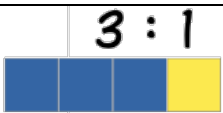
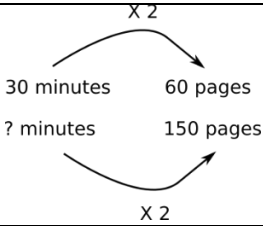


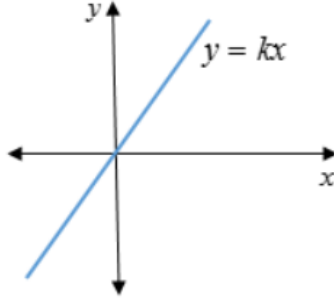


Topic/Skill	Definition/Tips	Example
1. Ratio	Ratio compares the size of <b>one part</b> to <b>another part</b> .  Written using the ':' symbol.	
2. Proportion	Proportion compares the size of <b>one part</b> to the size of the <b>whole</b> .  Usually written as a fraction.	In a class with 13 boys and 9 girls, the proportion of boys is $\frac{13}{22}$ and the proportion of girls is $\frac{9}{22}$
3. Simplifying Ratios	<b>Divide</b> all parts of the ratio by a <b>common factor</b> .	$5 : 10 = 1 : 2$ (divide both by 5) $14 : 21 = 2 : 3$ (divide both by 7)
4. Ratios in the form $1 : n$ or $n : 1$	<b>Divide</b> both parts of the ratio by one of the numbers to make <b>one part equal 1</b> .	$5 : 7 = 1 : \frac{7}{5}$ in the form $1 : n$ $5 : 7 = \frac{5}{7} : 1$ in the form $n : 1$
5. Sharing in a Ratio	<b>1. Add</b> the total parts of the ratio. <b>2. Divide</b> the amount to be shared by this value to find the value of one part. <b>3. Multiply</b> this value by each part of the ratio.  Use only if you <b>know the total</b> .	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
6. Proportional Reasoning	Comparing two things using <b>multiplicative reasoning</b> and applying this to a new situation.  Identify one multiplicative link and use this to find missing quantities.	
7. Unitary Method	Finding the <b>value of a single unit</b> and then finding the necessary value by <b>multiplying</b> 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 <b>one part</b> of the ratio is worth using the <b>unitary method</b> .	Money was shared in the ratio $3:2:5$ between Ann, Bob and Cat. Given that Bob had £16, found out the total amount of money shared.  $\pounds 16 = 2 \text{ parts}$ So $\pounds 8 = 1 \text{ part}$ $3 + 2 + 5 = 10 \text{ parts}$ , so $8 \times 10 = \pounds 80$
9. Best Buys	Find the <b>unit cost</b> by <b>dividing the price by the quantity</b> . The <b>lowest</b> number is the best value.	8 cakes for £1.28 $\rightarrow$ 16p each ( $\div$ by 8) 13 cakes for £2.05 $\rightarrow$ 15.8p each ( $\div$ by 13) Pack of 13 cakes is best value.

## KS3 Unit 31 Ratio and Proportion

10. Scale	The <b>ratio</b> of the <b>length</b> in a <b>model</b> to the length of the <b>real</b> thing.	 <p>Real Horse 1500 mm high 2000 mm long</p> <p>Drawn Horse 150 mm high 200 mm long</p>
11. Scale (Map)	The <b>ratio</b> of a <b>distance on the map</b> to the actual <b>distance in real life</b> .	<p>1 in. = 250 mi 1 cm = 160 km</p> 
12. Direct Proportion	<p>If two quantities are in direct proportion, <b>as one increases, the other increases by the same percentage.</b></p> <p>If <math>y</math> is directly proportional to <math>x</math>, this can be written as <math>y \propto x</math></p> <p>An equation of the form <math>y = kx</math> represents direct proportion, where <math>k</math> is the <b>constant of proportionality</b>.</p>	
13. Inverse Proportion	<p>If two quantities are inversely proportional, <b>as one increases, the other decreases by the same percentage.</b></p> <p>If <math>y</math> is inversely proportional to <math>x</math>, this can be written as <math>y \propto \frac{1}{x}</math></p> <p>An equation of the form <math>y = \frac{k}{x}</math> represents inverse proportion.</p>	