

7A Unit 2: Rates, Ratios & Proportions

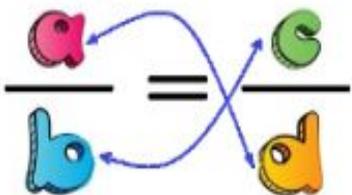
Classwork Packet

Name: _____

Class: _____

$$a : b = c : d$$

IF $\frac{a}{b} = \frac{c}{d}$ THEN $ad = bc$



Unit 1: HW Integer Review Problems

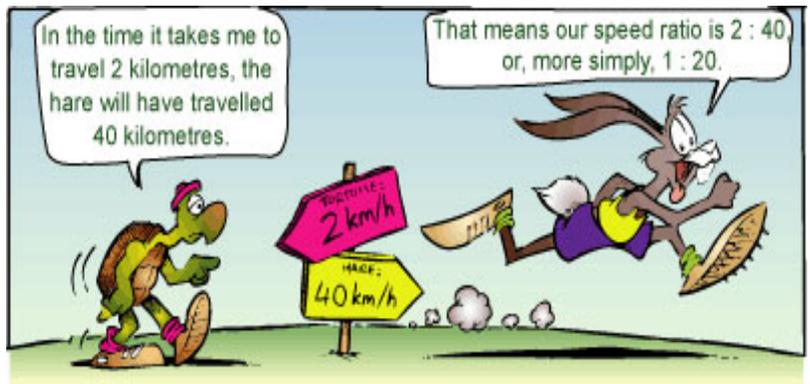
1. $-8 + (-6)$	2. $10 - 1 - 9 + 2$	3. $12 - (-4) * 2$
4. $16 - 2(3 - 2 * 1)$	5. $4 * -8 \div -2$	6. $-36 - 4^2 * 2$
7. $-22 - (-14) * 6$	8. $159 - (-30)$	9. $-22 + (-46)$
10. A deep-sea diver went 60 feet under the surface, and then swam up 26 feet. How many feet below the surface is the diver?	11. While playing football, Matt lost 6 yards, and then gained 20 yards, then lost 8 yards. How many yards did he gain from his three plays?	12. If you are standing at the top of a mountain 6,624 feet above sea level and there is a submarine 230 feet below sea level, how much higher is your elevation than the submarine?
13. $-6(-12 - 2 * 2)$	14. $-30 \div -3 * -2$	15. $48 \div -2 * 4 - 1$
16. $10 * -2 + 4$	17. $-22 \div 2 + -2$	18. $-66 \div 2 - -6$
19. $-15 * 2 + -4$	20. $-6 * -2 - 10$	21. $-12 \div 4 - 100$
22. $-\frac{1}{5} \div 1\frac{1}{4}$	23. $-\frac{1}{2} \div -1\frac{3}{4}$	24. $-\frac{3}{2} * 1\frac{4}{7}$
25. $-1\frac{1}{5} \div 2$	26. $-2 \div -3\frac{4}{5}$	27. $\frac{1}{9} \div -1\frac{1}{3}$
28. $-1\frac{7}{10} \div 1\frac{1}{4}$	29. $1\frac{2}{5} \div -5\frac{3}{4}$	30. $-\frac{1}{4} * \frac{1}{4} + -\frac{1}{4}$
31. $-\frac{2}{3} * -1\frac{1}{4} + -2$	32. $-2 + \frac{3}{7} * 2$	33. $-2\frac{2}{3} * -1\frac{1}{10}$
34. $-2\frac{1}{5} * -1\frac{1}{4} - -.5$	35. $-1\frac{1}{4} * -2$	36. $-1\frac{5}{7} * -1\frac{1}{2}$
37. $-2\frac{3}{8} * -3\frac{1}{2}$	38. $-1\frac{1}{2} * -1\frac{1}{4} - -\frac{1}{4}$	39. $-3\frac{1}{2} * -1\frac{1}{3} - \frac{1}{2}$
40. $-2\frac{1}{2} * -1\frac{1}{4} * -2$	41. $-1\frac{1}{6} * -1\frac{1}{2} - (2 * -1)$	42. $-2\frac{1}{4} * -1\frac{1}{8} - -.25$
43. $(-3)(-1)(4)(-2)(-5)$	44. $(-16) \div 2 \div (-4) \div (-2)$	45. $\frac{3(-2)(-6)}{(-2)(12)}$
46. $(3 * 6) + 4 - (4 \div -2) - 8$	47. $(6 * -2) + 5 - (3 * -2 - 1)$	48. Find the distance if the temperature started at 50°F and dropped to 30°F.
49. Find the distance if the temperature started at -20°F and dropped to -30°F.	50. Find the distance if the temperature started at 60°F and dropped to -10°F.	51. Find the distance if the temperature started at 70°F and dropped to -1°F.
52. $4.2 * (-2.1) - 6.7$	53. $\frac{1}{2} + -\frac{4}{6} - \frac{1}{12}$	54. $12.2 \div -2 - 20.9$
55. $-\frac{1}{2} + \frac{4}{9} - \frac{1}{3}$	56. $-\frac{1}{2} - -\frac{1}{4} - \frac{1}{3}$	57. $-\frac{1}{2} * \frac{2}{4} - \frac{1}{8}$
58. $-\frac{1}{2} * \frac{2}{3} - -\frac{1}{3}$	59. $-\frac{1}{2} \div \frac{1}{4} - \frac{1}{4}$	60. $-\frac{1}{2} + -\frac{1}{4} - \frac{1}{8}$

