Document A

Source: Chart created from various sources.

Athens and Rome: Who Could Be a Citizen?

	Athens	Roman Republic	Requirements
Free, native-born adult males	Yes	Yes	**Athens:** If parents were free-born Athenians **Rome:** If parents were married in certain areas of Roman Empire
Free, native-born adult females	No	Yes	**Rome:** But had limited rights. Could own property, but could not vote or hold public office.
Free, native-born male children	No	Yes	**Athens:** First, had to complete education and two years of military training before being granted citizenship **Rome:** At birth, if parents were citizens
Female children	No	Yes	**Rome:** At birth if parents were citizens
Slaves	No	No	
Freed slaves	No	No	
Sons of freed slaves	No	Yes	

Document Analysis

1. What was required for an adult male to become a citizen of Athens? A Roman male?

2. Could women become citizens in Athens and Rome? Could slaves?

3. In which society were children granted citizenship?

4. In your opinion, which system, Athens or Rome, was more generous in granting citizenship to its people? Explain.

Document B

Source: From a speech titled *"The Polity of Athenians"* by The Old Oligarch, circa 424 BCE.

Note: The identity of The Old Oligarch (an oligarch is a person of power) is unknown.

> "I shall say that at Athens [...] it is the poor which mans the fleet and has brought the state her power, and the steersmen and the boatswains and the shipmasters and the lookout-men and the shipwrights – these have brought the state her power much rather than the ... best-born and the elite. This being so, it seems right that all should have a share in offices filled by lot [lottery] or by election, and that any citizen who wishes should be allowed to speak.... For if the poor and the common people and the worse elements are treated well, the growth of these classes will exalt [glorify] the democracy...."

Document Analysis

1. What is The Old Oligarch's main idea when he says it is the steersmen and the shipwrights (shipbuilders) who have brought the city-state power?

2. What is the significance of the fact that Athenians allowed a poor and common man to win a position in the government by lot?

3. Do you think that election by lottery was a wise practice by the Athenians? Explain.

Name _____ Class _____ Date _____

Practice 10-5

Ratios as Decimals

1. The book store employs 4 people. The ratio of women working in the store to the total number of workers is 3 to 4. The ratio of men working in the store to the total number of workers is 1 to 4.

a) Write the ratio of women workers to all workers in three different ways.

b) Write the ratio of men workers to all workers in three different ways.

2. The table shows the ratio of games lost to games played for the school basketball team. Complete the table by writing the ratio as a fraction and as a decimal.

Ratio	Fraction	Decimal
3 : 10	_____	_____

3. In the workbench drawer, the ratio of hex bolts to all bolts is 0.14. Write the ratio as a fraction in simplest form.

4. Last winter, the ratio of days with snow to days with no snow was 1.12. Write this ratio as a fraction in simplest form.

5. In a recent student government election, the ratio of students who voted for the winner to all the students who voted was 0.64. The number of students who voted was 125. How many votes did the winner get?

6. A salesperson's ratio of successful signups to the number of people called is 0.125. This month, the salesperson has 25 signups. How many people did the salesperson call this month?

7. **Libraries** In the school library, there are 110 fiction books, 125 nonfiction books, and 260 magazines. The ratio of fiction books to nonfiction books is 110 : 125. Write the ratio of fiction books to nonfiction books as a fraction and as a decimal.

8. **Error Analysis** Mr. Bright's math class is working on a puzzle. To solve the puzzle, the students must change a ratio from decimal form to a fraction in simplest form. The ratio is 2.33. Katie says that the ratio 2.33 is equal to $\frac{33}{100}$. Jon says the ratio 2.33 is equal to $\frac{233}{100}$.

a) Which student is correct?

❍ A. Jon ❍ B. Katie

b) What error was made?

❍ A. The decimal part was not added.

❍ B. The fraction is not in the simplest form.

❍ C. The whole number part was not added.

9. **Writing** The ratio of free throws made to free throws tried is 0.55 for a professional basketball player. Last year, the player tried 80 free throws.
   a) Explain how you can find the number of free throws the player made.
   b) How many free throws did the player make last year?

10. **Reasoning** You write a ratio as 7 : 10. You can also write the ratio as a fraction and as a decimal.
   a) In how many ways can you write the ratio as a fraction?
   ❍ A. exactly one way ❍ C. more than three ways
   ❍ B. exactly two ways ❍ D. exactly three ways
   b) In how many ways can you write the ratio as a decimal (without attaching zeros at the end)?
   ❍ A. exactly two ways ❍ C. more than three ways
   ❍ B. exactly three ways ❍ D. exactly one way
   c) Explain your reasoning.

