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Ratios

Unit 1 Lesson 1

Math 6

Students will be able to:

Determine the comparison between or relationship of two things using ratio.

Solve word problems involving ratio.

Key Vocabulary:

Ratio

Equal Ratios

Reduced Ratio

Fraction

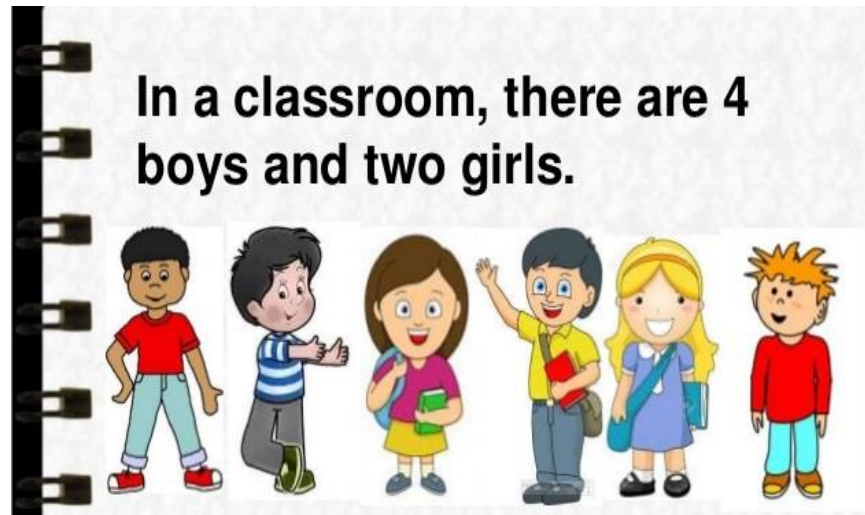GCF

Ratio is a comparison between, or a relationship of two things.

Example:

There is **1** ice cream cone to **3** cookies.

Example:

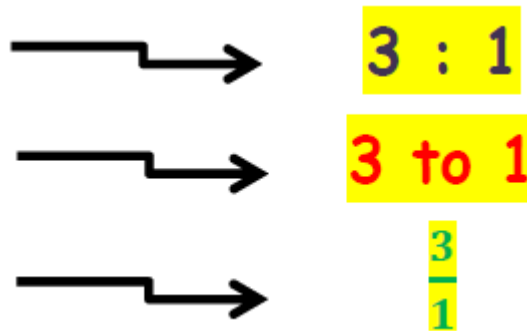In a classroom, there are 4 boys and two girls.

There are **4** boys to **2** girls.

Ratios can be shown in different ways!

There is **1** ice cream cone to **3** cookies.

1. Use the ":" to separate the values (read as **3 is to 1**).	**1:3**
2. We can also use the word "**to**"	**1 to 3**
3. We can write it as a **fraction**.	$\dfrac{1}{3}$

Sample Problem 1:

Write in three different ways the ratio of the given figure.

$3 : 1$

$3 : 1$

3 to 1

$$\frac{3}{1}$$

The ratio of 3 blue rectangles to 1 yellow rectangle.

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Sample Problem 2:

Answer the following questions given the picture below.
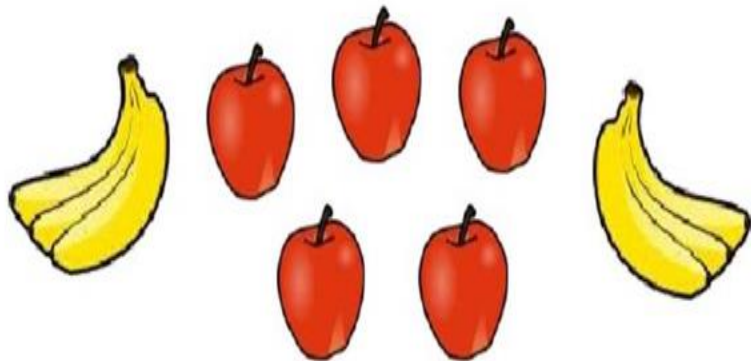
a. What is the ratio of apples to bananas?

Solution: 5 : 2

a. What is the ratio of bananas to apples?

Solution: 2 : 5

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Equal Ratios

To find an equal ratio, you can either multiply or divide each term in the ratio by the same number (but not zero).

