**Proportionss**

**Remember:** A **ratio** is a comparison of two or more numbers that are of the same type.

**Example** – The ratio of **boys to girls** in Mrs. Thangaraj’s class is **2 : 3**.

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We can think of the ratio 2 : 3 like this 🡪

This does not tell us how many students are in her class. It tells us that for every 2 boys there are 3 girls in her class.

So, her class **could** have **6 boys** and **9 girls**, for a total of 15 students.

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 Notice that it is still true that for every 2 boys there are 3 girls.

**So: 2 : 3 = 6 : 9**

A **proportion** is a statement that **two ratios are equivalent**.

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| **Problem** | **Ideas** |
| Karissa says that the ratios **3 : 5** and **4 : 6** are equivalent. Is she correct?  |  |
| Hibo says that the ratios **5 : 8** and **15 : 24** are equivalent. Is she correct? |  |

**Two ratios are equivalent if one is a multiple of the other.**

**x 3**



**2 : 3 = 6 : 9**



**x 3**

The **scale factor** is 3. These **ratios** are **equivalent**.

Wait, are these ratios equivalent?

**x 3**



No! These **ratios** are **not** **equivalent** since we have to use different numbers to multiply.

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**3 : 4 = 9 : 16**



**x 4**

**Determine** the **scale factor** for each of the following proportions.

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| **Proportion** | **Scale Factor** | **My Work** | **Or Method 2…** |
| 2 : 3 = 10 : 15 | 5 | I see that  2 x **5** = 10 and 3 x **5** = 15 | $$\frac{2}{3}=0.6666$$$$\frac{10}{15}=0.6666$$The fractions are equal, so that means the ratios are equal. |
| 3 : 5 = 30 : 50 |  |  |  |
| 7 : 4 = 35 : 20 |  |  |  |

I can get the scale factor **5** like this: 10 ÷ 2 = **5**.

I used the first number in each ratio and divided them.



**And a super hard problem….**

The ratio of **boys to girls** in Mrs. G’s class is 3 : 4. There are 21 students in her class. How many boys and girls are in her class?

In Ms. Thangaraj’s closet, the ratio of **heels to flats** is 3: 1. If she has 16 pairs of shoes, how many heels and flats does she have?

Aisha buys apples and bananas at Loblaws. She tells Prakash that the ratio of apples to bananas is 4:7. Prakash counts the fruit and sees that she has bought 24 fruit in total. Can her ratio be correct?