11. Write the ratio 0.88 as a fraction in simplest form.

12. **Multiple Representations** The first column of the table suggests two ratios. Complete the table by writing each ratio using a colon and then in fraction and decimal forms.

Description	Ratio	Fraction	Decimal
53 total students to 20 girls	_____ : _____	_____	_____
boys to girls	_____ : _____	_____	_____

13. In a group of students, the ratio of students wearing red shirts to students wearing blue shirts is 5.64. The ratio of students wearing yellow shirts to blue shirts is 2.94. Write the ratio of students wearing red shirts to students wearing blue shirts as a fraction in simplest form.

14. **Challenge** A company blends fruit juices in whole-gallon batches. In one batch, the ratio of the gallons of Juice A to the gallons of Juice B is 0.125. Find the least number of gallons possible for this batch.

15. **Challenge** One day in the town of Chattyville, the ratio of calls made on cell phones to calls made on home phones was 0.625. For cell phones, the ratio of calls completed to calls dropped was 0.875. The number of cell phone calls completed that day was 35.
   a) Find the total number of cell phone calls.
   b) Find the total number of all calls made that day.

Practice 10-5: Ratios as Decimals

1. a) 3 : 4, $\frac{3}{4}$, 0.75

b) 1 : 4, $\frac{1}{4}$, 0.25

2. $\frac{3}{10}$

0.3

3. $\frac{7}{50}$

4. $\frac{28}{25}$

5. 80

6. 200

7. $\frac{22}{25}$

0.88

8. a) A

b) C

9. a) Answers will vary

b) 44

10. a) C

b) D

c) Answers will vary

11. $\frac{22}{25}$

12. 53 : 20, $\frac{53}{20}$, 2.65

33 : 20, $\frac{33}{20}$, 1.65

13. $\frac{141}{25}$

14. 9

15. a) 75

b) 195

Name _____ Class _____ Date _____

Practice 10-6

Problem Solving

1. The school store opened on the first day of school with 30 notebooks and 18 pencils. Within two days it sold all of these items. On the first day, twice as many notebooks were sold as pencils. On the second day, for every 3 notebooks sold, 2 pencils were sold.

a) How many notebooks and how many pencils were sold on the first day?

b) How many notebooks and how many pencils were sold on the second day?

2. The table shows the amounts of some ingredients needed for a waffle recipe. Find the amounts of the ingredients needed to make 3 and 4 batches of waffles. Complete the table.

Waffle Ingredients			
Batches of Waffles	1	3	4
Shortening (tablespoons)	2	_____	_____
Baking powder (teaspoons)	5	_____	_____
Flour (cups)	4	_____	_____

3. The ratio of lime juice to soy sauce in a salad dressing is 6 : 7. The total of both ingredients is 39 tablespoons. How many tablespoons of each ingredient are used?

4. At Quincy Middle School, there are 45 girls and 27 boys in the sixth grade. There are two sixth-grade classrooms. Ms. Alvarado's class has twice as many girls as boys. The ratio of girls to boys in Mr. Lowry's class is 3 : 2.

a) Show how to find the number of boys and girls in each class using systematic guess and check.

b) How many girls and boys are in Ms. Alvarado's class?

❍ A. 4 girls and 2 boys

❍ B. 2 girls and 4 boys

❍ C. 18 girls and 9 boys

❍ D. 9 girls and 18 boys

5. There are 66 calories in 1 serving of cereal. If a bowl holds 2 servings, how many calories are in the bowl?

6. Two business partners, Ellen and Bob, invested money in their business at a ratio of 3 to 7. Bob invested the greater amount. The total amount invested was $200. How much did each partner invest?

7. Tyrone is making 52 cookies for a party. Some will be pecan cookies. Some will be honey ginger cookies. The ratio of pecan to honey ginger cookies will be 7 : 6. Suppose you use systematic guess and check to find the number of each type of cookie.

a) If the total for one of your guesses is half of 52, how might you change your guess?

❍ A. Divide each value by 2.

❍ B. Subtract 2 from each value.

❍ C. Add 2 to each value.

❍ D. Multiply each value by 2.

b) Explain your reasoning.

8. Bonnie read the nutrition label on the box of her favorite cereal to find out what she was really eating every morning. The table shows some of this information. Estimate how much of each nutrient is in 3 servings and 4 servings. Complete the table.

