

**Do Now:**

One adult chaperone is required to accompany every six students on a museum tour. How would you write this ratio of students to adults? Represent the ratio in three different ways.

6 to 1    6:1     $\frac{6}{1}$

~~19, 21, 41, 39, 27, 35, 29, 35~~

(19)  $\frac{15}{4}$ , 19 to 5,  $\frac{53}{15}$ , 4:1, 18 to 6

~~$\frac{15}{4}$ ,  $\frac{19}{5}$ ,  $\frac{53}{15}$ ,  $\frac{4}{1}$ ,  $\frac{18}{6}$~~

~~3.5, 3.8, 3.5, 4, 2~~

(18 to 6,  $\frac{53}{15}$ ,  $\frac{15}{4}$ , 19 to 5, 4:1)

(39)

$\frac{25 \text{ mi}}{1 \text{ gallon}}$  on  $\frac{300 \text{ miles}}{12 \text{ gallons}}$  (one tanks)

a) 24 gallons

b) 600 miles

c) \$ 0.06

d) No (need \$2)

(41)

$\frac{\text{Goldfish}}{\text{Total Fish}}$     3  $\leftarrow$  total fish

$\frac{1 \text{ goldfish}}{2 \text{ angelfish}}$

( $\frac{1 \text{ goldfish}}{3 \text{ total fish}}$ )

6  $\leftarrow$  2 goldfish

$\frac{2 \text{ gold}}{6 \text{ total}}$      $\frac{4 \text{ angelfish}}{4 \text{ angelfish}}$

(35)

$$\frac{45 \text{ min}}{2 \text{ mi}} = \frac{? \text{ hours}}{1 \text{ mi}}$$

$$\frac{\cancel{45} \text{ min} \cdot \frac{1 \text{ hours}}{\cancel{60} \text{ min}}}{2 \text{ mi}} = \frac{3 \text{ hours}}{8 \text{ mi}}$$

$$\frac{3 \text{ hours} \div 8}{8 \text{ mi} \div 8} = \frac{0.375 \text{ hours}}{1 \text{ mi}}$$

unit rate

(29)

$$\frac{25 \text{ wins} \div 40}{40 \text{ games} \div 40} = \frac{0.625 \text{ wins}}{1 \text{ game}}$$

$$= \frac{\frac{5}{8} \text{ wins}}{1 \text{ game}}$$

(33)

$$\frac{\$33,000}{1 \text{ year}} = \frac{?}{1 \text{ month}}$$

$$\frac{\$33,000}{\cancel{1} \text{ year}} \cdot \frac{\cancel{1} \text{ year}}{12 \text{ months}} = \frac{\$2750}{1 \text{ month}}$$

(27)

$$\frac{26 \text{ points} \div 3}{3 \text{ quarters} \div 3} = \frac{8.7 \text{ points}}{1 \text{ quarter}} \quad \left( \frac{8\frac{2}{3} \text{ points}}{1 \text{ quarter}} \right)$$

$$= \frac{8.\bar{6} \text{ points}}{1 \text{ quarter}}$$

### 6.2 Writing and Solving Proportions

7.RP  
7.EE  
8.EE

- SWBAT write and solve proportions.
- SWBAT represent and analyze situations using algebraic symbols.

Calculators: Yes

### 6.3 Solving Proportions Using Cross Products

Cross Multiplication

7.RP  
7.EE  
8.EE

- SWBAT solve proportions using cross products.
- SWBAT represent and analyze situations using algebraic symbols.

Calculators: Yes

A [proportion](#) is an equation that states two ratios are equal.

$$\frac{a}{b} = \frac{c}{d}, \text{ where } b \neq 0 \text{ and } d \neq 0$$

Ex.)  $\frac{2 \cdot 4}{3 \cdot 4} = \frac{8}{12}$

A [cross product](#) of two ratios is the product of the numerator of one ratio and the denominator of the other ratio.

