Math
Monday 4/10/2017

Unit 6: Rates, Ratios, and Proportions

You need your notebook

Le Standards: 6.RP

1. Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.

2. Understand the concept of a unit rate a/b associated with a ratio a:b with b not equal to 0, and use rate language in the context of a ratio relationship.

3. Use ratio and rate reasoning to solve real-world and mathematical problems.

What is a ratio?

Its a way to compare two numbers using division.

We are used to comparing numbers using =, <, >, and ≤, ≥

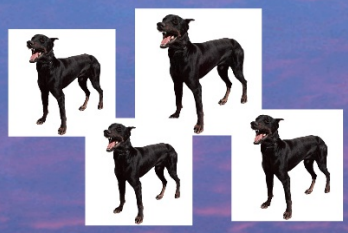
We can write them 3 different ways

1. [redacted]
2. [redacted]
3. [redacted]

A ratio is a camparison of two different items.

It can be written in three different ways. If Susan has 3 cats and John has 4 dogs, we can write it in these ways:

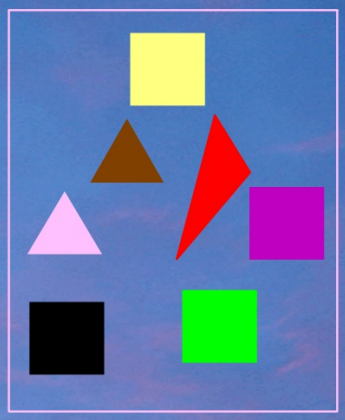
3 to 4 or 3 : 4 or $\frac{3}{4}$

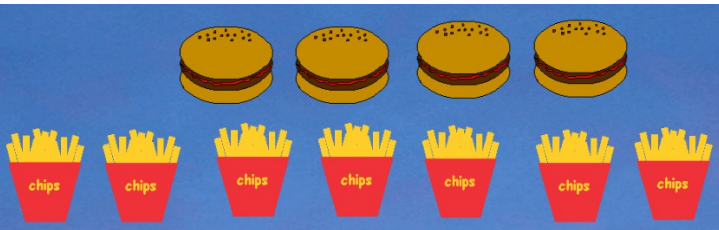


It is very important to notice what the question asks first when setting up your ratio.

Write the ratios in three different ways

1. Triangles to squares
2. Squares to triangles
3. Shapes to triangles
4. Squares to shapes



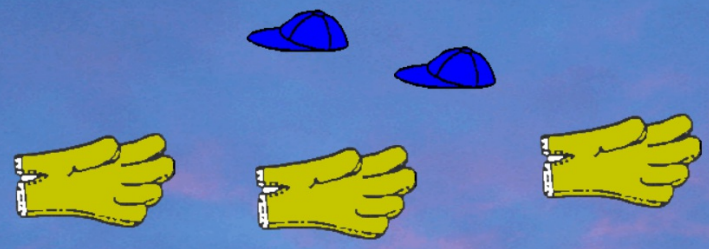


Write the ratio of burgers to chips in three different ways.

Write the ratio of chips to burgers in three different ways.

Write the ratio of rainbows to the three-leaf clover in three different ways

Write the ratio of gloves to caps in three different ways



Write the ratio of ladybugs to butterflies in three ways.

Math
Tuesday 4/11/2017

Review:

On your paper, write the following ratio 3 ways.

Today we are going to use ratios to compare two things....while we play a game!

You will need the following chart on your paper.

a Student	b Throw 1	c Throw 2	d Throw 3
Student 1:			
Student 2:			
Student 3:			
Student 4:			

On your sheet of paper, answer the following questions:

How many total shots were attempted by the 4 students?

How many shots did the students complete?

Write a ratio for the amount of shots completed compared to the total number attempted.

Write ratios for each student comparing attempts to successful shots.

Now lets compare…

Which student had the highest number of successful shots?

Can we come up with a success RATE?

This is your Ticket out the door

Math
Wednesday 4/12/2017

Yesterday we played a game…that involved ratios.

and at the end of the game we created a rate.

