Rates, Ratio, and Proportions Mixed Practice Name _____

It's not good enough to just get the answer. You must prove your answer using identifiable mathematical reasoning.

1. The ratio of boys to girls in the sixth grade is 2 : 3.

   a. If there are 24 boys, how many girls are there?

   b. If there are 80 students, how many girls are there?

   c. If there are 75 students, how many more girls are there than boys?

2. A rope that is 2 feet and 6 inches long is cut into 3 strips in a ratio 2 : 3 : 5.

   a. How long is the longest piece?

   b. How much longer is the longest piece than the shortest one?

   c. What is the length of each piece if they are cut in a 1 : 2 : 3 ratio?

3. There were 35 children and 10 adults at a cookout.

a. What is the ratio of adults to children at the cookout?

b. What is the ratio of children to total people and the cookout?

c. Five more children came to the cookout. Now what is the ratio of children to total people?

4. The ratio of green M&M's to yellow is 2 : 5.

a. If there are only green and yellow M&M's in the bag, what is the smallest number of M&M's possible?

b. If there are 84 M&M's in the bag all together, how many are green?

c. If red M&M's were added to the bag in part b to get a total of 100, what is the ratio of green to yellow to red?

5. There are 65 children in the sixth grade. There are 15 more boys than girls.

a. How many girls are in the class?

b. What is the ratio of boys to girls?

6. A bin of soccer balls, basketballs, and volleyballs contains 112 balls. For every 3 soccer balls, there are 5 basketballs and 6 volleyballs. How many more basketballs are there than soccer balls?

7. Justin is making cookies, using a recipe in which the ratio of flour to chocolate chips to sugar is 4: 2: 1 for each batch.

a. If he is using 8 cups of flour how many cups of sugar does he need?

b. To make 3 batches of cookies, what is the ratio of flour to chocolate chips to sugar?

8 ✓ 8. Brian, Tim and Kenny got paid a total of $240 for mowing neighborhood lawns. They split the money in the ratio of 5: 9: 10.

a. How much less did Brian make than Tim?

b. Brian complained about making so much less. The boys decided to break up their pay in a ratio of 3: 4: 5 instead. How much more does Brian make than in part a?

9 X 11. David hikes 2 ¼ miles in ½ an hour.

a. What is his rate in miles per hour?

b. At this rate, how long will it take him to walk 18 miles?

c. If he walks for 7 hours, how far will he have gone?

10 X 12. Erica babysits for 4 ½ hours and is paid $27.

a. How much does she make per hour?

b. How much does she make for 8 hours?

c. If the people she babysits for have $34 to pay her, how long can they stay out?

11 X

13. Michael is headed to his aunt's house. For the first 2 hours he drives at 55 mph. For next hour, he drives 70 mph. For the final 2 hours he drives 50 mph.

a. How far does he travel?

b. What is his average speed for the entire trip?

c. If he drives the entire trip at 70 mph, how much less time will it take?

12 X

14. John took a 5 ½ mile walk to his friend's house. He left at 11 a.m. and arrived at his friend's house at 1 p.m.

a. What was his average speed of walking?

b. If the return trip took a half hour longer, how much lower was his average speed on the return trip than on the trip to his friend's house?

Rates, Ratio, and Proportions Mixed Practice Name Key

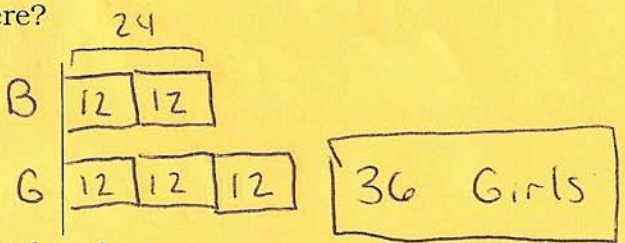
It's not good enough to just get the answer. You must prove your answer using identifiable mathematical reasoning.