Aim: How do we use ratios, rates and proportions?

Warm up: What do you remember about ratios?

Homework:

NOTES:



Ratios: a comparison between 2 numbers by _____. Ratios can be written 3 ways
_____ : _____ : _____

Rates: a ratio that compares two quantities with different _____

Proportions: Two _____ fractions set equal to each other.

Problem 1: Suzy is baking cookies and has to include 4 tablespoons of vanilla for every 6 tablespoons of sugar. What is the ratio of tablespoons of sugar to total tablespoons used in the recipe?

Problem 2: A rectangle has a width of 2 inches and a length of 12 inches. What is the ratio of the area of the rectangle to the perimeter of the rectangle?

Part B: If the rectangle was doubled in size, would that effect the ratio? Justify.

Problem 3: In Louisville, 40% of the population is female and 60% are males. 36% of Louisville's population is under 18. The ratio of males to females who are under 18 is 2:1. If there are 1,176 males who are under 18, what is the population of females who are over 18?

Problem 1: Mike runs $1\frac{3}{4}$ miles in 20 minutes. How many miles can he run in 2 hours? Justify.

Problem 2: An isosceles triangle has a base of 6 inches and a height of 12 inches. The side of the triangle is double the base. What is the ratio of the area of the triangle to the perimeter of the triangle?

Problem 3: What is the ratio of miles Mike ran in an hour to miles Lou ran in an hour?

- Lou Ran $2\frac{1}{4}$ miles in 20 minutes.
- Mike Ran $4\frac{1}{8}$ miles in 40 minutes.

Problem 4: Peter mixes $1\frac{1}{2}$ cups of ice tea for every $\frac{3}{4}$ of a cup of lemonade. How many cups of ice tea will be needed for $1\frac{1}{2}$ cups of lemonade?

Problem 5: The perimeter of a rectangle is equal to 280 meters. The ratio of its length to its width is 5:2. How would you find the ratio of the area of the rectangle to the width of the rectangle? Justify.

Part B: If the length and width were doubled. What is the ratio of the increased perimeter to the increased area?

Problem 6: The length of the side of square A is twice the length of the side of square B. What is the ratio of the area of square A to the area of square B?

Part B: If the side of square A increased by 20% and the side of square B increased by 30%. How would the ratio of the perimeters differ from part A to part B? Justify.

Aim: How do we use proportions to solve problems?

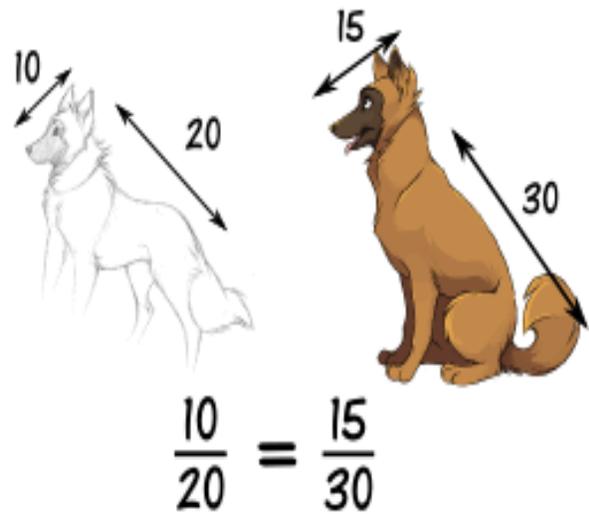
Warm up: $3x = 6$

Homework:

NOTES:

Steps in Setting up a Proportions

1. Label the _____ of the fractions with the same unit.
2. Label the _____ of the fractions with the same unit.
3. To solve _____ multiply.