A **rate** is a special ratio in which the two terms are in different units. For example, if a 12-ounce can of corn costs 69¢, the **rate** is 69¢ for 12 ounces. The first term of the ratio is measured in cents; the second term in ounces.

Usually, we want to simplify the rate as much as possible so that we can understand it better.

Take for example miles per gallon.

the number of miles that we drive and the number of gallons of gas we used can help a driver to determine if their car is running efficiently.

For instance, my car has a 10 gallon gas tank. When I worked 40 miles away from home, I could drive to work and back 10 times before my next trip to the gas station...
Can anyone figure out how many miles I was able to travel per 1 gallon of gas?

A rate is a special ratio in which the two terms are in different units.

200 miles per 5 hours.

Unit Rates

A unit rate is a rate value where the second quantity is one unit.

such as:
$34 per pound,
25 miles per hour,
15 inches of rain per week.

To Convert a rate to a unit rate:

Divide the first term by second term.

Express the ratio as a unit rate: **15 pencils for $5.**

How many pencils can you buy for $1?

Divide the first term by second term. $\frac{\text{15 pencils for \$5.}}{5}$ $\frac{}{5}$

click here →

Write each rate as a **Unit Rate**:

1) 50 miles per 10 gallons.

2) $5 for 10 pounds of Potatoes.

3) $55 per 5 hours of works.

4) 500 miles in 5 days.

5) 100 people in 4 rows.

6) 500 trees in 10 gardens.

click and drag the answer into the proper box:

0.5	50	100	25	11	5

What are some other rates that we can apply here?

The next concept that we need to look at are proportions.

Math
Thursday 4/13/2017

Proportions

A proportion is used to solve problems involving ratios.

For example: if the ratio of green cars to red cars is 4:1, and that we have 12 green cars, how can we find the number of red cars?

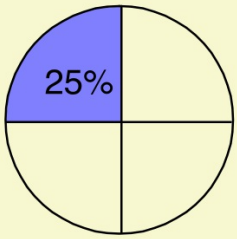
$$\frac{4}{1} = \frac{12}{x}$$  $$\frac{\text{Green}}{\text{Red}}$$

A proportion is an equation stating that two ratios are equal.

For Example:

We know that 25% or $\frac{25}{100}$ is equal to $\frac{1}{4}$.

$$\frac{25}{100} = \frac{1}{4}$$



If we examine these two ratios you can see that their cross products are equal. This is the Cross Product Property and is true for all equivalent ratios.

$$\frac{25}{100} = \frac{1}{4}$$

$$100 \cdot 1 = 25 \cdot 4$$

$$100 = 100$$

List 5 pairs of ratios that you know to be equivalent and examine their cross products.

1.

2.

3.

4.

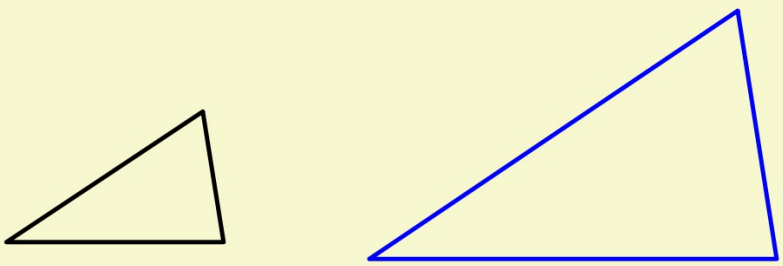
5.

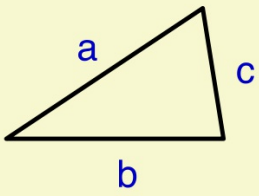
Just like any equation you can solve to find the missing part.