1. The ratio of boys to girls in the sixth grade is 2 : 3.

a. If there are 24 boys, how many girls are there?

$\frac{2b}{3g} \overset{\times 12}{=} \frac{24b}{36g}$ (×12)

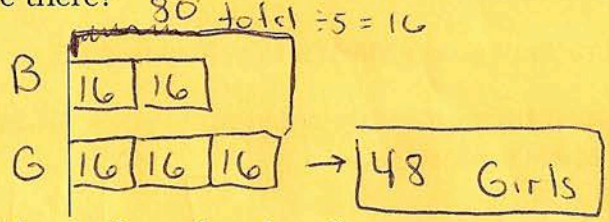
36 girls



b. If there are 80 students, how many girls are there?

$\frac{3g}{5t} \overset{\times 16}{=} \frac{\text{total } 48}{80 \text{ total}}$ (×16)

48 girls



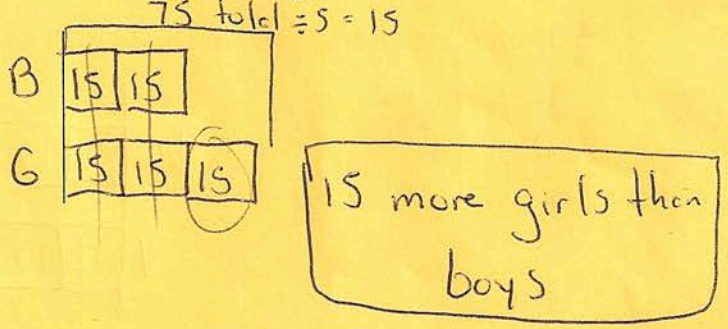
c. If there are 75 students, how many more girls are there than boys?

$\frac{2b}{3g} \overset{\times 15}{=} \frac{30b}{45g}$ (×15)

↓

5 total $\xrightarrow{\times 15}$ 75 total

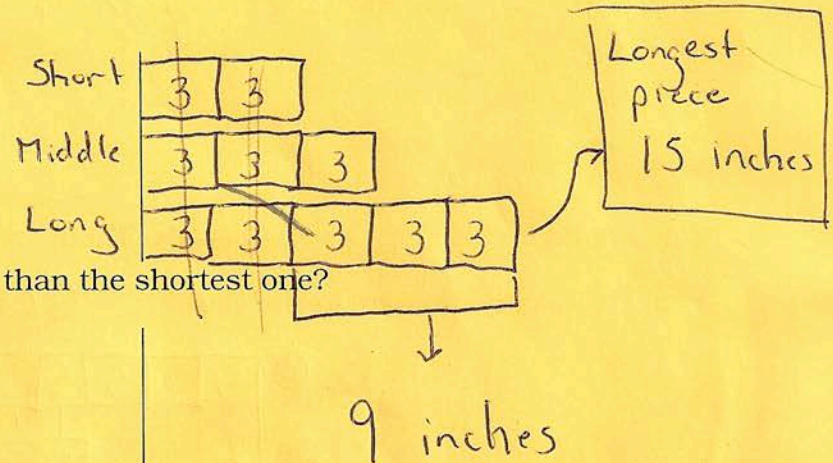
15 more girls than boys



2. A rope that is 2 feet and 6 inches long is cut into 3 strips in a ratio 2 : 3 : 5.

a. How long is the longest piece?

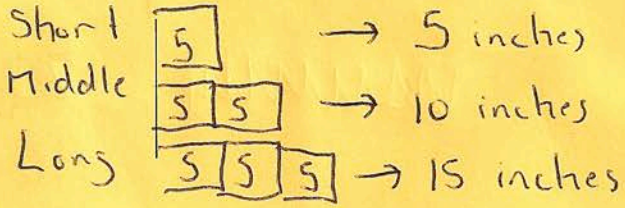
30 inches



b. How much longer is the longest piece than the shortest one?