Problem 1: Solve for x

$$\frac{1\frac{1}{4}}{\frac{2}{3}} = \frac{x}{\frac{1}{2}}$$

Problem 2: It takes 20 minutes to skate $4\frac{1}{5}$ miles.
How many miles can Danny skate in 30 minutes?

Part B: Could Danny skate at least 12 miles in an hour? Justify.

Problem 3: To make cupcakes Dawn needed to mix sugar, vanilla and flour in a ratio of 20 oz: 18 oz: 12 oz. When Dawn made a larger batch she used 30 ounces of sugar. How many ounces of flour would be needed?

- Would the relationship remain proportional if the batch was cut in half? Justify your answer.

Problem 1: It takes 17 minutes to ride $6\frac{1}{4}$ miles on a bike. How many miles can Peter ride in 1 hour?

Problem 2 A farmer used 9 square yards of grass to feed 4 horses. How many horses could a farmer have if there was 420 square yards of grass?

Problem 3: Amelia is baking brownies for her bake sale. She adds cups of flour, cocoa and sugar to the mix in the ratio of 10:5:2. She needs to make the recipe smaller but use the same ratio. If she uses $\frac{1}{3}$ of a cup of cocoa how much flour and sugar will she need?

Problem 4: A 4-pound bag of sand covers 470 square feet. How many bags would be needed to cover 1070 square feet?

Problem 5 Hotel guests have 4 activities to chose from. The table below shows the number of people who have signed up for each activity.

Snorkeling	20 people
Shuffleboard	6 people
Board Games	10 people
Volleyball	24 people

- If 90 guests are expected to sign up for one of the four activities. Could the hotel expect 20 guests to sign up for snorkeling? Justify your answer



Problem 6: Reese earned \$38.50 for 4 hours of babysitting. If she works for 10 hours at the same hourly rate, how much would she earn?

Part B: If Reese received a 20% raise, how much is her hourly wage? Justify.

Aim: How can we determine if two ratios are equivalent?

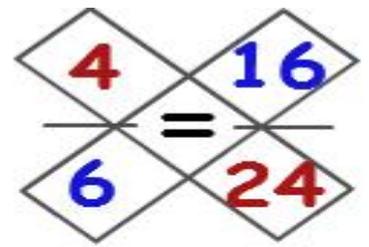
Warm up: Reduce the ratio to its lowest form. 42:54

Homework:

NOTES:

Proportion: two equivalent fractions set _____ to each other.

A relationship is proportional when the **cross products** are _____.



$$4 \times 24 = 6 \times 16$$
$$96 = 96$$

Problem 1: Determine if the following ratios are proportional. Justify.

5 to 4, 35 to 28

Problem 2: Mike runs $1\frac{1}{2}$ miles in 20 minutes and 3 miles in an hour. Is Mike's distance proportional to the time he spent running? Justify.

Part B: Could a proportion have time in hours and minutes? Justify.

Problem 3: A 12-pound Canadian Goose eats 1,814 grams of food per day and a 3-pound Mallard Duck eats 544 grams of food per day. Would the grams per pound for the Mallard Duck be proportional to the grams per pound of the Canadian Goose?

Part B: If the Mallard Duck eats 43.5 percent more and the Canadian Goose eats 72 percent more, would the proportionality change? Justify.

Problem 1: Determine if the following ratios are proportional. Justify.

6 to 7, 18 to 21

Problem 2: Sara bikes $2\frac{1}{2}$ miles in 20 minutes and 6 miles in an hour. Is Sara's distance proportional to the time she spent biking? Justify.

Problem 3: CVS sold 70 birthday cards in 14 days. After a 5-week period, CVS sold 280 birthday cards. Are the birthday cards sold proportional to the time spent selling them?

Problem 4: A painting had a height of 32.5 inches and a width of 42.9 inches. A post card of the painting is 3.3 inches wide and 2.5 inches high. Are the painting's dimensions proportional to the postcard's dimensions? Justify.

Problem 5: Ray's college is 212 miles away from his house. If Ray's car gets 35 miles per gallon, would the amount of gallons for one trip be proportional to the amount of gallons he would need round trip? Justify.

Part B: Assuming the price of gas is \$3.60 per gallon, how much would Ray spend round trip? Justify.

Problem 6: There are 600 pupils in a school. The ratio of boys to girls in this school is 3:5. How many total girls went to the school?

Part B: If the ratio of boys and girls remained the same, how many girls would attend the school if the total population increased by 15%?

Part C: Do the total amount of girls remain proportional when the population is increased? Justify.

Aim: How do you solve for unit rate?

Warm up: Where have you see unit rates in real life?

Homework:

NOTES:

Unit Rate: A ratio that has a denominator of _____.