Cereal Nutrition Information			
	Amount per Serving	**Estimate for 3 Servings**	**Estimate for 4 Servings**
Potassium	65 mg	_____ mg	_____mg
Sugars	11 g	_____ g	_____ g
Protein	4 g	_____ g	_____ g

9. A doctor ordered a patient to exercise. The patient walked for 168 minutes in two weeks. The ratio of the time for the first week to the time for the second week is 8 : 13. How many minutes did the patient walk each week?

10. **Challenge** A new coffee shop sold 468 cups of hot coffee and 351 cups of iced coffee during its first two days. The ratio of cups of hot coffee sold to cups of iced coffee sold on the first day was 17 : 9. On the second day, the shop sold twice as many cups of iced coffee as the first day. The ratio of cups of hot coffee sold to cups of iced coffee sold on the second day was 19 : 18.

a) How many cups of each type of coffee did the shop sell the first day?

b) How many cups of each type of coffee did the shop sell the second day?

11. **Challenge** Rachel works a day job and an evening job. She works 78 hours every two weeks. The ratio of the hours she works at her day job to the hours she works at her evening job is 11 : 2. The ratio of the hourly pay for her day job to the hourly pay for her evening job is 5 : 4. Rachel earns $25 an hour at her day job. How much does she earn every two weeks?

Practice 10-6: ***Problem Solving***

1. a) 12
6
b) 18
12

2. 6, 8
15, 20
12, 16

3. 18 tablespoons of lime juice and 21 tablespoons of soy sauce

4. a) Answers will vary
b) C

5. 132 calories

6. Ellen invested $60
Bob invested $140

7. a) D
b) Answers will vary

8. 210
280
30
40
15
20

9. 64 min the first week
104 min the second week

10. a) 221 hot coffee
117 iced coffee
b) 247 hot coffee
234 iced coffee

11. $1,890

Name _____ Class _____ Date _____

Practice 12-1

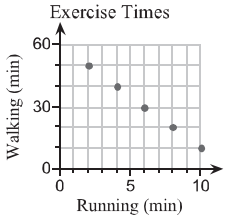
Plotting Ratios and Rates

1. a) A student runs 2 minutes for every 10 minutes she walks. Complete the table.

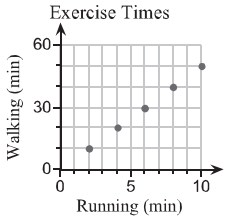
Exercise Times					
Running (minutes)	2	4	6	8	10
Walking (minutes)	10	_____	_____	_____	_____

b) Which graph shows the ratios correctly?

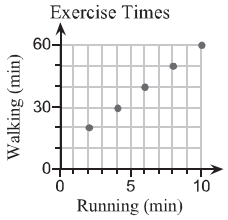
❍ A.



❍ B.



❍ C.

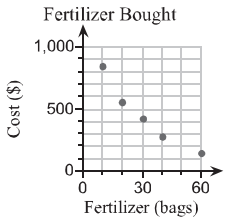


2. a) A store charges $140 for every 10 bags of fertilizer a farmer buys. Complete the table.

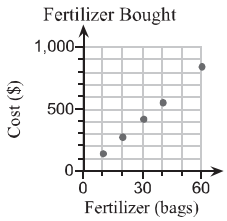
Fertilizer Bought					
Fertilizer (bags)	10	_____	30	40	_____
Cost ($)	140	280	_____	_____	840

b) Which graph shows the ratios correctly?

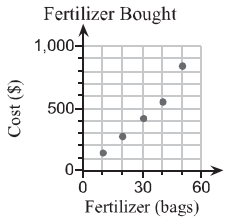
❍ A.



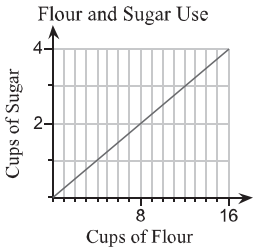
❍ B.



❍ C.



3. The graph shows the relationship between the number of cups of sugar and the number of cups of flour in a recipe. Decide which statements are true. Check all that apply.



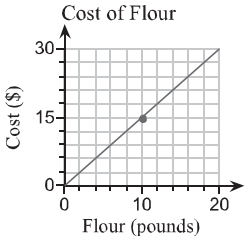
❑ A. To use 2 cups of flour, you need 8 cups of sugar.

❑ B. You need 0.25 cup of sugar for every cup of flour.

❑ C. The point (16, 4) represents 16 cups of flour to 4 cups of sugar.

❑ D. One ratio of cups of flour to cups of sugar is 8 : 2.