Equal Ratios
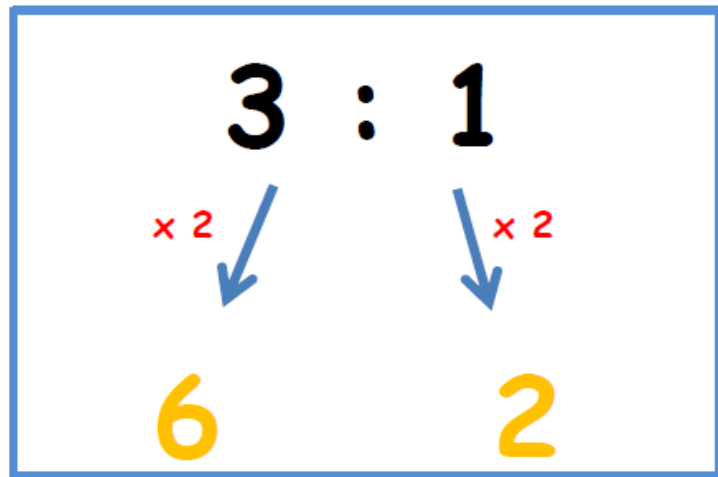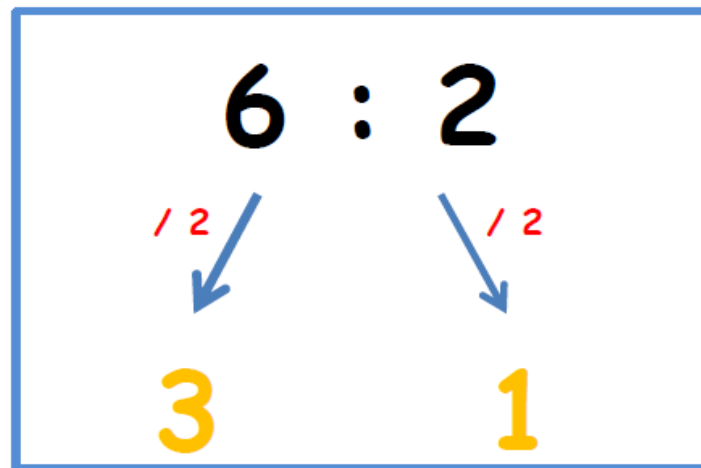
3 : 1

6   2

Here, the ratio is also 3 blue squares to 1 yellow square, even though there are more squares.

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Equal Ratios

3 : 1

×2   ×2

6   2

or

6 : 2

/2   /2

3   1

Therefore, 3 : 1 = 6 : 2

How do we know that the RATIOS are EQUAL?

Example: Are the ratios 4 : 1 and 12 : 3 equal?

Step 1: Find the quotient of the numbers in the ratio.

$$4 \div 1 = 4 \qquad\qquad 12 \div 3 = 4$$

Step 2: If the quotients are the **SAME**, then ratios are **EQUAL**!

$$4:1 = 12:3$$

Sample Problem 3:

Are the ratios 3:4 and 12:16 EQUAL or NOT?

Solution:

3 ÷ 4 = 0.75
12 ÷ 16 = 0.75
Therefore, 3:4 = 12:16

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Reducing Ratios

Reducing ratios is similar to reducing a fraction in lowest terms since ratios can be expressed as fractions.

Example: Reduce 12:16 in lowest terms.

Step 1: Find the GCF of the numbers in the ratio.
GCF is 4

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Reducing Ratios

Step 2: Divide the numbers in the ratio by the GCF.

$$\frac{12}{4} : \frac{16}{4} \quad \textbf{3 : 4}$$

IMPORTANT: Ratios are in lowest terms if and only if, the Greatest Common Factor left is 1.

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Sample Problem 4:

Reduce 16 : 24 in lowest term.

Solution:

GCF is 8 $\longrightarrow$ $\dfrac{16}{8} : \dfrac{24}{8}$ $\longrightarrow$ 2 : 3

Ratios

Who wants some yummy pancake?

A recipe for pancakes uses 3 cups of flour and 2 cups of milk. To make pancakes for a LOT of people we might need 4 times the quantity.

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a. What is the ratio of flour to milk in the original recipe?
Solution: 3 : 2

b. What is the ratio of flour to milk in the NEW recipe?
Solution:

$3 \times 4 : 2 \times 4 = \mathbf{12 : 8}$

12 cups of flour to 8 cups of milk for a yummy pancake

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