

Simplifying Ratio – NA8 part i)

Simplifying ratio means cancelling (dividing) the numbers on **both sides** of the ratio down to their **lowest** common terms. i.e. dividing until the numbers can be divided no further as whole numbers.

Example

Simplify the ratio 18 : 12

Simplifying means keeping both sides of the ratio as integers

Solution

What number goes into 18 and 12 exactly?

2 divides into both 18 and 12. Divide by 2.

This gives the ratio 9 : 6.

Repeat the process...

What goes into 9 and 6 exactly?

3 goes into 9 and 6. Divide by 3, to give 3 : 2. Hence, 18 : 12 is simplified to 3 : 2.

Extra: You also need to be able to write a ratio in the form **1 : n**.

Example

Write the ratio 18 : 12 in the form 1 : n.

Solution

Divide both sides of the ratio by 18

$$\begin{aligned} 18 : 12 &= 1 : \frac{12}{18} \\ &= 1 : \frac{2}{3} \end{aligned}$$

Simplify the fraction by dividing top and bottom of the fraction by 6

Dividing a Quantity in a Given Ratio – NA8 part ii)

Example

Divide £17 in the ratio 3 : 2.

Solution

There are $3 + 2 = 5$ parts!

Divide by 5 to get $\frac{17}{5}$

This gives you the value of 1 part

2 parts is therefore worth $2 \times \frac{17}{5} = \text{£}6.80$

3 parts is therefore worth $3 \times \frac{17}{5} = \text{£}10.20$

So £17 is split into £10.20 and £6.80.

Strategy

1. Calculate the number of parts
2. Divide by the number of parts
3. Multiply this as required.

Your Turn!!

a) Divide £78 in the ratio 3 : 2 : 1.

Hint: There are $3+2+1 = 6$ parts. Now finish off this question.

Extra: Link to Fractions

Example

If $\frac{1}{4}$ of the class are boys then the ratio of boys to girls will be 1 : 3. This is because the denominator of the fraction (the bottom part) gives the 'total number of parts' is $1+3=4$ in this example. But backwards we have that if the ratio of boys to girls in a class is 1 : 5 then the fraction of boys in the class is $\frac{1}{6}$.

Extra Your Turn!!

b) If $\frac{2}{45}$ of the class are boys, then the ratio of boys to girls will be what?

c) If the ratio of boys to girls is 3 : 5, then what fraction of the class are boys?

RAPID 'ACID' TEST – Blank out the page above before answering these!

1. Simplify 12 : 100
2. Simplify 21 : 28
3. Divide £22 in the ratio 3 : 8.
4. Jim and John divide £100 in the ratio 5 : 8. How much does Jim receive to the nearest penny?

Hint: Don't round any figures until you write down your answer!