4. You buy flour in bulk for a recipe. What is the unit price of the flour based on the graph?



- ❍ A. $10 per pound
- ❍ B. $15 per pound
- ❍ C. $1.50 per pound
- ❍ D. $0.30 per pound

5. The equation $y = \frac{1}{5}x$ describes the number of calls y a salesperson makes in x minutes. How does y change as x changes, and which statement describes what the change means?

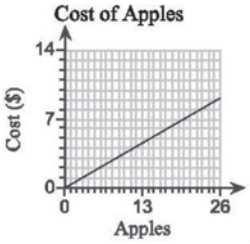
- ❍ A. As x increases by 1, y increases by 5. This means that every 1 minute the salesperson makes 5 calls.
- ❍ B. As x increases, by 5, y increases by 1. This means that every 5 minutes the salesperson makes 1 call.
- ❍ C. As x increases by 5, y increases by 1. This means that every 1 minute the salesperson makes 5 calls.
- ❍ D. As x increases by 1, y increases by 5. This means that every 5 minutes the salesperson makes 1 call.

6. The equation $y = 1\frac{1}{4}x$ describes the number of inches y that a snail travels in x minutes. How does y change as x changes, and which statement describes what the change means?

- ❍ A. As x increases by 4, y increases by 11. This means that every 11 minutes the snail travels 4 inches.
- ❍ B. As x increases by 11, y increases by 4. This means that every 11 minutes, the snail travels 4 inches.
- ❍ C. As x increases by 4, y increases by 11. This means that every 4 minutes the snail travels 11 inches.
- ❍ D. As x increases by 11, y increases by 4. This means that every 4 minutes the snail travels 11 inches.

7. a) Writing The graph shows the relationship between the cost of a bag of apples and the number of apples in a bag. Based on the graph, decide whether the following statement is true or false.

To buy 7 apples, you need $20.



b) Explain your answer. Draw a picture to support your answer, if necessary.

8. Reasoning The graph shows the relationship between the number of points a basketball team scores and the number of minutes the team has been playing. It shows a unit rate of 0.16 minute per point. Based on the graph, could another unit rate be 5.25 points per minute? Explain your reasoning.

9. **Error Analysis** The equation $y = \frac{7}{15}x$ describes the number of miles, y, that a bus travels in x minutes. Your friend says that as x increases by 7, y increases by 15.

a) What error did your friend likely make?

- ❍ A. Your friend calculated the values incorrectly.
- ❍ B. Your friend used the wrong units.
- ❍ C. Your friend switched the values of x and y.
- ❍ D. Your friend said that the values increase instead of decrease.

b) How does y change as x changes, and which statement describes what the change means?

- ❍ A. As x increases by 7, y increases by 15. This means that every 7 minutes the bus travels 15 miles.
- ❍ B. As x increases by 7, y increases by 15. This means that every 15 minutes the bus travels 7 miles.
- ❍ C. As x increases by 15, y increases by 7. This means that every 15 minutes the bus travels 7 miles.
- ❍ D. As x increases by 15, y increases by 7. This means that every 7 minutes the bus travels 15 miles.

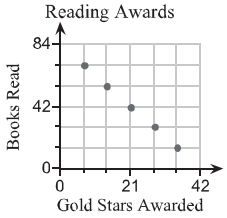
10. **Reading Awards** For a reading contest, a teacher awards 7 gold stars for every 14 books read.

a) Complete the table.

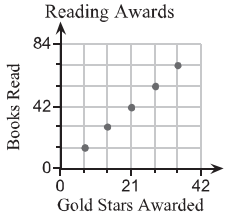
Reading Awards					
Gold Stars Awarded	7	14	21	28	35
Books Read	14	_____	_____	_____	_____

b) Which graph shows the ratios correctly?

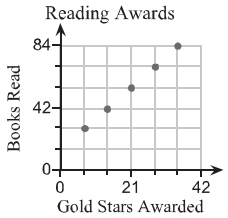
❍ A.



❍ B.



❍ C.



11. **Open-Ended** You are given the equation $y = \frac{22}{15}x$, where y represents yards and x represents seconds.

a) How does y change as x changes?

- ❍ A. As x increases by 15, y increases by 22.
- ❍ B. As x increases by 22, y decreases by 15.
- ❍ C. As x decreases by 15, y increases by 22.
- ❍ D. As x increases by 22, y increases by 15.

b) Describe a situation that this equation could represent. Describe what the change means for your situation.

12. Multiple Representations The equation $y = \frac{12}{20}x$ describes the number of kilometers, y, that a van travels in x minutes. What is the constant speed of the van in terms of hours? Express the speed in three different ways.