- Miles _____ hour
- Cost _____ Item

Convert to Unit Rates:

$\frac{6 \text{ miles}}{3 \text{ hours}}$	$\frac{40 \text{ words}}{2 \text{ min.}}$	$\frac{5 \text{ miles}}{2 \text{ hours}}$
$\frac{6 \div 3}{3 \div 3}$	$\frac{40 \div 2}{2 \div 2}$	$\frac{5 \div 2}{2 \div 2}$
$= \frac{2 \text{ mi.}}{1 \text{ hr.}}$	$= \frac{20 \text{ words}}{1 \text{ min.}}$	$= 2.5 \text{ mi./hr.}$
$= 2 \text{ mi./hr.}$	$= 20 \text{ words/min.}$	

Solving For Unit Rate

1. Find unit rate with _____: $\frac{\text{Y: Dependent Variable}}{\text{X: Independent Variable}}$
2. Find unit rate with a _____: $\frac{Y}{X} = \frac{?}{1}$

Problem 1: Peter swam $2\frac{1}{2}$ miles in $\frac{3}{5}$ of an hour.
How many miles could Peter swim in one hour?

Problem 2: Which store would you choose to buy a can of Coke from? Justify.

CVS: 4 cans of Coke for \$6.52.

Walgreens: 12 cans of Coke for \$20.88.

Part B: A bottle deposit of \$0.05 is added to each can at CVS. Would the bottle deposit impact your decision? Justify.

Problem 3: Ms. Miller found different options to purchase totes and shirts needed for a school trip. If Ms. Miller needs 60 totes and 60 shirts which options should she choose? Justify.

Totes		Shirts	
T1. 5 totes for \$15.75		S1. 10 for \$48.50	
Must buy in quantities of 5		Must buy in quantities of 10	
T2. 10 totes for \$25.00		S2. 5 for \$24.50	
Limited to 20 totes per order		Must buy in quantities of 5	
T3. \$2.00 each		S.3 75 for \$300.00	
Must purchase 70 totes		Must purchase 75 totes	

Problem 1: In a dinner 12 dozen eggs were used for 50 breakfast platters. At this rate, how many eggs were used for 136 breakfast platters?

Problem 2: In a farm, 20 hens produce 400 eggs per day. To increase egg production, the farm brought in new hens, but the new hens were half as effective in laying eggs. If 600 eggs are produced each day, how many hens were brought in?

Problem 3: Sara read 68 pages of The Hunger Games in 28 minutes. How many pages of The Hunger Games could Sara read in one hour?

Problem 4: Who ran a faster mile Mike or Tom?

Mike runs $3\frac{1}{4}$ miles in $1\frac{1}{4}$ hours.

Tom runs $4\frac{2}{4}$ miles in $2\frac{2}{4}$ hours.

Problem 5: Andy walked $\frac{3}{4}$ of a mile in 10 minutes. Jason walked $\frac{4}{5}$ of a mile in 15 minutes. What was the difference in their speeds, in MPH?

Part B: How would your answer change if the difference were in MPM? Justify.

Problem 6: During the morning shift a farmer packed 4 pints of berries every 6 minutes. During the evening shift a farmer packed 3 pints of berries every 5 minutes. What is the difference in the morning and afternoon rates in pints per hour?

Part B: If the farm sells their berries for \$3.45 per pint. How much Revenue could the farm earn after they packed berries for 20.5 during the morning shifts and 15.8 hours during the evening shifts? Justify.

Aim: How do we represent a proportional relationship by writing an equation?

Warm up: What makes a relationship proportional?

Homework:

NOTES:

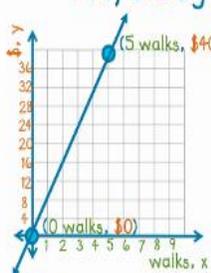
Slope: also known as _____ : _____ and K.

Rules for Writing Proportional Equations

3. **M** is always the _____
4. **B** must always be _____
5. The **origin** is represented by the point **(0, 0)**.

Core Lesson

Amy's Dog Walking: \$8 per walk



$\$8 \cdot 5 \text{ walks} = \40

$$\frac{\$8}{1 \text{ walk}} = \frac{\$0}{0 \text{ walks}}$$
$$\frac{\$8}{1 \text{ walk}} = \frac{\$40}{5 \text{ walks}}$$

LEARN ZILLION

Problem 1: Which line shows a proportional relationship? Justify your answer using mathematical terminology.

- $Y = \frac{1}{2}x$
- $Y = .75x + 2$

Problem 2: Anthony ran $1\frac{1}{4}$ miles in $2\frac{1}{2}$ hours. Write an equation to demonstrate the proportional relationship between miles traveled and hours ran.

