

Name: Key  
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Mr. Johnson  
Math 8

### Lesson 5.6 – Equivalent Ratios

#### Investigation:

Complete the quick Investigate activity on page 269 of your textbook with the person you are sitting beside. List the strategies you used and also explain why you think your answers are correct. Use the space below to answer these questions.

#### Definitions:

Equivalent Ratios: Are ratios that are equal.

$8:6 = 4:3$  since they can form by multiply or dividing both numbers

Greatest Common Factor (GCF) the greatest number that divides into each number in a set

ex. 5 is the GCD of 10 and 15

Simplest Form: a ratio with terms that have no common factors, other than 1

#### Notes:

The ratios 3:4 and 6:8 are called equivalent ratios. Equivalent ratios are equal. An equivalent fraction can be formed by multiplying or dividing the terms of a ratio by the same number.

For example: Using the ratio 8:32 write two ratios that are equivalent using division and two using multiplication below:

Division:

$$\begin{array}{r} 8:32 \\ \hline 2 \quad 2 \\ \hline 4:16 \\ \hline 2 \quad 2 \\ \hline 2:8 \end{array}$$

Multiplying: 32

$$\begin{array}{r} 8:32 \\ \times 2 \\ \hline 16:64 \\ \times 2 \\ \hline 32:128 \end{array}$$

When we divide the terms in a ratio by their greatest common factor we write the ratio in simplest form.

For example, write the following ratios in simplest form. HINT: find the greatest common factor for both numbers.

GCF: 5

$$\frac{15:25}{5 \quad 5}$$

3:5

GCF: 6

$$\frac{24:30}{6 \quad 6}$$

4:5

GCF: 20

$$\frac{20:80}{20 \quad 20}$$

1:4

GCF: 16

$$\frac{64:16}{16 \quad 16}$$

4:1

Examples:

1. Use the ratios below.

A	♣♣♣♣	♥♥♥
B	♠♠	♦♦♦
C	♦♦♦♦	▶▶▶▶▶▶
D	▶▶▶	□□□□□

- a) Use the ratios in row A.  
If there are 16 clubs, how many hearts are there?

( $\times 4$ )  $3 \times 4 = 12$

- b) Use the ratios in row B.  
If there are 24 diamonds, how many spades are there?

( $\times 8$ )  $2 \times 8 = 16$

- c) Use the ratios in row C.  
If there are 2 diamonds, how many arrows are there?

( $\div 2$ )  $6 \div 2 = 3$

- d) Use the ratios in row D.  
If there are 4 squares, how many arrows are there?

ratio =  $\frac{3 \Delta}{6 \square} = \frac{x}{4 \square}$  2 arrows

2. Find pairs of equivalent ratios. How do you know they are equivalent?

3:15:21      3:6  
2:7      9:18  
2:5      12:15:21  
20:50      8:28  
10:18      2:10:14  
24:30:42      5:9

they share a GCF

Assignment:

Pg. 273-275  
#s 4-17