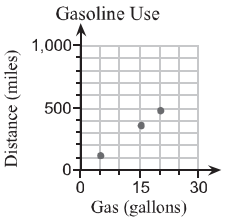
13. On a cross-country trip, a car uses 5 gallons of gas for every 120 miles it travels. Make a table of equivalent ratios to help you answer the questions.

a) How many gallons of gas does the car use if it travels 360 miles?

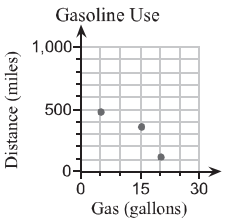
b) How far can the car travel if it uses 20 gallons of gas?

c) Which graph shows the ratios correctly?

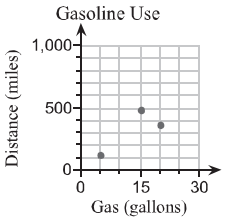
❍ A.



❍ B.



❍ C.

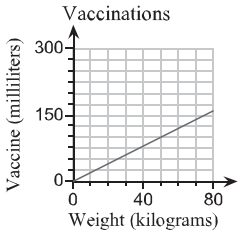


14. Challenge The equation $y = \frac{19}{2}x$ describes the number of miles, y, that an airplane travels in x minutes.

a) What is the constant speed of the airplane in miles per minute?

b) How many miles does the airplane travel in 4 hours?

15. Challenge The graph shows the relationship between the amount of a vaccine, in milliliters, and the weight of the person receiving the vaccine, in kilograms.



a) What is the unit rate of milliliters of vaccine per kilogram?

❍ A. 2 mL per kg

❍ B. 70 mL per kg

❍ C. 2 kg per mL

❍ D. 35 kg per mL

b) How much does a person weigh if they receive a vaccine of 140 mL?

c) Explain how you could use the graph to estimate the weight of a person who receives a 299 mL vaccine.

ANSWER KEY

Practice 12-1: ***Plotting Ratios and Rates***

1. a) 20
30
40
50
b) B

2. a) 20
60
420
560
b) B

3. B, C, D

4. C

5. B

6. C

7. a) False
b) Answers will vary

8. No

9. a) C
b) C

10. a) 28
42
56
70
b) B

11. a) A
b) Answers will vary

12. 36 km/hr
1 km/100 sec
72 km/2 hr
108 km/3 hr

13. a) The car uses 15 gal. of gas if it travels 360 mi.
b) The car can travel 480 mi if it uses 20 gal. of gas.
c) A

14. a) 9.5 mi/min
b) 2,280 mi

15. a) A
b) 70 kg
c) Answers will vary

Name _____ Class _____ Date _____

Practice 12-2

Recognizing Proportionality

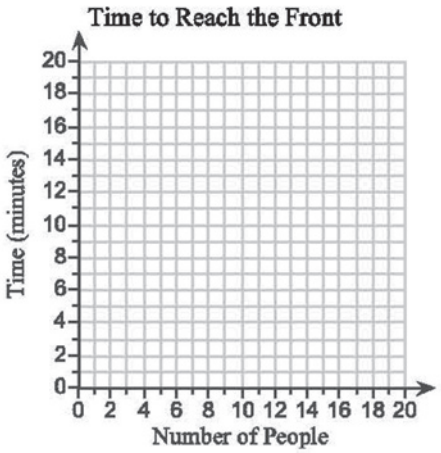
1. Check all ratios that are proportional to $\frac{20}{50}$.

- ❑ A. $\frac{16}{40}$
- ❑ B. $\frac{25}{55}$
- ❑ C. $\frac{5}{2}$
- ❑ D. $\frac{8}{20}$
- ❑ E. $\frac{100}{250}$
- ❑ F. No ratios here are proportional to $\frac{20}{50}$.

2. Are the ratios $\frac{24}{42}$ and $\frac{40}{90}$ proportional?

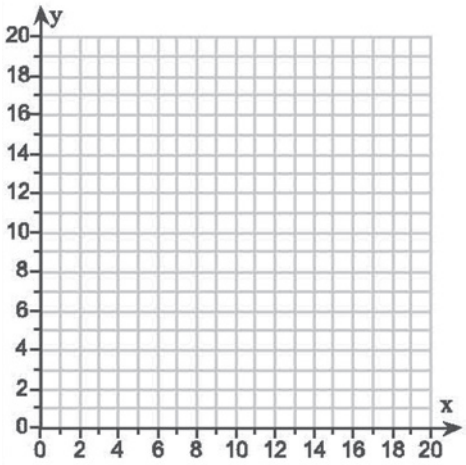
3. Suppose you are waiting in a line. The time it takes for you to reach the front depends on the number of people ahead of you. This is shown in the table. Use the given graph setup to plot the pairs of values shown in the table. Does the table show a proportional relationship?

