

My mathematical Journey

*Mathswatch clips in brackets

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 at CEC?

- Direct and inverse proportion (*MW R8, R13)
- Proportional reasoning in various contexts (*MW R4, 39, 105)
- Percentage changes and decimal multipliers (*MW R9a, R9b)

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

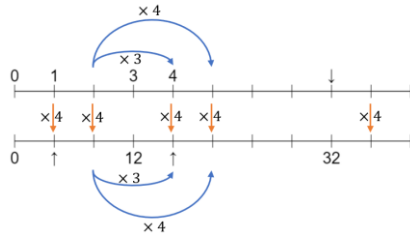
If two quantities are in **direct proportion**, the following two facts are true:

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

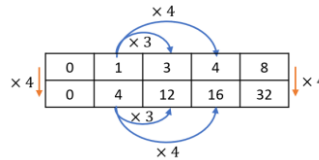
If two quantities are in **inverse proportion**, the following fact is true:

- 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 $£40 \times 1.12$
- 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 $£40 \times 0.88$