Y7 Maths Knowledge Organiser Topic 14: Ratio 1

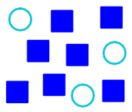
What must I be able to do?

- ☐ Understand the relationship between ratios and fractions
  - ➢ Sparx M267
- ☐ Write equivalent ratios, and find the missing term in a pair of equivalent ratios
  - ➢ Sparx M885
- ☐ Express ratios involving rational numbers in their simplest form
- ☐ Express ratios in the for 1:n and n:1
  - ➢ Sparx M543
- ☐ Be able to use the unitary method
- ☐ Interpret $a : b$ and $a : b : c$, where a, b and c are whole numbers
- ☐ Compare two or more quantities by using ratio
- ☐ Divide a quantity in a given ratio
  - ➢ Sparx M525
- ☐ Find the whole/ one part when a whole is divided into parts in a given ratio
  - ➢ Sparx M801
- ☐ Solve word problems involving ratio
- ☐ Work out which item is best value for money
  - ➢ Sparx M681

Key vocabulary

Ratio	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.
Unitary	The unitary method is a technique which is used for solving a problem by finding the value of a single unit.
Best value	Compare the price of the same amount of an item. The item that is cheaper for the same quantity is better value for money.

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)

Equivalent ratios

Ratios can be simplified by dividing by a common factor

e.g. 25 : 10 : 15 ÷ 5 → 5 : 2 : 3

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

e.g. 5 : 18 ÷ 5 → 1 : 3.6

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.

Brand A	Brand B
400g	750g
£2.56	£5.10

Brand A
£2.56 ÷ 400
= £0.0064

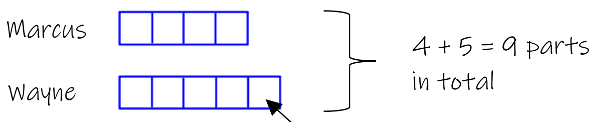
This is cost per 1g

Brand B
£5.10 ÷ 750
= £0.0068

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

Sharing in a ratio

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



£4500 split into 9 parts is

£4500 ÷ 9 = £500 Each part is worth £500

So Marcus gets £500 x 4 = £2000

And Wayne gets £500 x 5 = £2500

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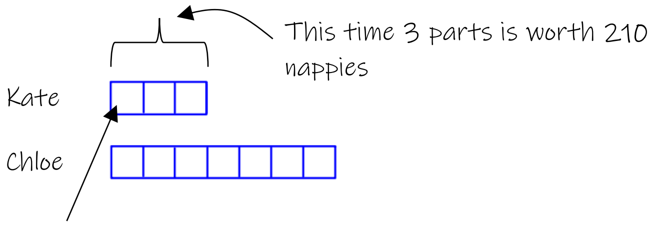
e.g. Kate and Chloe both have young children and have bought a large quantity of nappies in the ratio 3 : 7

Kate has bought 210 nappies.

How many has Chloe bought?



So one part is worth 210 ÷ 3 = 70 nappies

Chloe has 7 parts so has a total of 70 x 7 = 490 nappies