (0, 0)$	



## Science Mom Lesson 123

## Unit 8.8, Lesson 12: Practice Problems

Name \_\_\_\_\_

Andre and Jada are discussing how to write  $\frac{17}{20}$  as a decimal. Andre says he can get the decimal by using long division to divide 17 by 20. Jada says she can multiply by  $\frac{5}{5}$  to get an equivalent fraction with a denominator of 100, and then write the number of hundredths as a decimal.

- 1.1 Do both of these strategies work?

Which strategy do you prefer? Explain your reasoning.

- 1.2 Write  $\frac{17}{20}$  as a decimal. Explain your thinking.

2. Write each expression as a decimal.

Expression	Decimal
$\sqrt{\frac{9}{100}}$	
$\frac{99}{100}$	
$\sqrt{\frac{9}{16}}$	
$\frac{23}{10}$	

3. Write each expression as a fraction.

Expression	Fraction
$\sqrt{0.81}$	
0.0276	
$\sqrt{0.04}$	
10.01	



## Science Mom Lesson 124

## Unit 8.8, Lesson 13: Practice Problems

Name \_\_\_\_\_

1. Elena and Han are discussing how to write the repeating decimal  $x = 0.\overline{137}$  as a fraction.

Han says that  $0.\overline{137}$  equals  $\frac{13,764}{99,900}$ . "I calculated  $1000x = 137.\overline{777}$  because the decimal begins repeating after three digits. Next, I subtracted to get  $999x = 137.64$ . Then, I multiplied by 100 to get rid of the decimal:  $99,900x = 13,764$ . Finally, I divided to get  $x = \frac{13,764}{99,900}$ ."

Elena says that  $0.\overline{137}$  equals  $\frac{124}{900}$ . "I calculated  $10x = 1.\overline{377}$  because one digit repeats. Next, I subtracted to get  $9x = 1.24$ . Then, I did what Han did to get  $900x = 124$  and finally divided to get  $x = \frac{124}{900}$ ."

Who is correct? Circle your answer.

- A. Han      B. Elena      C. Both      D. Neither

Explain your thinking.

- 2.1 How are the numbers  $0.444$  and  $0.\overline{4}$  the same?

- 2.2 How are the numbers  $0.444$  and  $0.\overline{4}$  different?

- 3.1 Fill in the blank next to each fraction with the letter of its decimal representation.

$$\frac{2}{3} : \underline{\hspace{2cm}}$$

A.  $3.\overline{45}$

D.  $0.\overline{23}$

$$\frac{126}{37} : \underline{\hspace{2cm}}$$

B.  $0.\overline{6}$

E.  $3.450$

C.  $3.\overline{405}$

F.  $0.\overline{6}$

- 3.2 Write each decimal as a fraction.

Decimal	Fraction
$0.\overline{75}$	
$0.\overline{3}$	



1. State whether each number is rational or irrational.

Number	Rational or Irrational
$\frac{-13}{3}$	
$\sqrt{37}$	
- 77	
$-\sqrt{100}$	
$-\sqrt{12}$	
0.1234	

2. Select the best explanation for why  $-\sqrt{10}$  is irrational.
- A.  $-\sqrt{10}$  is irrational because it is not rational.
  - B.  $-\sqrt{10}$  is irrational because it is less than zero.
  - C.  $-\sqrt{10}$  is irrational because it is not a whole number.
  - D.  $-\sqrt{10}$  is irrational because if I put  $-\sqrt{10}$  into a calculator, I get -3.16227766 , which does not make a repeating pattern.
- 3.1 Give an example of a rational number and explain how you know it is rational.
- 3.2 Give three examples of irrational numbers.
4. Select all the irrational numbers.

$\frac{-123}{45}$

$\frac{2}{3}$

$\sqrt{14}$

$\sqrt{99}$

$\sqrt{100}$

$\sqrt{64}$