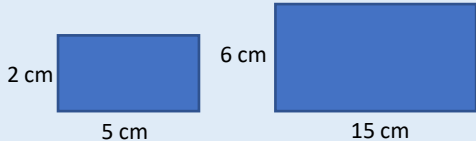


Mathematics	Ratio & Multiplicative Reasoning	Year 8	Term 1
-------------	----------------------------------	--------	--------



Ratio	Proportion	Similarity
<p>Ratio - a part to part comparison <i>The ratio of a to b is written as a:b (said as “a to b”)</i></p> <p>: is called a colon.</p> <p>Unit ratio – A ratio in the form n:1 or 1:n (where one side of the ratio is equal to 1 e.g. 1:3 or 5:1)</p> <p>Simplify – Find an equivalent ratio which contains smaller integers e.g. 3:12 can be simplified to 1:4</p> <p>Numerator - The top number in a fraction. It tells us how many parts we have.</p> <p>Denominator - The bottom number in a fraction. It shows how many parts the item has been split into.</p> <p>Unit fractions - have a numerator of 1 e.g. $\frac{1}{4}$</p>	<p>Proportion – When two ratios or fractions are equivalent.</p> <p>Double – To multiply by 2.</p> <p>Triple – To multiply by 3.</p> <p>Rate – A ratio that compares quantities that have different units. For example: Exchange rate – Compare quantities with different currencies.</p> <p>Currency – The money used by a country.</p> <p>Linear – Linear graphs form a straight line.</p> <p>Convert – To change between different units.</p> <p>Units – Used as a standard of measurement e.g. <i>centimetres</i>.</p> <p>Approximate – Not exact but quite close.</p> <p>Origin – (0,0)</p>	<p>When one shape is an enlargement of another then the two shapes are similar.</p> <p>Similar shapes – Have corresponding sides proportional and corresponding angles are equal.</p> <p>Corresponding sides – Sides in the same position on two similar shapes.</p> <p>Scale factor - A multiplier which indicates how much a shape is enlarged by e.g. <i>the scale factor below is 3:</i></p> <div></div>

WORKED EXAMPLES

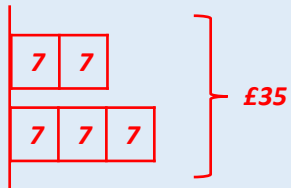
Ratio

Simplify the ratio 6 : 14



The highest common factor of 6 and 14 is 2, so we can divide both sides of the ratio by 2.

Share £35 in the ratio 2 : 3



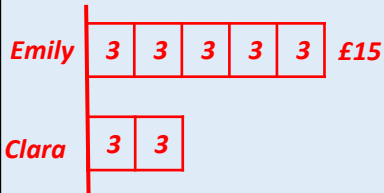
*There are five boxes in total so $\text{£}35 \div 5 = \text{£}7$
Therefore, £7 goes in each box.*

*Two of the boxes have a total of £14
Three of the boxes have a total of £21
Therefore, the new ratio is £14 : £21*

Emily and Clara share some money in the ratio 5 : 2

Emily gets £15

How much does Clara get?



*Emily has £15 and Emily has 5 boxes so $\text{£}15 \div 5 = \text{£}3$
Therefore, £3 goes in each box.*

Clara gets two boxes of £3 so Clara gets £6

Proportion

Work out the cost of 8 apples if 4 apples cost £1.64

apples	cost
4	£1.64
$\times 2$ 8	$\times 2$ <u>£3.28</u>

Work out the cost of 7 cookies if 3 cookies cost 78p.

cookies	cost
3	£0.78
$\div 3$ 1	$\div 3$ £0.26
$\times 7$ 7	$\times 7$ <u>£1.82</u>

The exchange rate to change Pounds into US Dollars is £1 = \$1.25

How many Pounds can I buy with \$800?

Pounds	US Dollars
£1	\$1.25
$\times 1.25$	
<u>£640</u>	\$800
$\div 1.25$	

Similarity

The two rectangles are similar.

Work out the length of the missing side.

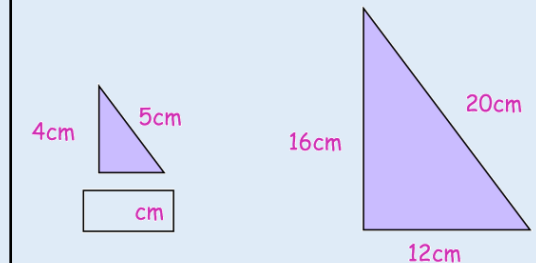


small shape	big shape
3cm	6cm
$\times 2$	
8cm	<u>16cm</u>
$\times 2$	

The scale factor of enlargement to go from the small shape to the big shape is 2

The two triangles are similar.

Work out the length of the missing side.



small shape	big shape
4cm	16cm
$\times 4$	
5cm	20cm
$\times 4$	
<u>3cm</u>	12cm
$\div 4$	

The scale factor of enlargement to go from the small shape to the big shape is 4