

Simplifying ratios

Sunday, 12 April 2020 10:49 am

★ By the end of the lesson I would hope that you have an understanding and be able to apply to questions the following concepts:

- Build on the work which was already covered in Ratios
- Understand that you can simplify ratios
- Know how to simplify ratios by dividing by the highest common factor
- Convert units to ensure we write the ratios correctly

RECAP

This is the second lesson where we look at ratios. Having spent some time looking at how ratios are written (expressed) and that the order of the ratios is really important, we now look at simplifying ratios.

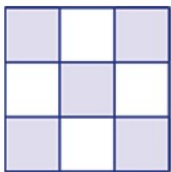
RECAP: Ratios

Here were some examples we used in the last lesson. We were asked to write the ratios with shaded and then unshaded. **Remember that the order you write them is really important!**

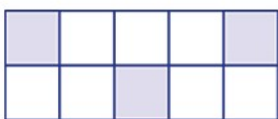


Shaded : unshaded

1 : 2



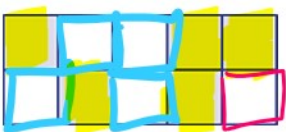
5 : 4



3 : 7

You will notice that the figures are not able to be cancelled down (or simplified). This is exactly the same process as we do in simplifying fractions.

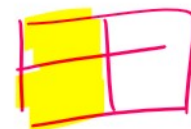
Now look at the following examples. State the ratio of shaded parts to unshaded parts for each of the following in simplest form

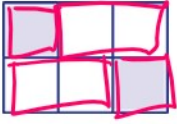


Shaded : unShaded

5 : 5

1 : 1





$$2 : 4$$

$$1 : 2$$

These can be simplified!

Where we can simplify ratios, **we should**.

Examples of how we can use ratios

The following examples are taken, with permission, from the Cambridge Essentials Year 8 Textbook

Simplify the following ratios.

- 7 : 21
- 450 : 200

$$\begin{array}{c} 7 : 21 \\ \div 7 \quad \left(\begin{array}{l} \swarrow \\ \searrow \end{array} \right) \quad \div 7 \\ \hline 1 : 3 \end{array}$$

$$\begin{array}{c} 450 : 200 \\ \div 50 \left(\begin{array}{l} \swarrow \\ \searrow \end{array} \right) \div 50 \\ \hline 9 : 4 \end{array}$$

Simplify the following ratios.

- $\frac{3}{5} : \frac{1}{2}$
- $2\frac{1}{3} : 1\frac{1}{4}$

$$\begin{array}{c} \frac{3}{5} : \frac{1}{2} \\ \frac{10}{1} \times \frac{3}{5} : \frac{1}{2} \times \frac{10}{1} \\ \hline 6 : 5 \end{array}$$

$$\begin{array}{c} 2\frac{1}{3} : 1\frac{1}{4} \\ \frac{7}{3} : \frac{5}{4} \\ \frac{12}{1} \times \frac{7}{3} : \frac{5}{4} \times \frac{12}{1} \\ \hline 28 : 15 \end{array}$$

Different units are a massive trick! You cannot express ratios if they have different units.

Below is a question where you have different units.

First change the quantities to the same unit, and then express each pair of quantities as a ratio in simplest form.

- 4 mm to 2 cm
- 25 minutes to 2 hours

$$10 \text{ m} : 1 \text{ cm}$$

$$\begin{array}{ccc} 4 \text{ mm} & : & 2 \text{ cm} \\ 4 & : & 20 \\ \div 4 & \left(\begin{array}{c} \swarrow \quad \searrow \\ 1 & : & 5 \end{array} \right) & \div 4 \\ \hline & & \end{array}$$

$$25 \text{ min} : 120 \text{ mins}$$

$$25 : 120$$

$$5 : 25$$

$$\underline{\underline{1 : 5}}$$