9 inches

c. What is the length of each piece if they are cut in a 1 : 2 : 3 ratio?



3. There were 35 children and 10 adults at a cookout.

a. What is the ratio of adults to children at the cookout?

10 : 35

b. What is the ratio of children to total people and the cookout?

35 : 45

c. Five more children came to the cookout. Now what is the ratio of children to total people?

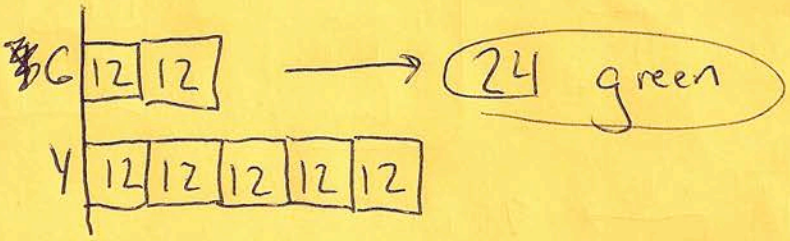
40 : 50

4. The ratio of green M&M's to yellow is 2 : 5.

a. If there are only green and yellow M&M's in the bag, what is the smallest number of M&M's possible?

7 total { 2 green, 5 yellow

b. If there are 84 M&M's in the bag all together, how many are green?

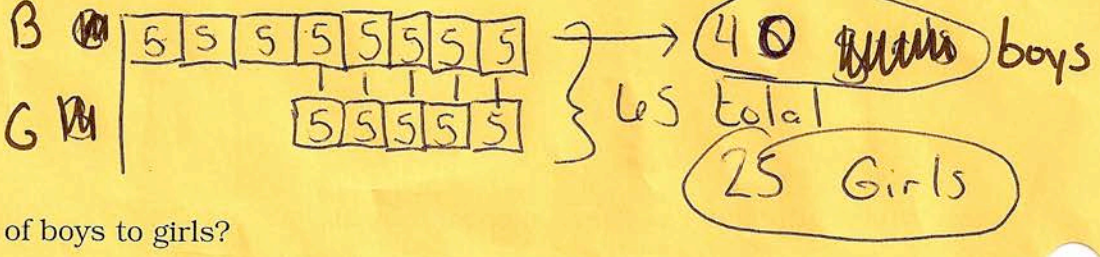


c. If red M&M's were added to the bag in part b to get a total of 100, what is the ratio of green to yellow to red?

24 green : 60 yellow : 16 red

5. There are 65 children in the sixth grade. There are 15 more boys than girls.

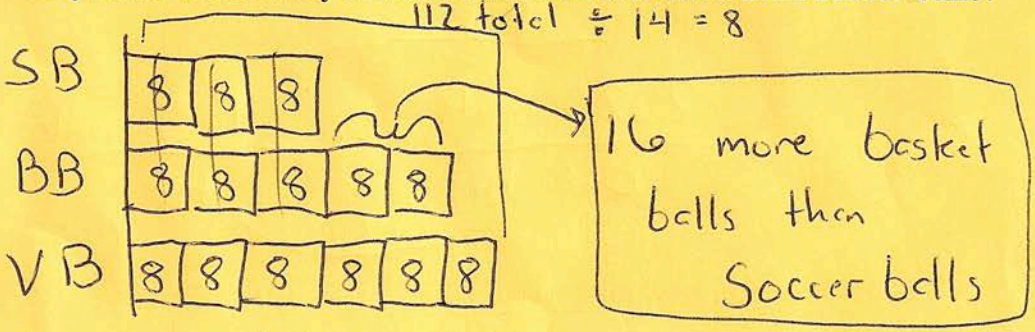
a. How many girls are in the class? GCF of 65 and 15 is 5



b. What is the ratio of boys to girls?

