PROPORTIONAL REASONING…

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.

# @whisto\_maths

Ratio and Scale

The ratio of a circles

circumference to its diameter

Pi **∏** Circumference

 Diameter

Sharing a whole into a given ratio

Model the Question

James: Lucy

3 : 4

James

£350

find the value of one part

tthole: £350

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

Put back into the question

James: Lucy

Lucy

£350 ÷ 7 = £50

= one part

= £50

James = 3 x £50 = £150

x 50 3 : 4

x 50

£350

£150:£200

Lucy = 4 x £50 = £200

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

Model the Question

Blue : Red

5 : 1

= one part

= 10 pens

Blue pens

Red pens

Put back into the question

Blue : Red

x 10 5 : 1 x 10

50: 10

Blue pens = 5 x 10 = 50 pens

Red pens = 1 x 10 = 10 pens

There are 50 Blue Pens

One unit

= 10 pens

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?

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

Ratio as a fraction

Trees

Trees: flowers

3 : 7

flowers

fraction of trees

Number of parts of in group

Total number of parts

3

10

Tree parts 3 + flower parts 7 = 10

There are 3 parts for trees

fraction

Ratio

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.

Representing a ratio

“for every 5 boys there are 3 girls”

This represents the 5 boys

Double Number Line

This is the “whole” – boys and girls together

5:3

This is the

“whole” – boys and girls together

This represents the 5 boys This represents the 3 girls

This represents the 3 girls

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

Cancel down the ratio to its lowest form

“for every 6 days of rain there are 4 days of sun”

6:4

÷ by 2

rain

sun

3:2

“for every 3 days of rain there are 2 days of sun” – when this happens twice the ratio becomes 6:4.

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

for 6 and 4 the biggest factor (number that multiplies into them is 2)

Ratio 1:n (or n:1)

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

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

\*H\* the n part does not have to be an integer

for this type of question

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