Part B: If Anthony did 5 miles as a warm up before running, would the equation remain proportional? Justify.

Problem 3: Lucy biked $3\frac{1}{2}$ miles in 100 minutes. Write an equation to demonstrate the proportional relationship between miles traveled and hours biked.

Problem 1: Mary swam $\frac{3}{4}$ miles in $\frac{2}{3}$ of an hour. Write an equation to show the proportional relationship between miles traveled and hours swam.

Problem 2: 9 apples cost \$18.27. Write the equation of the line using (A) for apple.

Problem 3: Mike read $\frac{3}{4}$ of a book in $2\frac{1}{6}$ hours. Write an equation to show the amount of the book read varies directly with the time-spent reading.

Problem 4: John bought 6 sweaters for \$232.26. Write an equation to demonstrate the cost per sweater.

Part B: If a tax of 8.6% were added, how would your equation change?

Problem 5: James is riding his bike to raise money for his school. The distance (d) varies directly with the length of time (t). If James rides 530.25 miles in $10\frac{3}{4}$ hours. Write an equation showing the proportional relationship between distance and time.



Part B: If James rides his bike for 3 hours, how many miles will he travel? Justify your answer using mathematical terminology.

Problem 6: Jimmy builds houses. On Friday's he works 8 hours and installs 1680 bricks. On Saturdays he works 6 hours and installs 1260 bricks. Determine if the 2 relationships are directly proportional to each other by writing an equation? Defend your answer using mathematical terminology.



Part B: If Jimmy burns $188\frac{1}{6}$ calories per hour and works 2 Fridays and one Saturday, how many calories did he burn? Justify.

Aim: How do we determine a proportional relationship in a table?

Warm up: Is $3x + 4$ proportional? Justify.

Homework:

NOTES:

Rules for Proportional Relationships in Tables

- When simplified $\frac{y}{x}$ all values have the same _____
- Must have (,) in the table

Hours	Money
0	\$0
1	\$9
2	\$18
3	\$27
4	\$36

Problem 1: Do the number of sodas form a proportional relationship with cost?

# of Sodas ()	Total Cost ()
0	\$0
2	\$4.50
4	\$9

Problem 2: Are the miles walked proportional to hours travelled? Justify.

Total Hours ()	Miles Walked ()
0	0
3	6.75
5	11.25

Part B: If Mike travelled 15 miles in 5 hours, how would the affect the proportionality of the table? Justify.

Problem 3: Is the number of miles travelled directly proportional to the number of gallons used? Justify your answer.

# Of Gallons ()	Miles Travelled ()
0	0
2	$11\frac{1}{2}$
4	23

Problem 1: Are the number of cupcakes proportional to price?

# of cakes	Total Cost (\$)
0	\$0
3	\$6.99
5	\$11.65

Problem 2: Are the number of bags proportional to the total cost?

Bags of Chips	Total Cost (\$)
0	\$0
3	\$1.95
7	\$4.55

Problem 3: Are the number of shirts proportional to the total cost?

# of shirts	Total Cost (\$)
0	\$0
4	\$63.00
6	\$94.50

Problem 4: Are the packs of pens proportional to the price?

Packs of Pens	Total Cost (\$)
0	\$0
3	\$34.98
5	\$58.30

Problem 5: Determine the constant of proportionality for the table. Is the amount of hours proportional to the miles travelled? Justify.

Hours On Bus	Miles Traveled
0	
1	
2	131.5
3	
4	263



Part B: A greyhound bus travelled 313 miles in 5 hours. How would this affect the proportionality of the table? Justify your answer.

Problem 6: Mike in on a bicycle trip. Every 4 days he travels 230 KM. Create a proportional table comparing miles traveled to days spent traveling. ($1.60934 \text{ km} = 1 \text{ mile}$)

Number of Days	Total Miles

Part B: Would your table remain proportional if the distance traveled were converted to kilometers? Justify.

Aim: How can we construct graphs to determine whether a relationship is proportional?

Warm up: What do you remember about graphing?