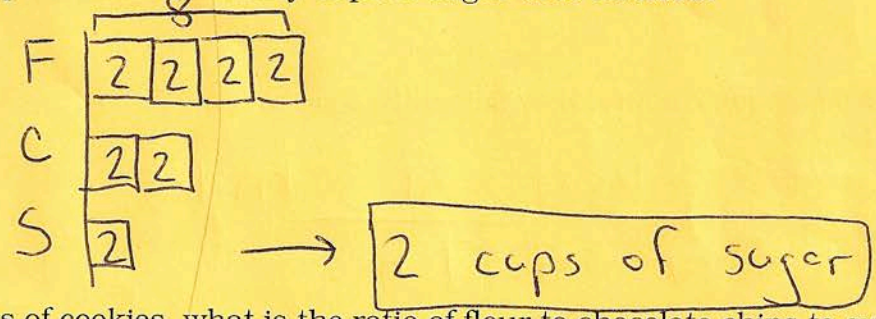
40 : 25

6. A bin of soccer balls, basketballs, and volleyballs contains 112 balls. For every 3 soccer balls, there are 5 basketballs and 6 volleyballs. How many more basketballs are there than soccer balls?



7. Justin is making cookies, using a recipe in which the ratio of flour to chocolate chips to sugar is 4: 2: 1 for each batch.

a. If he is using 8 cups of flour how many cups of sugar does he need?



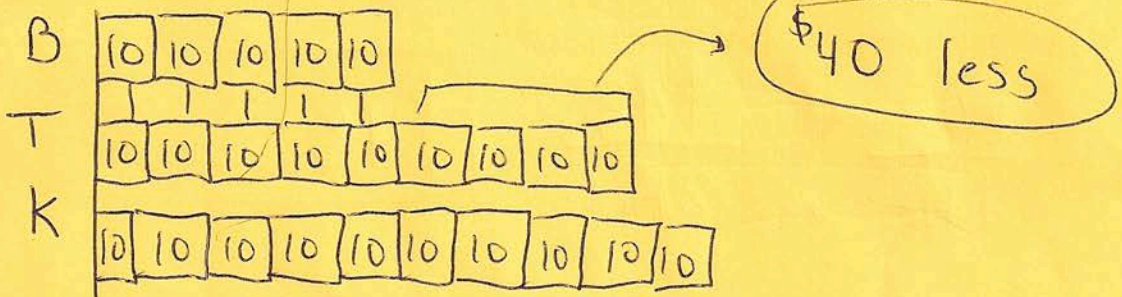
b. To make 3 batches of cookies, what is the ratio of flour to chocolate chips to sugar?

12 : 6 : 3

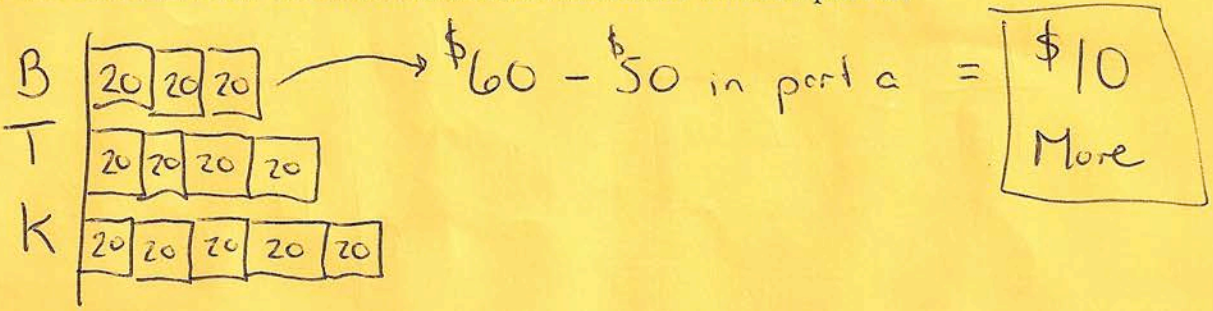
8X 8. Brian, Tim and Kenny got paid a total of $240 for mowing neighborhood lawns. They split the money in the ratio of 5: 9: 10.

