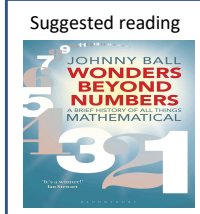


Year 8 – Proportional Reasoning Ratio & Scale



Want to know more? Scan the QR code to visit the curriculum overview for Year 8 Maths, including topic summaries, key words, and books that you may want to read in your own time



What do I need to be able to do?

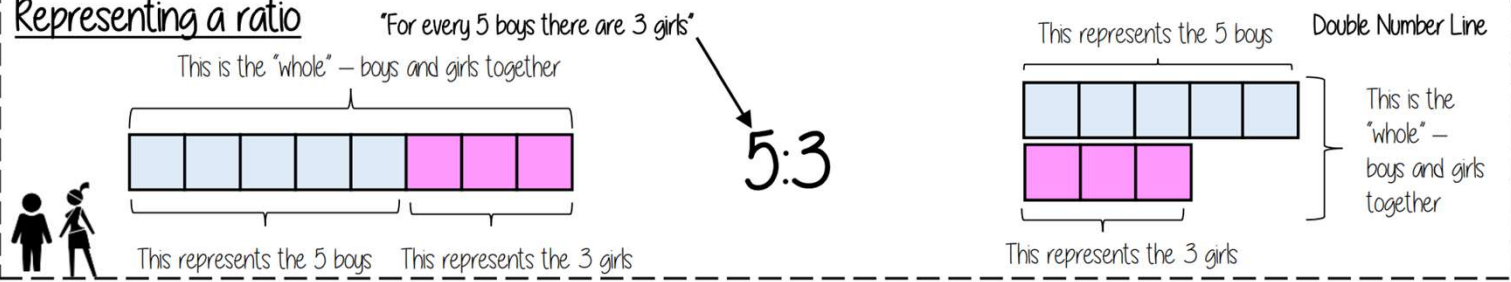
- By the end of this unit you should be able to:
- Simplify any given ratio
 - Share an amount in a given ratio
 - Solve ratio problems given a part
- Solutions should be modelled, explained and solved.

Keywords

- Ratio:** a statement of how two numbers compare
- Equal Parts:** all parts in the same proportion, or a whole shared equally
- Proportion:** a statement that links two ratios
- Order:** to place a number in a determined sequence
- Part:** a section of a whole
- Equivalent:** of equal value
- Factors:** integers that multiply together to get the original value
- Scale:** the comparison of something drawn to its actual size



Representing a ratio



Order is Important

"For every dog there are 2 cats"

Dogs: Cats

1:2

The ratio has to be written in the same order as the information is given

e.g. 2:1 would represent 2 dogs for every 1 cat. ✗

Simplifying a ratio

"For every 6 days of rain there are 4 days of sun"

6:4

Cancel down the ratio to its lowest form

Find the biggest common factor that goes into all parts of the ratio

For 6 and 4 the biggest factor (number that multiples into them is 2)

+ by 2

3:2

"For every 3 days of rain there are 2 days of sun" – when this happens twice the ratio becomes 6:4

Ratio 1:n (or n:1)

This is asking you to cancel down until the part indicated represents 1

Show the ratio 4:20 in the ratio of 1:n

The question states that this part has to be 1 unit. Therefore Divide by 4

4 : 20

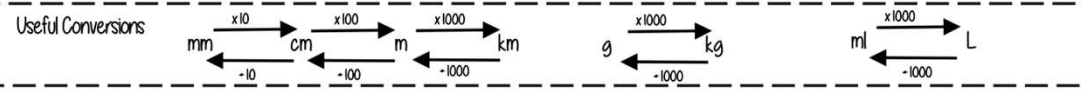
1 : 5

This side has to be divided by 4 too – to keep in proportion

If the n part does not have to be an integer for this type of question

Units are important:

When using a ratio – all parts should be in the same units



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

£350

Lucy

Find the value of one part

Whole: £350

7 parts to share between (3 James, 4 Lucy)

□ = one part = £50

Put back into the question

James: Lucy

James = 3 x £50 = £150

Lucy = 4 x £50 = £200

James: Lucy

3 : 4

£150 : £200

Finding a value given 1:n (or n:1)

Inside a box are blue and red pens in the ratio 5:1. If there are 10 red pens how many blue pens are there?

Model the Question

Blue : Red

5 : 1

One unit = 10 pens

□ = one part = 10 pens

Put back into the question

Blue pens = 5 x 10 = 50 pens

Blue : Red

5 : 1

50 : 10

Red pens = 1 x 10 = 10 pens

There are 50 Blue Pens

Ratio as a fraction

Trees: Flowers

3 : 7

Ratio

There are 3 parts for trees

Fraction of trees

Number of parts of in group

Total number of parts

$\frac{3}{10}$

Tree parts 3 + Flower parts 7 = 10