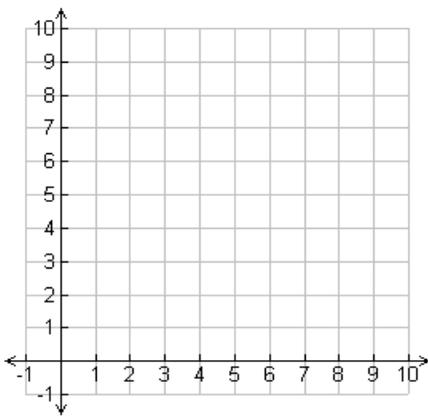
Homework:

NOTES:

1. A proportional relationship uses the equation $y = mx$. $M =$ _____.
2. A proportional graph is **linear** and must pass through the _____.
3. The constant of proportionality is always represented by the point $(1, _)$

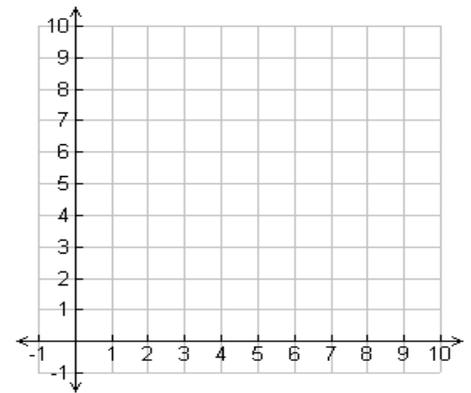
Problem 1: Determine if the relationship shown in the table is proportional using a graph.

Hours	Miles
2	4
3	6
4	8
5	10



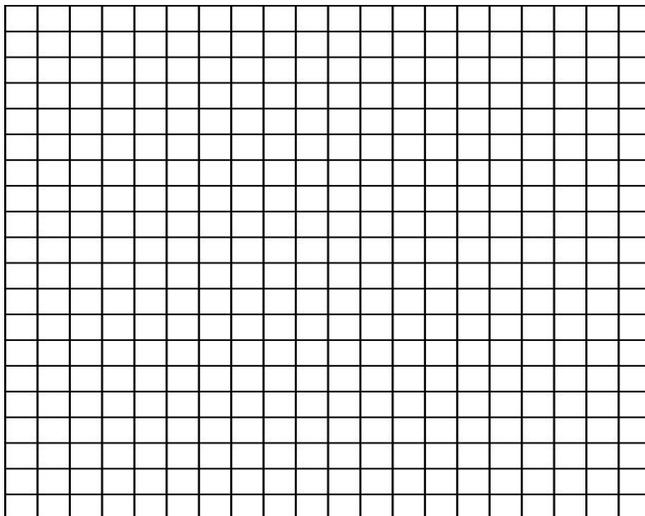
Problem 2: Determine if the relationship shown in the table is proportional using a graph.

# of sodas	Total Cost
3	2
6	4
9	6



Part B: Would the coordinate $(4, 3)$ change the proportionality of the graph? Justify.

Problem 3: The Tables below show Sandy's earnings from two different jobs. Use the graph to justify which table is proportional.

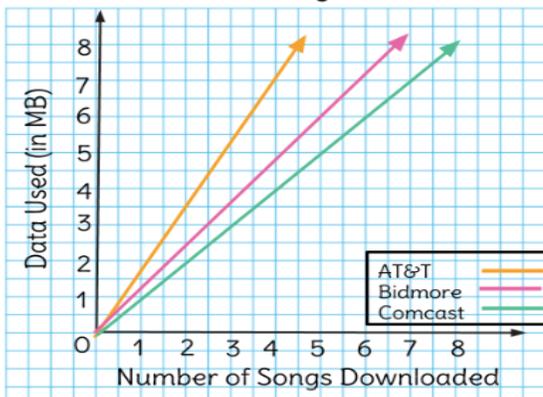


Hours Worked	Earnings
2	\$18.00
3	\$26.00
4	\$34.00
Hours Worked	Earnings
3	\$16.50
5	\$27.50
6	\$33.00

Job #1

Job #2

Data Usage



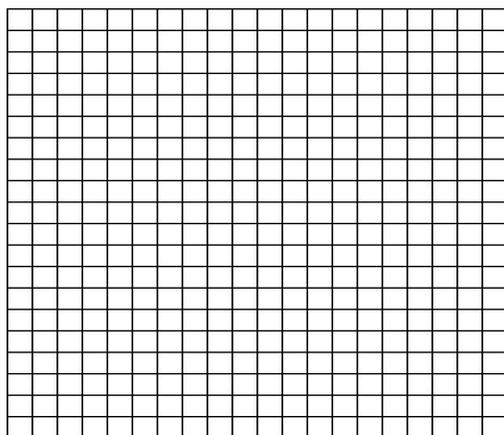
Problem 1: Which company has the highest data rate per song

Problem 2: Determine whether the cost of renting a game is proportional to the number of games rented by graphing.