24

a. How much less did Brian make than Tim?



b. Brian complained about making so much less. The boys decided to break up their pay in a ratio of 3: 4: 5 instead. How much more does Brian make than in part a?



9 X

11. David hikes 2 ¼ miles in ½ an hour.

a. What is his rate in miles per hour?

$$\frac{2.25 \text{ miles}}{0.5 \text{ hrs}} \xrightarrow{\times 2} \frac{4.5 \text{ miles}}{1 \text{ hr}}$$

4.5 or $4\frac{1}{2}$ miles

b. At this rate, how long will it take him to walk 18 miles?

$$\frac{4.5 \text{ miles}}{1 \text{ hr}} \overset{\times 2}{=} \frac{9 \text{ miles}}{2 \text{ hrs}} \overset{\times 2}{=} \frac{18 \text{ miles}}{4 \text{ hrs}}$$

4 hours

c. If he walks for 7 hours, how far will he have gone?

$$\frac{4.5 \text{ miles}}{1 \text{ hr}} \overset{\times 7}{=} \frac{31.5 \text{ miles}}{7 \text{ hrs}}$$

31.5 miles

10 X

12. Erica babysits for 4 ½ hours and is paid $27.

a. How much does she make per hour?

$$\frac{\$27}{4.5 \text{ hrs}} \xrightarrow{\div 4.5} \frac{\$6}{1 \text{ hr}}$$

$6 per hr

b. How much does she make for 8 hours?

$$\frac{\$6}{1 \text{ hr}} \overset{\times 8}{=} \frac{\$48}{8 \text{ hrs}}$$

$48

c. If the people she babysits for have $34 to pay her, how long can they stay out?

$$\frac{\$6}{1 \text{ hr}} = \frac{\$34}{x \text{ hrs}}$$

$$\frac{6x}{6} = \frac{34}{6}$$

$$x = \frac{17}{3} \text{ or } 5\frac{2}{3} \text{ hrs}$$

~~13~~ 11. Michael is headed to his aunt's house. For the first 2 hours he drives at 55 mph. For next hour, he drives 70 mph. For the final 2 hours he drives 50 mph.

a. How far does he travel?

$\frac{55 \text{ mi}}{1 \text{ hr}} \times 2 = \frac{110 \text{ mi}}{2 \text{ hrs}}$ + then $\frac{70 \text{ miles}}{1 \text{ hr}}$ + then $\frac{50 \text{ mi}}{1 \text{ hr}} \times 2 = \frac{100 \text{ mi}}{2 \text{ hrs}}$

280 miles

b. What is his average speed for the entire trip?

$\frac{280 \text{ miles}}{5 \text{ hrs}} \div 5 = \frac{56}{1 \text{ hr}}$

56 mph

c. If he drives the entire trip at 70 mph, how much less time will it take?

$\frac{70 \text{ miles}}{1 \text{ hour}} \times 4 = \frac{280 \text{ miles}}{4 \text{ hrs}}$

It will take 1 less hour

12 ~~14~~. John took a 5 ½ mile walk to his friend's house. He left at 11 a.m. and arrived at his friend's house at 1 p.m.

11 am → 1 pm = 2 hrs

a. What was his average speed of walking?

$\frac{5.5 \text{ miles}}{2 \text{ hrs}} \div 2 = \frac{2.75 \text{ miles}}{1 \text{ hr}}$

2.75 mph

b. If the return trip took a half hour longer, how much lower was his average speed on the return trip than on the trip to his friend's house?

2.2 mph

$\frac{5.5 \text{ miles}}{2.5 \text{ hrs}} \div 2.5 = \frac{2.2 \text{ miles}}{1 \text{ hr}}$

His average speed was 0.55 mph lower