7th Grade Math

*Module 1: Ratios and Proportional Relationships*

Math Parent Letter

This document is created to give parents and students a better understanding of the math concepts found in Eureka Math (© 2013 Common Core, Inc.) that is also posted as the Engage New York material which is taught in the classroom. Module 1 of Eureka Math (Engage New York) builds on ratios, rates, and unit rates to formally define proportional relationships and the constant of proportionality.

Focus Area Topic B:

Ratios & Rates Involving Fractions

Reminder:
"of" in mathematics is an operational word for MULTIPLY

Don't FORGET!
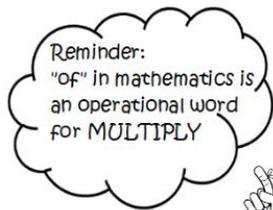
Students will build on knowledge of unit rates for ratios by considering application problems involving fractions. Students may need to review dividing fractions to feel more confident in these problems.

Example Problem and Answer

Javin would like his mother to bake cookies for his class. He would need 40 cookies in order for every student and teacher. Javin's mom has a recipe that makes 10 cookies. The recipe calls for $\frac{2}{3}$ cup of chocolate chips. If Javin's mom has 2 cups of chocolate chips, will she have enough to make 40 cookies?

Answer:

Find $\frac{cups}{cookie}$ …

$$\frac{\frac{2}{3}}{10} = \frac{\frac{2}{3} \times \frac{1}{10}}{10 \times \frac{1}{10}} = \frac{\frac{2}{30}}{1} = \frac{2}{30} \ cups/cookie$$

How many does she need for 40 cookies?...

$$\frac{2}{30} \times 40 = \frac{8}{3} = 2\frac{2}{3} \ cups$$

Therefore, Javin's mom does not have enough chocolate chips to make the cookies.

Focus Area Topic C:

Ratios & Rates Involving Fractions

Equivalent Ratios

Students use tables to find an equivalent ratio of two partial quantities given a part-to-part ratio and the total of those quantities, in the third column, including problems with ratios of fractions.

Example Problem and Answer

The following table shows the number of cups of milk and flour that are needed to make biscuits.
Complete the table.

Milk (cups)	Flour (cups)	Total (cups)
7.5		
	10.5	
12.5	15	
		11

First, using the row that has two quantities, find the total (sum) and related ratios.

Milk (cups)	Flour (cups)	Total (cups)
7.5		
	10.5	
12.5	15	27.5
		11

The ratio of milk to flour is $\dfrac{12.5}{15} = \dfrac{5}{6}$

The ratio of flour to milk is $\dfrac{15}{12.5} = \dfrac{6}{5}$

What does this mean?

The amount of milk is $\frac{5}{6}$ the amount flour.

The amount of flour is $\frac{6}{5}$ the amount of milk.

Use this information to write an equation to find the missing values of the table.

For example, $\frac{6}{5} \times 7.5 = 9$ cups of flour; $7.5 + 9 = 16.5$ total cups

Milk (cups)	Flour (cups)	Total (cups)
7.5	9	16.5
8¾	10.5	19¼
12.5	15	27.5
5	6	11

Can an equation be written to find each quantity? If so, write one for milk and one for flour.

Yes

$M = \frac{5}{6}F$ $\qquad\qquad$ $F = \frac{6}{5}M$

Where M represents amount of milk and F represents amount of flour.

Focus Area Topic C:

Ratios & Rates Involving Fractions

Students solve multi-step ratio problems including fractional markdowns, markups, commissions, fees, etc. using a variety of methods.

Example Problem and Answer

20% OFF
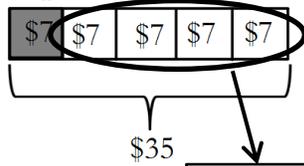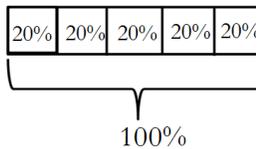
All clothing at Gennuso's Clothing Boutique!!