Time to Reach the Front				
Number of People	1	4	5	7
Time (minutes)	2	8	10	14



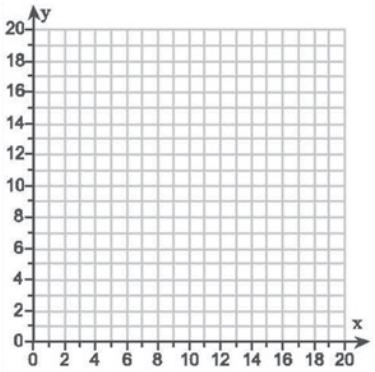
4. Use the given graph setup to plot the pairs of values shown in the table. Does the table show a proportional relationship?

x	2	3	4	5
y	3	4	5	6

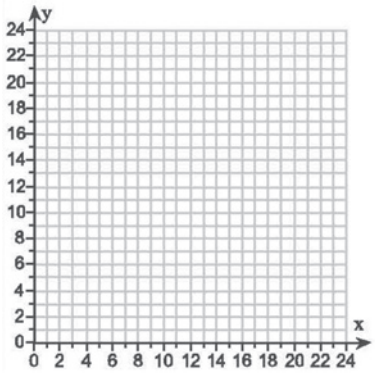


5. Use the given graph setup to graph the equations y = 2x and y = 2x + 4. Which of the equations, if either, represents a proportional relationship?

- ❍ A. both equations
- ❍ B. neither equation
- ❍ C. only y = 2x
- ❍ D. only y = 2x + 4



6. Use the given graph setup to graph the equation y = 2x + 7. Does the equation represent a proportional relationship?



7. a) Writing Are the ratios $\frac{12}{9}$ and $\frac{20}{15}$ proportional? Explain your reasoning.

b) Describe a situation in which these ratios might come up. Explain why it would be important to know whether the ratios are proportional.

8. **a) Reasoning** There are different ways to tell whether an equation represents a proportional relationship. Is there one way that is always best? Explain your reasoning.

b) Which of the equations $y = 2x$ and $y = 2x + 15$, if either, represents a proportional relationship?

- ❍ A. only $y = 2x + 15$
- ❍ B. neither equation
- ❍ C. both equations
- ❍ D. only $y = 2x$

9. **Error Analysis** Mr. Greene gave his class a list of ratios. Then he asked which of the ratios, if any, are proportional to $\frac{4}{5}$. One of his students incorrectly said that only $\frac{8}{10}$ is proportional to $\frac{4}{5}$.

a) Which of the given ratios are proportional to $\frac{4}{5}$? Check all that apply.

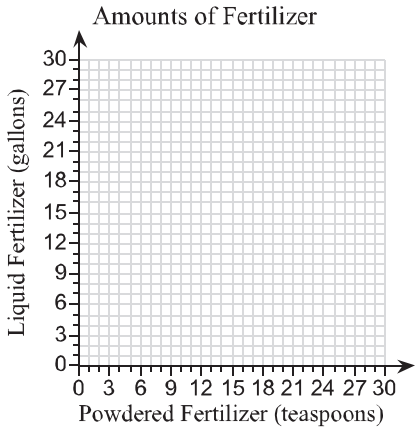
- ❑ A. $\frac{9}{10}$
- ❑ B. $\frac{28}{35}$
- ❑ C. $\frac{40}{50}$
- ❑ D. $\frac{8}{10}$
- ❑ E. $\frac{5}{4}$
- ❑ F. $\frac{56}{55}$
- ❑ G. none of these

b) What was the student's error?

- ❍ A. The ratio $\frac{8}{10}$ is not the only ratio in the list that is proportional to $\frac{4}{5}$.
- ❍ B. At lease one of the given ratios is proportional to $\frac{4}{5}$, but $\frac{8}{10}$ is not one of them.
- ❍ C. None of the given ratios is proportional to $\frac{4}{5}$.

10. Fertilizer You can make liquid fertilizer by mixing powdered fertilizer with water. The amount of liquid fertilizer you make depends on the amount of powdered fertilizer you use. This is shown in the table. Plot the pairs of values shown in the table. Does the table show a proportional relationship?

