YEAR 6 — NUMBER . . .

Ratio

@whisto_maths

What do I need to be able to do?

By the end of this unit you should be able to:

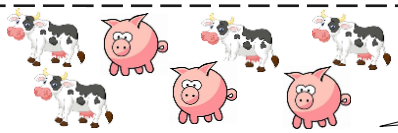
- Use ratio language
- Understand ratios and fractions
- Use the : symbol for ratio
- Calculate ratios
- Use scale factors
- Calculate scale factors
- Link ratio and proportion

Keywords

Ratio: a statement of how two numbers compare
Enlargement: to change the size of a shape
Proportion: a statement that links two rations
Scale Factor: the multiple that increases/ decreases a shape in size
Part: a section of a whole
Scale: the comparison of something drawn to its actual size
Order: to place a number in a determined sequence

Ratio Language

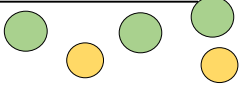
"For every XXX of XXX there are XXX of XXX"



For every 4 cows there are 3 pigs

For every 3 pigs there are 4 cows

Ratios and fractions



For every 3 green counters there are 2 yellow counters

The ratio of green to yellow counters is 3 : 2

The fraction of green counters is:

$\frac{3}{5}$

There are 3 green counters

There are 5 counters overall

The fraction of yellow counters is:

$\frac{2}{5}$

There are 2 yellow counters

The ratio symbol

"For every 2 strawberries I have 4 bananas and 6 berries"

Ratio of strawberries, bananas and berries 2 : 4 : 6

The order of notation follows the order of the parts

□ : □

The colon notation is the symbol for ratio "For every…"

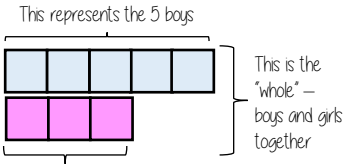
Representing a ratio

"For every 5 boys there are 3 girls" 5:3

This is the "whole" — boys and girls together

This represents the 5 boys

This represents the 3 girls

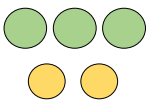


This represents the 5 boys

This is the "whole" — boys and girls together

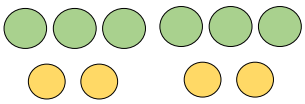
This represents the 3 girls

Proportion



The ratio of green to yellow counters is 3 : 2

$\frac{3}{5}$ are green $\frac{2}{5}$ are yellow



The ratio of green to yellow counters is 6 : 4

$\frac{6}{10} = \frac{3}{5}$ are green

$\frac{4}{10} = \frac{2}{5}$ are yellow

Ratio increases proportionally

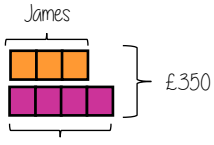
The proportion remains the same

Sharing a whole into a given ratio

James and Lucy share £350 in the ratio 3:4
Work out how much each person earns

Model the Question

James : Lucy
3 : 4



James

£350

Lucy

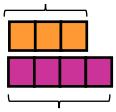
Find the value of one part

Whole: £350
7 parts to share between
(3 James, 4 Lucy)

□ = one part
= £50

£350 ÷ 7 = £50

James = 3 x £50 = £150

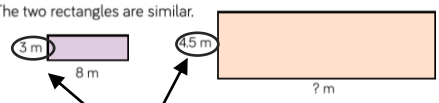


£350

Lucy = 4 x £50 = £200

Scale Factors

The two rectangles are similar.



3 m

8 m

4.5 m

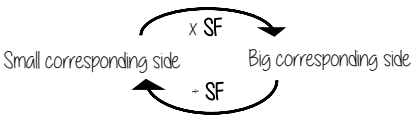
? m

Use **corresponding** sides to calculate a scale factor

This is an enlargement of scale factor 1.5

Scale factor can also be calculated by:

Bigger corresponding side
Smaller corresponding side



Small corresponding side

x SF

÷ SF

Big corresponding side