$35 $50

Alice tried on both the $35 skirt and the $50 skirt. Her favorite was the $35 skirt. Using the ad shown, how much will Alice actually pay for the skirt?

Each part is 20% when 100 is divided into 5 parts

Method 1:
Tape Diagram

| 20% | 20% | 20% | 20% | 20% |

100%

| $7 | $7 | $7 | $7 | $7 |

$35

Customer pays $28

Method 2:
Use the given rate of discount, multiply by the price and then subtract from the original price.
$$35-0.20(35) = 35 - 7 = \$28$$
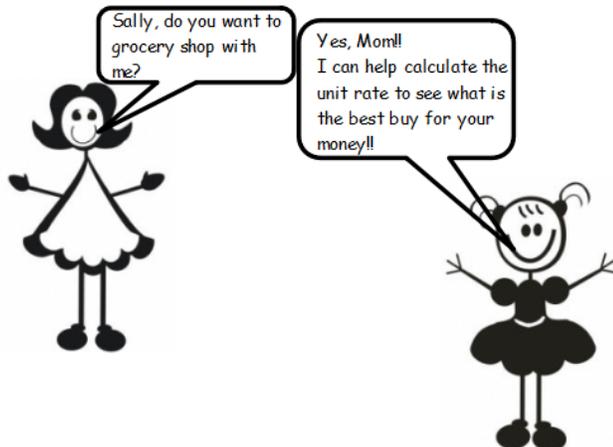The consumer pays $28 of the original price.

Method 3:
Subtract the rate from 1 whole, then multiply that rate times the original price.
$$100\% - 20\% = 80\%$$
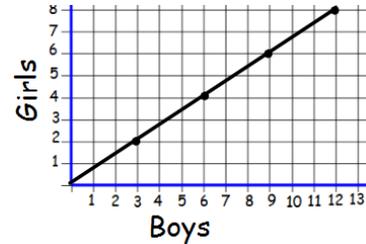The consumer will pay for 80% of the skirt.
$$\frac{80}{100} \times 35 = 28$$

Sally, do you want to grocery shop with me?

Yes, Mom!! I can help calculate the unit rate to see what is the best buy for your money!!

Focus Area Topic C:

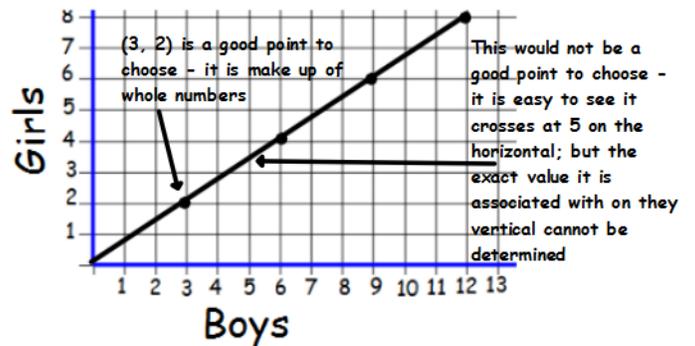*Ratios & Rates Involving Fractions*

Example Problem and Solution

Task:
Describe the relationship of the graph shown above.

Answer: The graph show s that fore every 3 boys there are 2 girls. As the number of boys increases, the number of girls increase. They are increasing at a constant rate of $\frac{3}{2}$ girls per boy.

Task:
Identify two points on the line and explain what each means.

(3, 2) is a good point to choose – it is make up of whole numbers

This would not be a good point to choose – it is easy to see it crosses at 5 on the horizontal; but the exact value it is associated with on they vertical cannot be determined

Answer:
(6, 4) means when there are 6 boys there are 4 girls; (9, 6) when there are 9 boys there are 6 girls.

Question:
What is the unit rate?

Answer:
The unit rate in girls per boy is $\frac{3}{2}$.

Question:
What point represents the unit rate?

The unit rate must be the value of the y-coordinate of the point on the graph, which has an x-coordinate of one.

Answer:
The point that shows the unit rate is $(1, \frac{3}{2})$.