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Math 8

### Lesson 5.8 – Solving Ratio Problems

#### Notes:

A statement that two ratios are equal is a proportion. For example, 2:3 is proportionate to 4:6. Proportions are often used in cooking. For instance if we wanted to use a recipe to make twice as much as it originally called for we would make sure our measurements were in doubled.

To calculate proportion problems you can use your multiplication and/or division skills. Although some problems you will encounter in your text may be more complicated (See example #3 pg. 290)

Examples:  $\div 9$

1.  $5:w = 45:63$   
 $\div 9$

$$63 \div 9 = 7$$

$$w = 7$$

2.  $x:7 = 35:49$   
 $\div 7$

$$35 \div 7 = 5$$

$$x = 5$$

3.  $13:3 = 39:y$   
 $\times 3$

$$y = 9$$

4.  $50:25 = z:1$   
 $\div 25$

$$z = 2$$

5. A ski shop rents 5 snowboards for every 3 sets of skis it rents. Suppose 126 sets of skis were rented. How many snowboards were rented?

$$5 \text{ snowboards} : 3 \text{ ski sets} = x \text{ snowboards} : 126 \text{ ski sets}$$

$\xrightarrow{\times 42}$   
 $\xrightarrow{\times 42}$

$5 \times 42 = 210$  snowboards were rented.

6. The scale on a map is 1 cm represents 40 km. The actual straight line distance between 2 cities is about 340 km. What is the map distance between these 2 cities?

$$1 \text{ cm} : 40 \text{ km} = x \text{ cm} : 340 \text{ km}$$

$\xrightarrow{\times 8.5}$        $\xrightarrow{\times 8.5}$       or       $\frac{1}{40} = \frac{x}{340}$   
 $\frac{340}{40} = x$   
 $\frac{34}{4} = x$   
 $8.5 = x$

8.5 cm

7. The ratio of the number of students who take trumpet lessons to clarinet lessons is 6:5. The ratio of the number of students who take piano lessons to trumpet lessons is 8:3. Ten students take clarinet lessons.

- a) How many students take trumpet lessons?

$$\frac{6}{t} = \frac{5}{10} = t : 10$$

$$t = 12$$

- b) How many students take piano lessons?

$$\frac{8}{p} = \frac{3}{t} = p : 12$$

$$p = 32$$

- a) How many students take trumpet lessons?

- b) How many students take piano lessons?

Assignment:

Pg. 297-299  
#s 1-2, 4-15, 18-19