Year 8 Maths - Autumn 2023

Module 1 – Ratio & Scale

What do I need to be able to do?

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

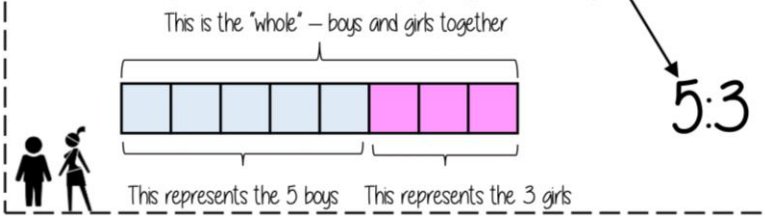
- Simplify any given ratio
- Share an amount in a given ratio
- Solve ratio problems given a part

Keywords

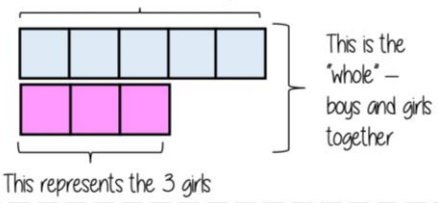
Ratio: a statement of how two numbers compare
Equal Parts:: all parts in the same proportion, or a whole shared equally
Proportion: a statement that links two ratios
Order: to place a number in a determined sequence
Part: a section of a whole
Equivalent: of equal value
Factors: integers that multiply 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"



Double Number Line



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

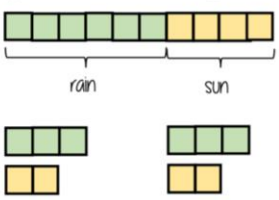
Cancel down the ratio to its lowest form

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

6:4

÷ by 2

3:2



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)

"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

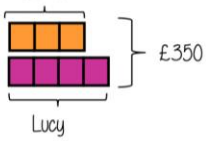
Sharing a whole into a given ratio

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

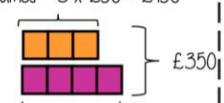
James: Lucy

(x 50) 3 : 4 (x 50)

£150 : £200

James = 3 x £50 = £150

Lucy = 4 x £50 = £200



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

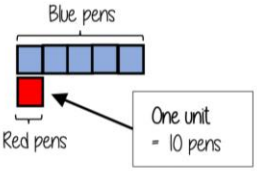
Inside a box are blue and red pens in the ratio 5:1. If there are 10 red pens how many blue pens are there?

Model the Question

Blue : Red

5 : 1

□ = one part = 10 pens



Put back into the question

Blue : Red

(x 10) 5 : 1 (x 10)

50 : 10

Blue pens = 5 x 10 = 50 pens

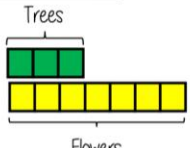
Red pens = 1 x 10 = 10 pens

There are 50 Blue Pens

Ratio as a fraction

Trees: Flowers

3 : 7



Ratio

There are 3 parts for trees

Fraction of trees

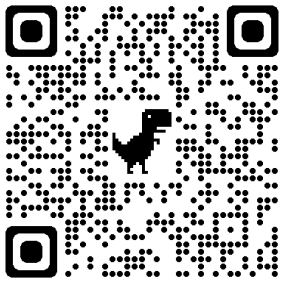
Number of parts of in group / Total number of parts = 3/10

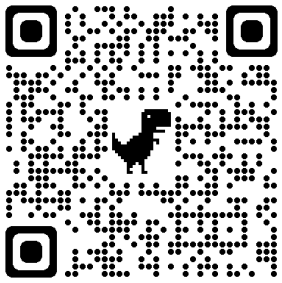
Fraction

Tree parts 3 + Flower parts 7 = 10

What is a ratio?

Linking ratios to fractions

Simplifying ratios	
 explanation	 practice questions

Dividing with ratios	
 explanation	 practice questions

Solving ratio problems	
 explanation	 practice questions