

# Y7 Maths Knowledge Organiser Topic 15: Ratio 1

What must I be able to do?	Key vocabulary						
<ul style="list-style-type: none"> <li>□ Understand the relationship between ratios and fractions ➤ Sparx M267</li> <li>□ Write equivalent ratios, and find the missing term in a pair of equivalent ratios ➤ Sparx M885</li> <li>□ Express ratios involving rational numbers in their simplest form</li> <li>□ Express ratios in the form 1:n and n:1 ➤ Sparx M543</li> <li>□ Be able to use the unitary method</li> <li>□ Interpret <math>a : b</math> and <math>a : b : c</math>, where <math>a</math>, <math>b</math> and <math>c</math> are whole numbers</li> <li>□ Compare two or more quantities by using ratio</li> <li>□ Divide a quantity in a given ratio ➤ Sparx M525</li> <li>□ Find the whole/ one part when a whole is divided into parts in a given ratio ➤ Sparx M801</li> <li>□ Solve word problems involving ratio</li> <li>□ Work out which item is best value for money ➤ Sparx M681</li> </ul>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%; padding: 5px;"><b>Ratio</b></td> <td style="padding: 5px;">Numbers, separated by colons, that show how many of one thing there are compared to another. e.g. if a ratio of dogs to cats is 4:1, then there are four dogs for every one cat.</td> </tr> <tr> <td style="padding: 5px;"><b>Unitary</b></td> <td style="padding: 5px;">The unitary method is a technique which is used for solving a problem by finding the value of a single unit.</td> </tr> <tr> <td style="padding: 5px;"><b>Best value</b></td> <td style="padding: 5px;">Compare the price of the same amount of an item. The item that is cheaper for the same quantity is better value for money.</td> </tr> </table>	<b>Ratio</b>	Numbers, separated by colons, that show how many of one thing there are compared to another. e.g. if a ratio of dogs to cats is 4:1, then there are four dogs for every one cat.	<b>Unitary</b>	The unitary method is a technique which is used for solving a problem by finding the value of a single unit.	<b>Best value</b>	Compare the price of the same amount of an item. The item that is cheaper for the same quantity is better value for money.
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## Expressing as a ratio

the order matters!

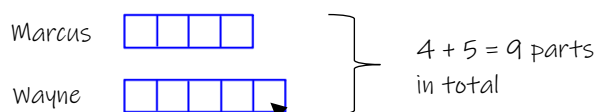
The ratio of circles to squares is 3:7

The ratio of squares to circles is 7:3

The fraction which are squares is  $\frac{7}{10}$  (7 + 3)

## Sharing in a ratio

e.g. Marcus and Wayne share £4500 in the ratio 4 : 5



£4500 split into 9 parts is

$$£4500 \div 9 = £500 \quad \text{Each part is worth } £500$$

So Marcus gets  $£500 \times 4 = £2000$

And Wayne gets  $£500 \times 5 = £2500$

## Equivalent ratios

Ratios can be simplified by dividing by a common factor

e.g.

$$\begin{array}{ccc} 25 : 10 : 15 & & \\ \div 5 \swarrow & \searrow \div 5 & \\ 5 : 2 : 3 & & \end{array}$$

They can also be simplified to 1:n or n:1 by dividing by an appropriate value

e.g.

$$\begin{array}{ccc} 5 : 18 & & \\ \div 5 \swarrow & \searrow \div 5 & \\ 1 : 3.6 & & \end{array}$$

The only time we allow a decimal in a ratio is when it is the "n"

## Best value using a unitary method

For these questions, scale the quantity down to 1 (also known as the unitary method) then compare.

<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;"> <p>Brand A</p> <p>400g</p> <p>£2.56</p> </div>	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;"> <p>Brand B</p> <p>750g</p> <p>£5.10</p> </div>
Brand A	Brand B
$£2.56 \div 400 = £0.0064$	$£5.10 \div 750 = £0.0068$

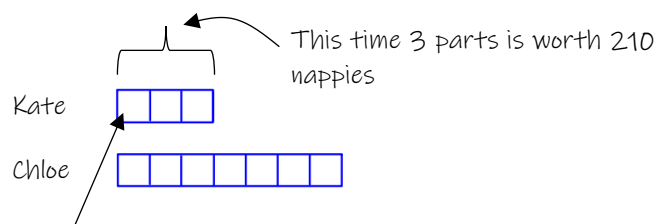
This is cost per 1g

$£0.0064$  is smaller than  $£0.0068$   
so Brand A is better value

e.g. Kate and Chloe both have young children and have bought a large quantity of nappies in the ratio 3 : 7

Kate has bought 210 nappies.

How many has Chloe bought?



So one part is worth  $210 \div 3 = 70$  nappies

Chloe has 7 parts so has a total of  $70 \times 7 = 490$  nappies