Tell whether the ratios form a proportion.

a.)  $\frac{9 \div 3}{51 \div 3}, \frac{6 \div 2}{34 \div 2}$

$$\frac{3}{17} = \frac{3}{17} \text{ (Yes)}$$

$\frac{9}{51} \times \frac{6}{34}$   
 $9(34) = 306$   
 $51(6) = 306$  (Yes)

b.)  $\frac{12}{20}, \frac{32}{50}$

$$\frac{6}{10} \neq \frac{16}{25} \text{ (No)}$$

$\frac{12}{20} \times \frac{32}{50}$   
 $12(50) = 600$   
 $20(32) = 640$  (No)

Tell whether the ratios form a proportion.

a.)  $\frac{11}{12}, \frac{67}{72}$

b.)  $\frac{10}{75}, \frac{2}{15}$

Solve the proportion:

1.  $\frac{5 \cdot 3}{6 \cdot 3} = \frac{x}{18}$

$$x = 15$$

Mental Math

2.  $\frac{x}{98} = \frac{3 \cdot 14}{7 \cdot 14}$

$$x = 42$$

Solve the proportion:

3.  $\frac{x}{12} = \frac{2}{8}$

Algebra

$$8x = 12(2)$$

$$\frac{8x}{8} = \frac{24}{8}$$

$$x = 3$$

Solve the proportion.

a.)  $\frac{16}{p} = \frac{10}{45}$

$$10p = 45(16)$$
$$\frac{10p}{10} = \frac{720}{10} \quad (p=72)$$

b.)  $\frac{0.4}{6} = \frac{18}{z}$

$$0.4z = 6(18)$$
$$\frac{0.4z}{0.4} = \frac{108}{0.4} \quad (z=270)$$

c.)  $\frac{18}{50} = \frac{3x}{175}$

$$50(3x) = 18(175)$$
$$\frac{150x}{150} = \frac{3150}{150} \quad \frac{315}{15}$$
$$x = 21$$

Solve the proportion.

a.)  $\frac{30}{48} = \frac{15}{x+9}$

$$30(x+9) = 48(15)$$
$$30x + 270 = 720$$
$$\begin{array}{r} 30x + 270 = 720 \\ -270 \quad -270 \\ \hline 30x = 450 \end{array}$$

$$\frac{15}{24} = \frac{15}{x+9}$$

$$\frac{30x}{30} = \frac{450}{30}$$
$$x = 15$$

b.)  $\frac{35}{20} = \frac{13-x}{28}$

$$20(13-x) = 35(28)$$

$$260 - 20x = 980$$
$$\begin{array}{r} 260 - 20x = 980 \\ -260 \quad -260 \\ \hline -20x = 720 \end{array}$$

$$\frac{-20x}{-20} = \frac{720}{-20}$$

$$x = -36$$

Solve the proportion.

a.)  $\frac{x-4}{42} = \frac{14}{84}$

b.)  $\frac{22}{38} = \frac{33}{2x+7}$

During an outbreak of influenza, 2 students in Mr. Kuhlthau's 1st block class were absent. There are 30 students in his class. If the same absentee rate is valid for the entire student population of 1200 students, write and solve a proportion to determine how many students were absent during the outbreak.

1. Four notebooks cost \$4.40. How many notebooks can you buy for \$6.60?
2. Two roses cost \$3.50. How many roses can you buy for \$17.50?
3. A roll of paper towels cost \$1.90. How many rolls can you buy for \$9.50?
4. Christian works 8 hours and earns \$52. How many hours would he have to work to earn \$130?

Human hair grows about 0.7 cm in 2 weeks. How long does hair take to grow 14 cm?

**Exit Pass 6.2**

You are knitting a scarf with red, green and blue stripes. There are equal numbers of red and blue stripes. There are twice as many green stripes as there are red stripes. The scarf has 20 stripes.

- a.) Find the ratio of the number of red stripes to the total number of stripes on the scarf.
- b.) How many red stripes are there on the scarf?

**Exit Pass 6.3**

A post office sells first-class stamps and postcard stamps. For the year, the post office sold 7 first-class stamps for every 2 postcard stamps sold.

a. The post office sold 46,260 stamps for the year. How many of them were first-class stamps? How many were postcard stamps?

b. First-class stamps sold for \$0.37 each. Postcard stamps sold for \$0.23 each. Write a ratio for the amount of money collected for first-class stamps to the amount of money collected for postcard stamps.

c. Is the ratio you wrote in part (b) proportional to the ratio of first-class stamps sold to postcard stamps sold?

"Don't blame the sea if you cannot catch a fish."

Working individually or with a partner, complete the workbook.

**Workbook pg.**



**Reflection of Today's Lesson****6.3 Solving Proportions  
Using Cross Products**

7.RP  
7.EE  
8.EE

- SWBAT solve proportions using cross products.
- SWBAT represent and analyze situations using algebraic symbols.

Calculators: Yes

**Homework**

pg. 277-279 #7-27 odds, 37-40 all

pg. 283 #13-41 odds

~~Finish the quiz review!~~

