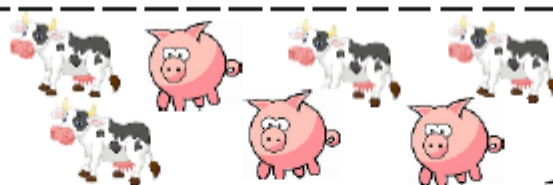


Knowledge Organiser: Year 8 Maths; Ratio



Ratio Language

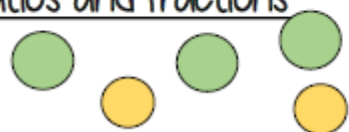
"For every XXX of XXX there are XXX of XXX"



For every 4 cows there are 3 pigs

For every 3 pigs there are 4 cows

Ratios and fractions

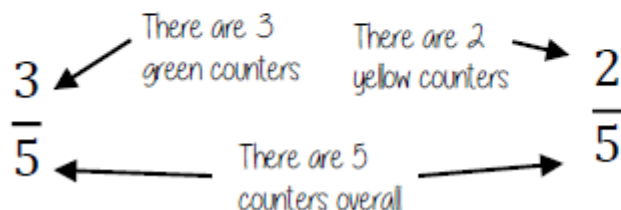


For every 3 green counters there are 2 yellow counters

The ratio of green to yellow counters is $3 : 2$

The fraction of green counters is:

The fraction of yellow counters is:



The ratio symbol



"For every 2 strawberries I have 4 bananas and 6 berries"

Ratio of strawberries, bananas and berries $2 : 4 : 6$

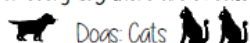
The order of notation follows the order of the parts



The colon notation is the symbol for ratio "For every..."

Order is Important

"For every dog there are 2 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

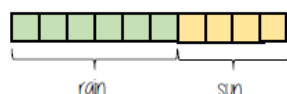
Cancel down the ratio to its lowest form

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

$6 : 4$

\div 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 multiplies 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

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

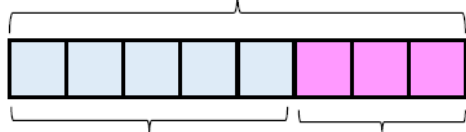
Scale: the comparison of something drawn to its actual size



Representing a ratio

"For every 5 boys there are 3 girls"

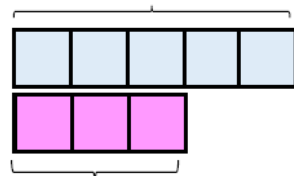
This is the "whole" — boys and girls together



5:3

This represents the 5 boys

Double Number Line



This represents the 3 girls

Conversion between currencies



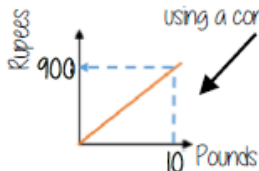
£1 = 90 Rupees

Currency is directly proportional

For every £1
I have 90 Rupees

£1 = 90 Rupees
 $\times 10$
£10 = 900 Rupees

Currency can be converted
using a conversion graph



Convert 630 Rupees into Pounds

£1 = 90 Rupees
 $\times 7$
£7 = 630 Rupees

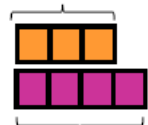
Sharing a whole into a given ratio

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

Model the Question

James: Lucy
3 : 4

James



Lucy

£350 ÷ 7 = £50

□ = one part
= £50

Find the value of one part

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

Put back into the question

James: Lucy

($\times 50$) 3 : 4 ($\times 50$)
£150 : £200

James = 3 × £50 = £150



Lucy = 4 × £50 = £200

Proportion



The ratio of green to
yellow counters is

3 : 2

$\frac{3}{5}$ are green

$\frac{2}{5}$ are yellow



The ratio of green to
yellow counters is

6 : 4

$\frac{6}{10} = \frac{3}{5}$ are green

$\frac{4}{10} = \frac{2}{5}$ are yellow

Ratio increases
proportionally

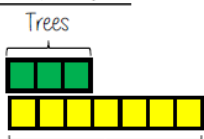
The proportion
remains the same

Ratio as a fraction



Trees: Flowers

3 : 7



Ratio

Flowers

Fraction of trees

Number of parts of in group
Total number of parts

$\frac{3}{10}$

Fraction

Tree parts 3 + Flower parts 7 = 10



How do we use Knowledge Organisers in Mathematics?

How can you use knowledge organisers at home to help us?

- **Retrieval Practice:** Read over a section of the knowledge organiser, cover it up and then write down everything you can remember. Repeat until you remember everything.
- **Flash Cards:** Using the Knowledge Organisers to help on one side of a piece of paper write a question, on the other side write an answer. Ask someone to test you by asking a question and seeing if you know the answer.
- **Mind Maps:** Turn the information from the knowledge organiser into a mind map. Then reread the mind map and on a piece of paper half the size try and recreate the key phrases of the mind map from memory.
- **Sketch it:** Draw an image to represent each fact; this can be done in isolation or as part of the mind map/flash card.
- **Teach it:** Teach someone the information on your knowledge organiser, let them ask you questions and see if you know the answers.

How will we use knowledge organisers in Mathematics?

Knowledge organisers will be used before I complete a Learning Check or Common Assessment. I will spend part of the lesson looking over each of the key topics of the half term before completing the Learning Check or Common Assessment.

I will also use these at home to complete my own independent learning and revision of these key topics.