

Year 8 – Maths Knowledge Organiser #2


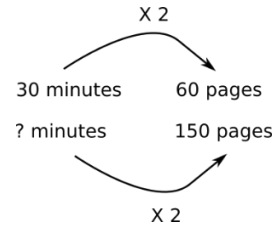
Autumn 2021

Ratio



Name:

Class:

Topic/Skill	Definition/Tips	Example
Ratio	Ratio compares the size of one part to another part . Written using the ':' symbol.	$3 : 1$ 
Simplifying Ratios	Divide all parts of the ratio by a common factor .	$5 : 10 = 1 : 2$ (divide both by 5) $14 : 21 = 2 : 3$ (divide both by 7)
Ratios in the form $1 : n$ or $n : 1$	Divide both parts of the ratio by one of the numbers to make one part equal 1 .	$5 : 7 = 1 : \frac{7}{5}$ in the form $1 : n$ $5 : 7 = \frac{5}{7} : 1$ in the form $n : 1$
Sharing in a Ratio	<ol style="list-style-type: none"> Add the total parts of the ratio. Divide the amount to be shared by this value to find the value of one part. Multiply this value by each part of the ratio. <p>Use only if you know the total.</p>	Share £60 in the ratio $3 : 2 : 1$. $3 + 2 + 1 = 6$ $60 \div 6 = 10$ $3 \times 10 = 30, 2 \times 10 = 20, 1 \times 10 = 10$ £30 : £20 : £10
Proportional Reasoning	Comparing two things using multiplicative reasoning and applying this to a new situation. Identify one multiplicative link and use this to find missing quantities.	
Unitary Method	Finding the value of a single unit and then finding the necessary value by multiplying the single unit value.	3 cakes require 450g of sugar to make. Find how much sugar is needed to make 5 cakes. $3 \text{ cakes} = 450\text{g}$ So $1 \text{ cake} = 150\text{g}$ (\div by 3) So $5 \text{ cakes} = 750 \text{ g}$ (\times by 5)

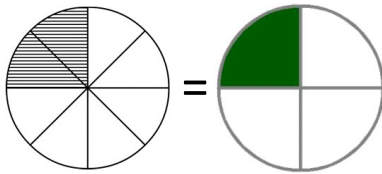
8. Ratio already shared	Find what one part of the ratio is worth using the unitary method .	Money was shared in the ratio 3:2:5 between Ann, Bob and Cat. Given that Bob has £16, found out the total amount of money shared. £16 = 2 parts So £8 = 1 part 3 + 2 + 5 = 10 parts, so 8 x 10 = £80
9. Best Buys	Find the unit cost by dividing the price by the quantity . The lowest number is the best value.	8 cakes for £1.28 → 16p each (÷by 8) 13 cakes for £2.05 → 15.8p each (÷by 13) Pack of 13 cakes is best value.

Key Concept

2 parts → $2:6$ ← 6 parts

$$=$$

$$1:3$$



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

Examples

Simplify 60 : 40 : 100

This could have been done in one step by dividing by 20.

$$\begin{aligned} &\div 10 \\ 60 : 40 : 100 \\ &\div 2 \\ 6 : 4 : 10 \\ &\div 2 \\ 3 : 2 : 5 \end{aligned}$$

Write 2 : 5 in the form 1 : n

$$\begin{aligned} &\div 2 \\ 2 : 5 \\ &\div 2 \\ 1 : 2.5 \end{aligned}$$

Share £45 in the ratio 2 : 7

$$45 \div 9 = 5$$

£10 : £35

$$\begin{array}{cc} 2 : 7 \\ \boxed{5} & \boxed{5} \\ \boxed{5} & \boxed{5} \\ =10 & \boxed{5} \\ & \boxed{5} \\ & \boxed{5} \\ & \boxed{5} \\ & =35 \end{array}$$

Joy and Martin share money in the ratio 2 : 5. Martin gets £18 more than Joy. How much do they each get?

£12 : £30

$$\begin{aligned} &2 : 5 \\ \boxed{6} & \boxed{6} \\ \boxed{6} & \boxed{6} \\ & \boxed{6} \\ & \boxed{6} \\ & \boxed{6} \\ 18 \div 3 = 6 & \\ =12 & =30 \end{aligned}$$

Tip

Its often useful to write the letters above the ratio. This helps you keep the order the correct way round.

Questions

- Simplify a) 45 : 63 b) 66 : 44 c) 320 : 440
- Write in the form 1 : n a) 5 : 10 b) 4 : 6 c) $x : x^2 + x$
- Share 64 in the ratio 3 : 5 4) Write the ratio 1 : 4 as a fraction.