Amounts of Fertilizer			
Powdered Fertilizer (teaspoons)	6	12	18
Liquid Fertilizer (gallons)	7	14	21



11. Multiple Representations Check all ratios that are proportional to $\frac{36}{21}$.

- ❑ A. $\frac{108}{63}$
- ❑ B. 84 to 49
- ❑ C. $\frac{28}{48}$
- ❑ D. 156 : 91

12. a) Mental Math Check all ratios that are proportional to $\frac{9}{10}$.

- ❑ A. $\frac{90}{100}$
- ❑ B. $\frac{20}{18}$
- ❑ C. $\frac{180}{200}$
- ❑ D. $\frac{45}{50}$

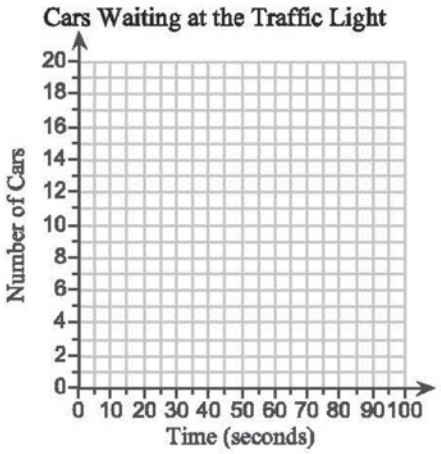
b) Explain how you were able to get the answer using mental math.

13. a) Which of the equations $y = \frac{3}{4}x + 2$ and $y = \frac{3}{4}x$, if either, represents a proportional relationship?

- ❍ A. neither equation
- ❍ B. only $y = \frac{3}{4}x + 2$
- ❍ C. both equations
- ❍ D. only $y = \frac{3}{4}x$

b) If either equation represents a proportional relationship, write two proportional ratios represented by the equation.

14. **Challenge** A police officer studies how the length of time a certain traffic light is red affects the number of cars waiting. At 11:24 A.M., the light turns red. After 30 seconds, 6 cars are waiting. After 50 seconds, there are 10 cars. Twelve cars are waiting after 60 seconds. When the light changes after 80 seconds, there are 16 cars waiting. The police officer puts this data into a table. Plot the pairs of values that would be shown in the table. Does the table show a proportional relationship?



15. **Challenge** A girl is making bracelets and necklaces to sell at a yard sale. Each bracelet uses 3 red beads, 9 blue beads, and 21 white beads. Each necklace uses 4 red beads, 16 blue beads, and 20 white beads.

a) What is the ratio in simplest fraction form of the number of red beads to the total number of beads for the bracelets?

b) What is the ratio in simplest fraction form of the number of red beads to the total number of beads for the necklaces?

c) Are these ratios proportional? Explain your reasoning.

Practice 12-2: ***Recognizing Proportionality***

1. A, D, E
2. No
3. Yes
4. No
5. C
6. No
7. **a)** Yes
   b) Answers will vary
8. **a)** Answers will vary
   b) D
9. **a)** B, C, D
   b) A
10. Yes
11. A, B, D
12. **a)** A, C, D
    b) Answers will vary
13. **a)** D
    b) Answers will vary
14. Yes
15. **a)** $\frac{1}{11}$
    b) $\frac{1}{10}$
    c) No

Week of April 27, 2020 Science Assignment

Trapped in Ice: Gather information about how climate change is rapidly altering sea ice in the Arctic.

On your digital device follow the directions to access content.

1. Go to the following website: https://scienceworld.scholastic.com/

2. Click the words "log-in" in the upper right hand corner of the web page.

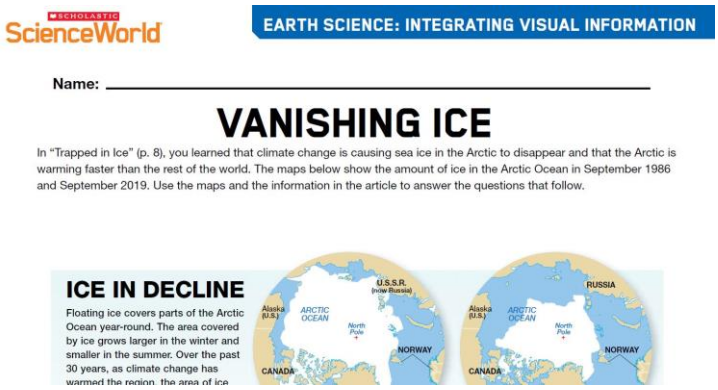
3. Click the link that reads: "I am a student". Your classroom password is: **batbus4361**

Once you have logged in look for the following Science World Cover and click it.	 OPEN PRESENTATION VIEW

Scroll until you find the following article, titled, "Trapped in Ice".	