# of Games	Cost
2	5
6	15

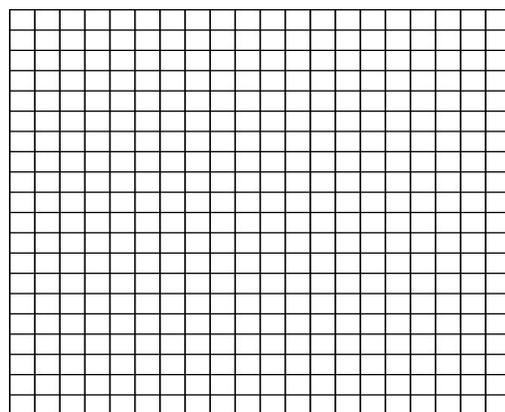
Problem 3: Graph to determine if the table has a proportional relationship.

Hours	Miles
2	6
4	12



Problem 4: Determine whether the number of feet the sloth moves is proportional to the time spent moving in minutes by graphing.

Time	2	3	4
Distance	12	18	24



Problem 5: Determine if each equation will form a proportion graph. Justify your answer.

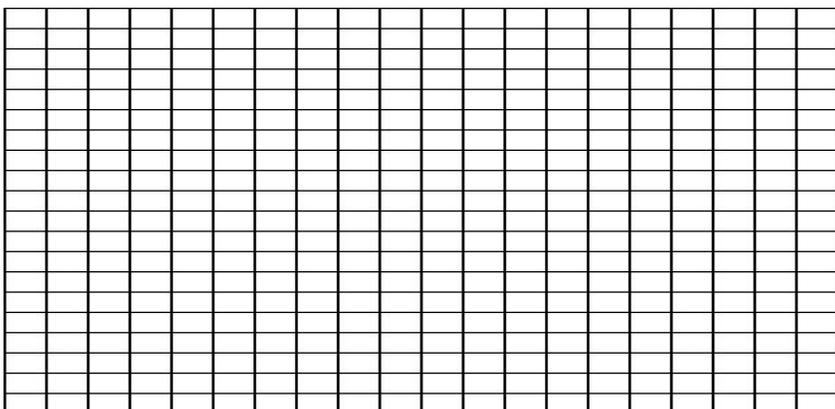
A. $y = x + 4x + 3$

B. $y = 4x + 2$

C. $3x + 2 - 2 = y$

D. $y - \frac{1}{4}x = x$

Problem 6: Use the graph to justify which table is proportional.



Hours	Miles
2	6
4	12
6	18
Hours	Miles
2	10
4	16
6	22

Aim: How do we calculate scale factor?

Warm up: Where have you seen models in real life?

Homework:

NOTES:

- **Model:** A _____ representation of an object
- **Actual:** the real-life object a _____ is based off of

Formula: $\frac{\text{LARGER (Actual)}}{\text{SMALLER (Model)}} = \frac{\text{SCALE FACTOR (Larger Unit)}}{\text{SCALE FACTOR (Smaller Unit)}}$

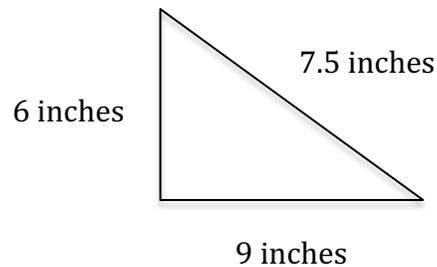


Problem 1: A Model train was based off a NYC subway car. The subway car was 24 feet long. The model train was 4 inches long. What scale was used to create the model train?

Problem 2: A blueprint is made for a new home in the area. The scale for the blueprint is 5.5 feet for every .8 of an inch. If the height of the home in the blueprint is 6.6 inches, how tall is the actual home to the nearest 10th of a foot?

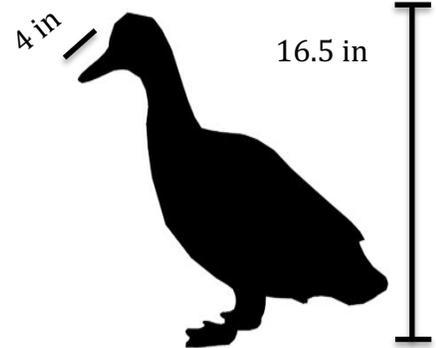
Part B: Would the scale 6 feet for every 1 inch be more accurate than the scale above? Justify.

Problem 3: A road is built around a pond. What is the perimeter of the pond if the scale is 5 feet for every one-inch.



Problem 1: A blueprint is made for a new mall in Queens, the scale is $8\frac{1}{4}$ feet for every .75 of an inch. If the height of the mall is 108.5 feet, what is the mall's height in the blueprint?

Problem 2: Grant is using the model below of Daffy the Duck to create a poster for his room. If Grant creates a poster of Daffy in which his beak is 19 inches long, how tall would Daffy have to be on the poster?



