My mathematical journey

What do I need to remember from before?

Multiplicative reasoning (NP3)

Fractions (NP7)

Double number lines and ratio tables (NP8)

Percentages (NP8)

What will I learn about in this unit?

Direct and inverse proportion

Proportional reasoning in various contexts

Percentage changes and decimal multipliers

Where does this lead?

Ratio (NP11)

Advanced proportion and rates of change (NP13)

Contextual graphs (A9)

Probability (SP3)

Key words and symbols: what I need to say and write accurately

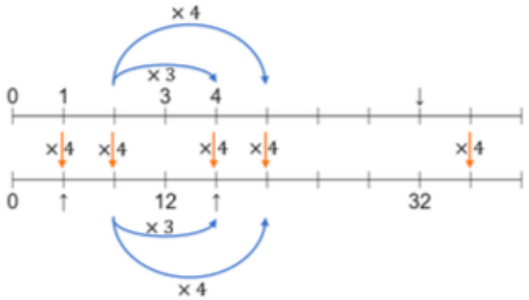
If two quantities are in **direct proportion**, the following two facts are true:

- There is a multiplicative relationship between them (e.g. if one doubles, the other doubles).
- If one is 0, the other is 0.

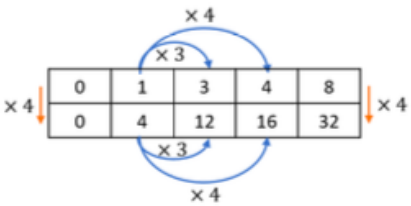
If two quantities are in **inverse proportion**, the following fact is true:

- There is an inverse multiplicative relationship between them (e.g. if one doubles, the other halves).

A **double number line** shows a multiplicative relationship.



A **ratio table** shows a multiplicative relationship, like a double number line but without the scale.



(Notice how both these diagrams show the same information.)

Fingertip facts: what I need to learn by heart

- When working with direct or inverse proportion, I can only multiply or divide.
- To increase a quantity by a percentage, I add the percentage onto 100%, convert this to a decimal and multiply.
  - e.g. To increase £40 by 12%, I find 100% + 12% = 112% = 1.12 and calculate £40 × 1.12
- To decrease a quantity by a percentage, I subtract the percentage from 100%, convert this to a decimal and multiply.
  - e.g. To decrease £40 by 12%, I find 100% − 12% = 88% = 0.88 and calculate £40 × 0.88

My mathematical journey

What do I need to remember from before?

Multiplication and division; multiples and factors (NP3)

Writing values as a fraction; equivalent fractions (NP7)

Ratio tables (NP10)

What will I learn about in this unit?

Using ratio notation

Equivalent ratios and simplifying

Ratios and fractions

Finding values from parts or the whole

Where does this lead?

Combining ratios (NP13)

Similar area and volume (GM8)

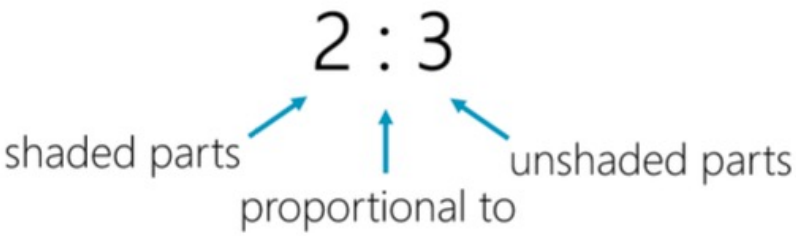
Geometric sequences (A13)

Advanced ratio (NP16)

Vectors (GM10)

Key words and symbols: what I need to say and write accurately

A **ratio** describes the **multiplicative relationship** between two quantities.



We use a **colon** : to separate parts of a ratio.

Key representations

We can use **bar models** and **ratio tables** to help us solve ratio problems. These two diagrams represent the same situation.