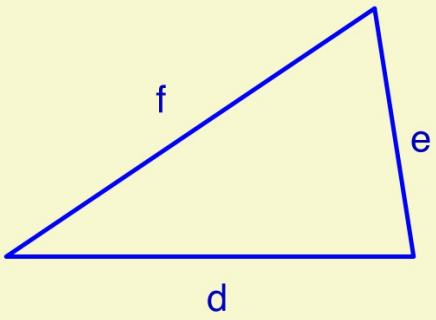
Use the Cross Product Property to write an equation and solve for x.

$$\frac{3}{8} = \frac{x}{24} \qquad \frac{x}{6} = \frac{8}{10}$$

Similar Triangles have the same shape, but may not be the same size.
The ratios of corresponding sizes on simmilar figures are equal.

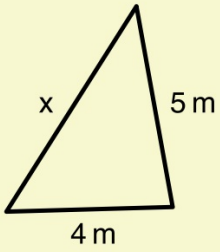


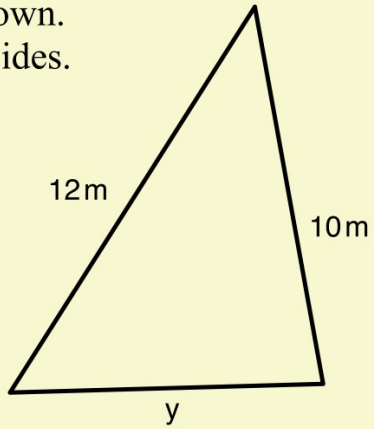




Write three ratios using corresponding sides that are equivalent.

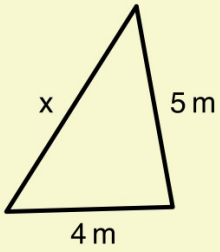
A pair of similar triangles is shown.
Find the missing length of the sides.

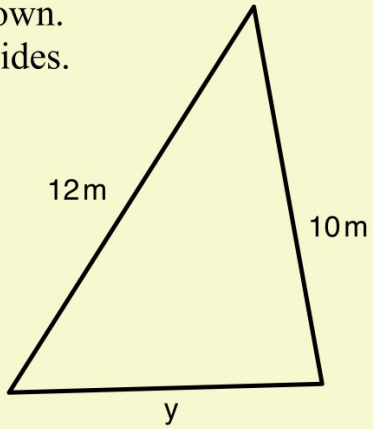




Solution

A pair of similar triangles is shown.
Find the missing length of the sides.





x = 6m

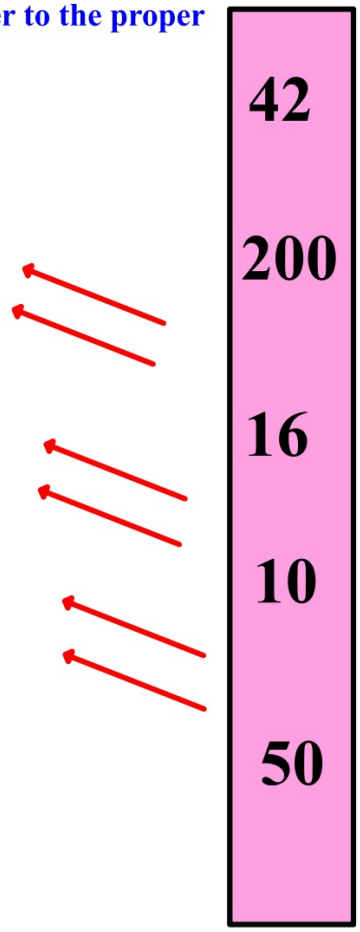
y = 8m

Can you name some professions or every day tasks that would require solving proportions?

Solve:

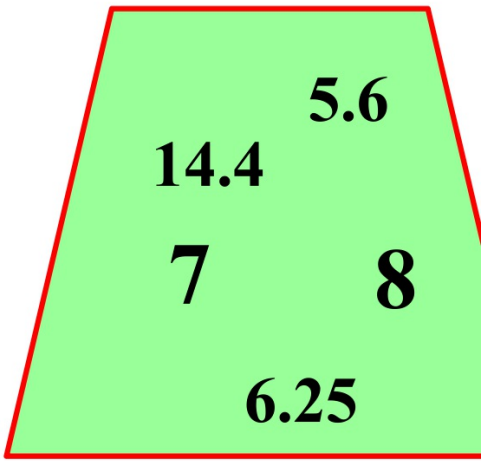
1)	$\frac{10}{6} = \frac{X}{6}$	
2)	$\frac{X}{8} = \frac{25}{4}$	
3)	$\frac{26}{X} = \frac{13}{21}$	
4)	$\frac{X}{14} = \frac{100}{7}$	
5)	$\frac{X}{7} = \frac{32}{14}$	

click and drag the correct answer to the proper box:



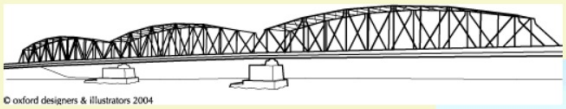
Solve: Then click and drag the correct answer into the proper box.

6	$\frac{9}{2} = \frac{36}{n}$
7	$\frac{7}{10} = \frac{k}{8}$
8	$\frac{20}{m} = \frac{16}{5}$
9	$\frac{a}{4} = \frac{3.5}{2}$
10	$\frac{6}{9.6} = \frac{9}{d}$

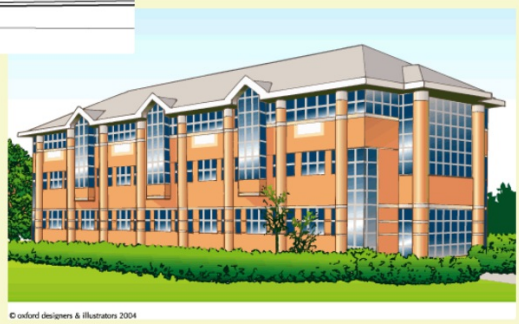


Molly bought a 128-ounce bottle of shampoo to save money. She used 8 ounces of shampoo per week. At this rate, how many weeks did the shampoo last?

F - 11
G - 12
H - 16
J - 18
K - 20



Architects use ratios and proportions to create scale models.



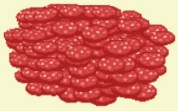
If an Architect uses the scale of 1: 80 for a model, How tall is the actual building if the model is 3½ ft high?

Math
Friday 4/14/2017

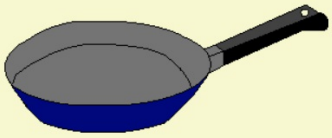
Pizza Stix

<u>INGREDIENTS</u>

1 (14 ounce) package egg roll wrappers
24 pieces of string cheese
25 (4 ounce) packages of sliced pepperoni sausage, cut into strips
1 (6 ounce) can sliced mushrooms, drained
2 tablespoons minced garlic
2 cups oil for frying or as needed
1 (14 ounce) jar marinara sauce



*(yeilds 24)



24 pizza stix	12 pizza stix	60 pizza stix
2 tablespoons garlic 	_____ tablespoons garlic	_____ tablespoons garlic
6 ounces of mushrooms 	_____ounces of mushrooms	_____ounces of mushrooms

Time to VOTE!

1. Solve the proportion.

$$\frac{7}{18} = \frac{21}{x}$$

A 3

B 32

C 36

D 54

2. Solve the proportion.

$$\frac{8}{20} = \frac{x}{30}$$

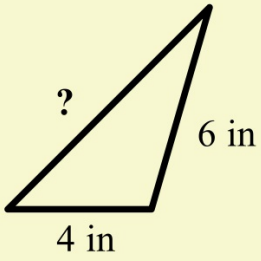
A 12

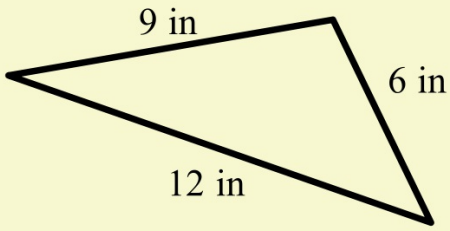
B 18

C 24

D 20

4. The triangles below are similar. Find the missing side length.





A 9 in

B 12 in

C 3 in

D 8 in