Problem 3: Maspeth and Manhattan are 6 inches apart on a map. If the scale is .5 of an inch for every 3.75 miles, what is the actual distance between the 2 points?

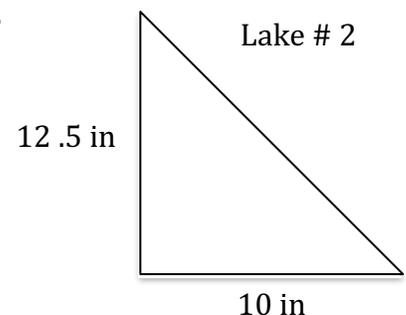
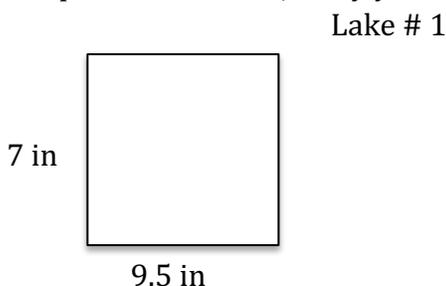
Problem 4: On a map IS 73 is 12 cm from the airport. By car the distance between the 2 points is 30 miles. What is the scale for the map?

Problem 5: A road is being built around a rectangular pond. On a map the pond has a length of 7.5 inches and a width of 5.5 inches. A scale of 5 miles per inch was used to create the map.

Part A: Find the difference between the actual perimeter and the actual area of the pond.

Part B: The actual pond's dimensions were increased by 30%. How much larger is the increased pond's area compared to the original ponds area? Justify.

Problem 6: Based off a scale of 7 feet per .05 of an inch. How much larger is the actual area of lake one compared to lake 2? Justify your answer using mathematical terminology.



Aim: How do we use proportions to make inferences?

Warm up: What is a sample?

Homework:

NOTES:

Using a Proportion

$$\frac{\text{Sample/ Surveyed/(Part)}}{\text{Sample/Surveyed (Total)}} = \frac{\text{Population/ Trial/Percent(Part)}}{\text{Population/ Trial/ Percent (Total)}}$$

Problem 1: Jenny had a bag of marbles. She chooses one marble without looking and repeats the process 18 times, which results in 10 blue marbles and 8 red marbles. Based on the results above about how many red marbles can she select if she chooses a marble at random 92 times?

Problem 2: 108 students were surveyed about their cellphone provider. The results are shown below. If the total population was 460 students, what is the best approximation for the total number of students with Verizon?

- 30 cell phones with AT&T
- 52 cell phones with Verizon
- 26 No cell phones

Part B: If the population doubled would the amount of customer's that use Verizon double? Justify.

Problem 3: Target sells boxes of movies. Each box has one dozen movies of the same title. The movies purchased during November are shown in the table below. Based on November's orders, approximately how many boxes of Star Wars movies would target sell if 500 orders were placed online?

Movie Title	Frequency
The Avengers	976
Star Wars	1024
The Hunger Games	1000

Problem 1: Tyler had a bag of marbles. He chooses one without looking and repeats the process 22 times, which results in 15 blue marbles and 7 green marbles. How many green marbles can he select if he chooses a marble at random 92 times.

Problem 2: Patrick had a bag of orange and yellow M&M's. He chooses one without looking 18 times resulting in 6 yellow M&M's and 12 orange M&M's. How many yellow M&Ms can he expect after randomly choosing an M&M 80 times?

Problem 3: The apps downloaded through iTunes are shown in the table below. Based on the next 250 downloads, approximately how many would download Facebook?

Song Title	Frequency
Instagram	348
Snapchat	275
Facebook	624

Problem 4: 90 students were surveyed about their favorite video game, the results are shown below. If there were 800 students, approximately how many students would choose Halo as their favorite game?

- 26 Call Of Duty
- 34 Halo
- 30 Mortal Kombat

Problem 5: A survey was given asking people what their favorite sport was. The table below shows the results.

Type of Sport	Percent %
Soccer	48
Football	22
Baseball	30

- **Part A:** Out of 500 people surveyed, how many would you expect to choose soccer as their favorite sport?
- **Part B:** Out of 300 people surveyed, is it reasonable to expect 30 people to consider football as their favorite sport? **Justify.**

Problem 6: A spinner consisted of four equal sections of blue, green, yellow, and red. After the spinner was spun 100 times the results were shown in the table below.

If the spinner is spun 50 more times, how many of these times would you expect the pointer to land on blue? Justify your answer.

Section	Frequency
Blue	14
Green	10
Yellow	8
Red	68