Read the article and answer the question at the end. **Explain why studying the Arctic in the winter is difficult but necessary.**	**OBTAINING AND COMMUNICATING INFORMATION:** Explain why studying the Arctic in the winter is difficult but necessary.

In addition to reading the article, "Trapped in Ice", please read and complete the worksheet, "Vanishing Ice". You do not need to print and complete. Just write your answers on a separate page.

Vanishing Ice Article looks like this:	

SCHOLASTIC ScienceWorld

EARTH SCIENCE: INTEGRATING VISUAL INFORMATION

Name: _____

VANISHING ICE

In "Trapped in Ice" (p. 8), you learned that climate change is causing sea ice in the Arctic to disappear and that the Arctic is warming faster than the rest of the world. The maps below show the amount of ice in the Arctic Ocean in September 1986 and September 2019. Use the maps and the information in the article to answer the questions that follow.

ICE IN DECLINE

Floating ice covers parts of the Arctic Ocean year-round. The area covered by ice grows larger in the winter and smaller in the summer. Over the past 30 years, as climate change has warmed the region, the area of ice

- Write answers on lined paper.
- Include your last name, comma, first name on the upper right hand corner.
- **Email a picture of just your paper to your science teacher by May 1, 2020.**

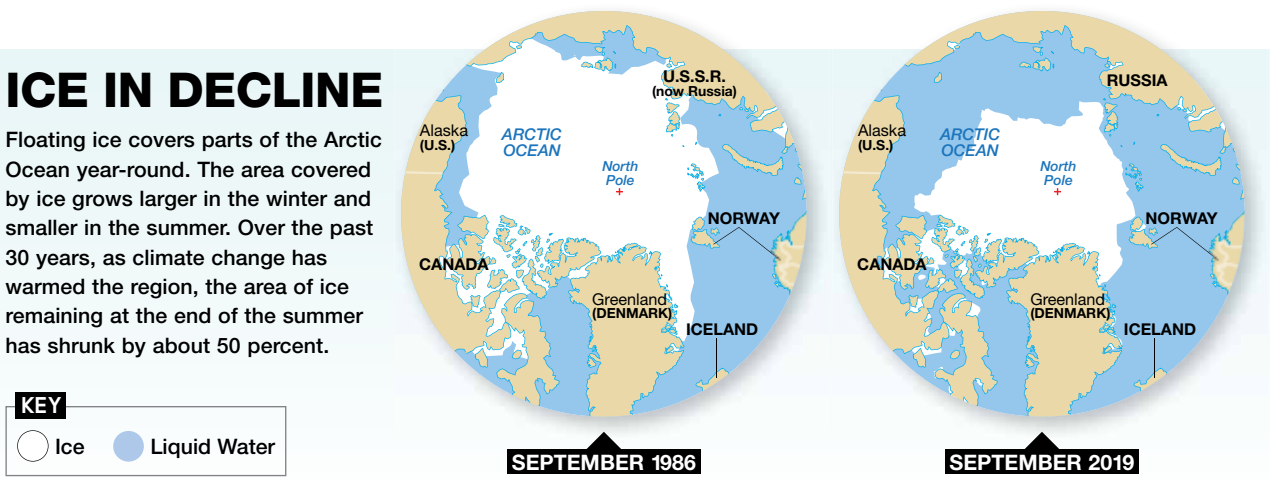
Name: _____

VANISHING ICE

In "Trapped in Ice" (p. 8), you learned that climate change is causing sea ice in the Arctic to disappear and that the Arctic is warming faster than the rest of the world. The maps below show the amount of ice in the Arctic Ocean in September 1986 and September 2019. Use the maps and the information in the article to answer the questions that follow.

ICE IN DECLINE

Floating ice covers parts of the Arctic Ocean year-round. The area covered by ice grows larger in the winter and smaller in the summer. Over the past 30 years, as climate change has warmed the region, the area of ice remaining at the end of the summer has shrunk by about 50 percent.



ANALYZE IT

1. Which areas in the Arctic have lost the most sea ice?

2. During what month was the data collected? Why do you think scientists use this month to determine how the amount of sea ice has changed over the years?

3. Where do you think scientists plan to place the Polarstern to freeze it in the ice? Explain your reasoning.

4. Do you think climate change has affected how ships can travel through the Arctic Ocean? If so, how?

5. The article states that Arctic ice has decreased by 75 percent in volume since the 1980s, while the area of ice has shrunk by 50 percent. Do you feel that the map captures that drastic decrease? How else could the data be represented?