



KEY VOCAB

Ratio shows how much of one quantity there is of something compared to another. They are usually written in the form a:b. The order in which a ratio is stated is important.

Equivalent ratios have the same value even though they may look different, e.g. 50:100 and 1:2.

Proportion is when two or more quantities have the same relative size.

Unitary means the value of a single unit. Think of other words that begin with 'uni' meaning 'one' such as unicycle, unison, uniform etc.



KEY KNOWLEDGE

Directly Proportional is when one amount **increases**, another amount **increases** at the same rate.

The symbol for "directly proportional" is \propto

Dog: Ears, tail and legs will grow at the same rate.



Another example; if you are paid £15 an hour then:

2 hours work = £30

3 hours work = £45

10 hours work = £150

Inversely Proportional is when one value **decreases** at the same rate that the other **increases**.

Seesaw: As one person goes up, the other goes down.



Another example; think about if you travelling are in a car:

As speed **increases**, travel time **decreases**.

Alternatively as speed **increases**, travel time **decreases**.

Simplifying Ratios

Simplify...

4 : 12 : 28

$\div 4$ $\div 4$ $\div 4$

1 : 3 : 7

30 out of 200 students travel to school by bus.

Write this proportion as a...

Decimal

$$30 \div 200 = 0.15$$

Fraction

$$\frac{30}{200} \text{ or in it's simplest form } \frac{3}{20}$$

Percentage

$$\frac{30}{200} \div 2 \rightarrow \frac{15}{100} = 15\%$$

MATHS

Y8 Ratio & Proportion

SPEAK
READ
ARTICULATE
THINK
QUESTION
WRITE
SPELL

Share £60 in the ratio 7 : 3 : 5

Step 1

$$7 + 3 + 5 = 15 \text{ parts}$$

$$£60 \div 15 \text{ parts} = £4$$

$$1 \text{ part} = £4$$

Step 2

$$\begin{array}{ccc} \textcircled{£4} & \textcircled{£4} & \textcircled{£4} & \textcircled{£4} & : & \textcircled{£4} & \textcircled{£4} & : & \textcircled{£4} & \textcircled{£4} & \textcircled{£4} \\ \textcircled{£4} & \textcircled{£4} & \textcircled{£4} & : & \textcircled{£4} & : & \textcircled{£4} & \textcircled{£4} \end{array}$$

Answer: £28 : £12 : £20

Jane made a drink using blackcurrant and water in the ratio 3:8. Scott made the same drink but in the ratio 4:10.

Who's drink is stronger?



FURTHER READING

<https://www.bbc.co.uk/bitesize/topics/zxw76sg>

<https://corbettmaths.com/contents/>

<https://www.pearsonactivelearn.com/app/library>