

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

"For every 5 boys there are 3 girls"

This is the "whole" – boys and girls together

5:3

Order is Important

"For every dog there are 2 cats"



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"

Cancel down the ratio to its lowest form

6:4

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)

3:2

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

Ratio In (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 In

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

4:20

1:5

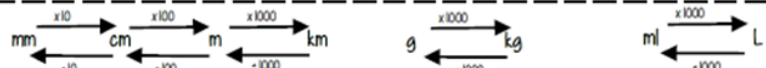
This side has to be divided by 4 too – to keep in proportion

*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

Useful Conversions



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



Find the value of one part

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

£350 ÷ 7 = £50
□ - one part = £50

Put back into the question

James: Lucy
3:4
(x 50) (x 50)
£150:£200



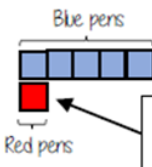
Finding a value given In (or n:1)

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 part = 10 pens



Put back into the question

Blue: Red
(x 10) (x 10)
5:1
50:10



There are 50 Blue Pens

Ratio as a fraction



Trees: Flowers
3:7



There are 3 parts for trees

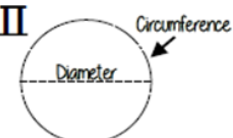
Flowers
Fraction of trees

Number of parts of in group
Total number of parts

$\frac{3}{10}$

Tree parts 3 + Flower parts 7 = 10

π



The ratio of a circles circumference to its diameter