**Ratio**

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

**Examples:**



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



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** |
| 1. We can also use the word “**to**”
 | **1 to 3** |
| 1. We can write it as a **fraction.**
 | $$\frac{1}{3}$$ |

**Sample Problem 1:**

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



**Solution:**

**The ratio of 3 blue rectangles to 1 yellow rectangle.**

**3 : 1**

**3 to 1**

$\frac{3}{1}$

**Sample Problem 2:**

**Answer the following questions given the picture below.**



1. What is the ratio of apples to bananas?

**Solution: 5 : 2**

1. What is the ratio of bananas to apples?

**Solution: 2 : 5**

**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).

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



**3 : 1**

 **x 2 x 2**

 **6 2**

Or it could be the other way around…

**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** $÷$ **1 = 4 12** $÷$ **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**

**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

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

 $\frac{12}{4} : \frac{16}{4}$ **3 : 4**

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

**Sample Problem 4:**

**Reduce 16 : 24 in lowest term.**

Solution:

GCF is 8 $\frac{16}{8} : \frac{24}{8}$ **2 : 3**

**Sample Problem 5:**

**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.



1. What is the ratio of flour to milk in the original recipe?

**Solution: 3 : 2**

1. What is the ratio of flour to milk in the NEW recipe?

Solution:

3 x 4 : 2 x 4 = **12 : 8**

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