Unit 9: Ratio Review

What do I need to be able to do?

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

- Compare quantities using ratio
- Link ratios and fractions and make comparisons
- Share in a given ratio
- Link Ratio and scales and graphs
- Solve problems with currency conversions
- Solve 'best buy' problems
- Combine ratios

Keywords

Ratio: a statement of how two numbers compare
Equivalent: of equal value
Proportion: a statement that links two ratios
Integer: whole number, can be positive, negative or zero.
Fraction: represents how many parts of a whole.
Denominator: the number below the line on a fraction. The number represent the total number of parts..
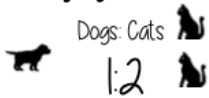**Numerator:** the number above the line on a fraction. The top number. Represents how many parts are taken
Origin: (0,0) on a graph. The point the two axes cross
Gradient: The steepness of a line

Compare with ratio (R)

"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.

Units have the be of the same value to compare ratios

Ratios and fraction (R)

Trees: Flowers

3 : 7

Fraction of trees

$$\frac{\text{Number of parts of in group}}{\text{Total number of parts}} \quad \frac{3}{10}$$
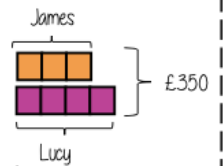
Sharing a whole into a given ratio (R)

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
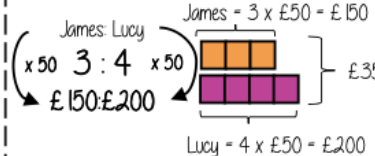
Find the value of one part

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

£350 ÷ 7 = £50
☐ = one part = £50

Put back into the question

James: Lucy

x 50 3 : 4 x 50

£150:£200

James = 3 x £50 = £150
£350
Lucy = 4 x £50 = £200
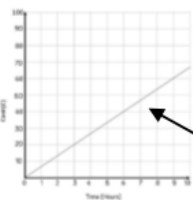
Ratio and graphs (R)

Graphs with a constant ratio are directly proportional
- Form a straight line
- Pass through (0,0)

The gradient is the constant ratio

Ratio and scale (R)

A picture of a car is drawn with a scale of 1:30
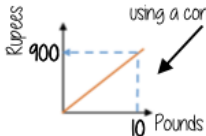
The car image is 10cm

Image : Real life
x 10 1cm : 30cm x 10
10cm : 300cm

Conversion between currencies (R)

£1 = 90 Rupees ← Currency is directly proportional

For every £1 I have 90 Rupees

x 10 £1 = 90 Rupees x 10
£10 = 900 Rupees

Currency can be converted using a conversion graph

Rupees
900
10 Pounds

Convert 630 Rupees into Pounds

x 7 £1 = 90 Rupees x 7 ← 630 ÷ 90 = 7
£7 = 630 Rupees

Ratios in 1:n and 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**

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

Combining ratios

B R G

The ratio of Blue counters to Red counters is 5:3

The ratio of Red counters to Green counters is 2:1

Ratio of Blue to Red to Green
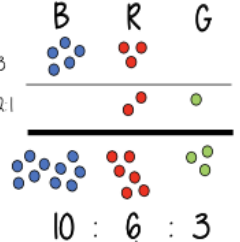
10 : 6 : 3

Use equivalent ratios to allow comparison of the group that is common to both statements

Lowest common multiple of the ratio both statements share

Best buys

4 pens costs £2.60   10 pens costs £6.00

You could work out how much 40 pens are and then compare

'1 pen costs...'
£2.60 ÷ 4 = £0.65   £6.00 ÷ 10 = £0.60

'1-pound buys...'
4 ÷ 2.60 = 1.54 pens   10 ÷ 6 = 1.67 pens

Compare the solution in the context of the question

The best value has the lowest cost 'per pen'

The best value means £1 buys you more pens