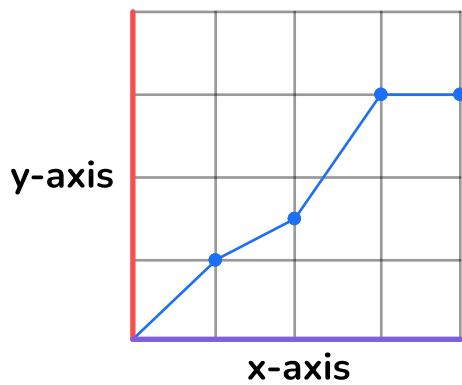# Line Graphs

Line graphs are used to display data that **changes over time**. Line graphs are **plotted** on a grid and are made up of **points** which are joined by **lines**.

There are **two variables** that are plotted, one on each axis of the graph:

The **variable** that we **measure** (for example, height), is plotted on the **y-axis**.

The **variable** that we are **changing** (usually time), is plotted on the **x-axis**.

y-axis

x-axis

Line graphs are best used for data where **one variable affects the other**, which means that as the value of **x changes**, the value of **y also changes**.

Method

Let's look at how to read a line graph!
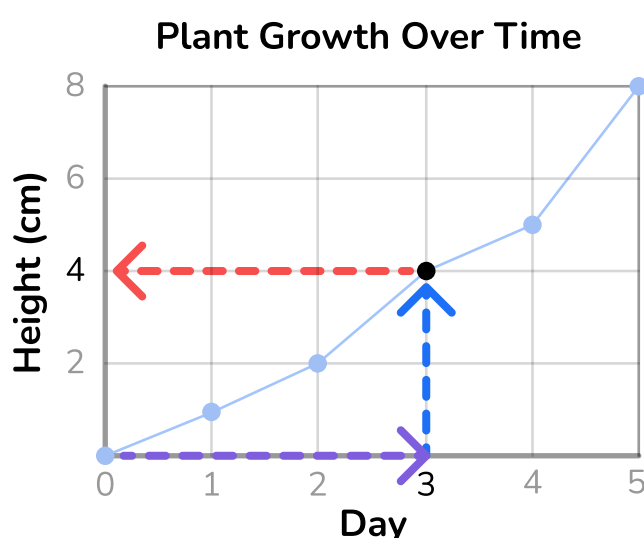
Plant Growth Over Time

Height (cm) — Day
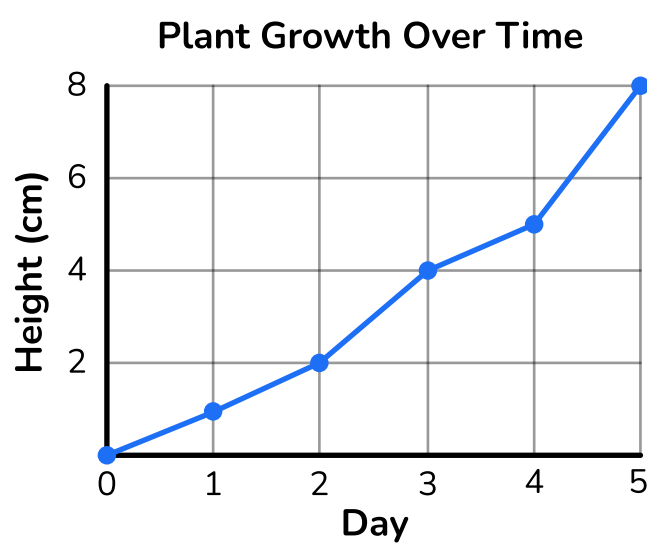
Let's find out how much **taller** the plant was on the **5th** day than on the **3rd** day.

1 Find the **first data point,** the plant's height on **day 3**.

To do this we need to **move along** the **x-axis** until we reach the number 3. →

Then we move **upwards** until we reach the **line** of our line graph. ↑

Then trace a line from this point to the **y-axis**. ←

Plant Growth Over Time

The height of the plant on the 3rd day was **4 cm**!

2 Find the value of the **second data point**, the plant's height on **day 5**.

The height of the plant on the 5th day was **8 cm**!

3 **Calculate** the **difference** between the two data points.

We need to **subtract** the plant's height on day 5 from its height on day 3:
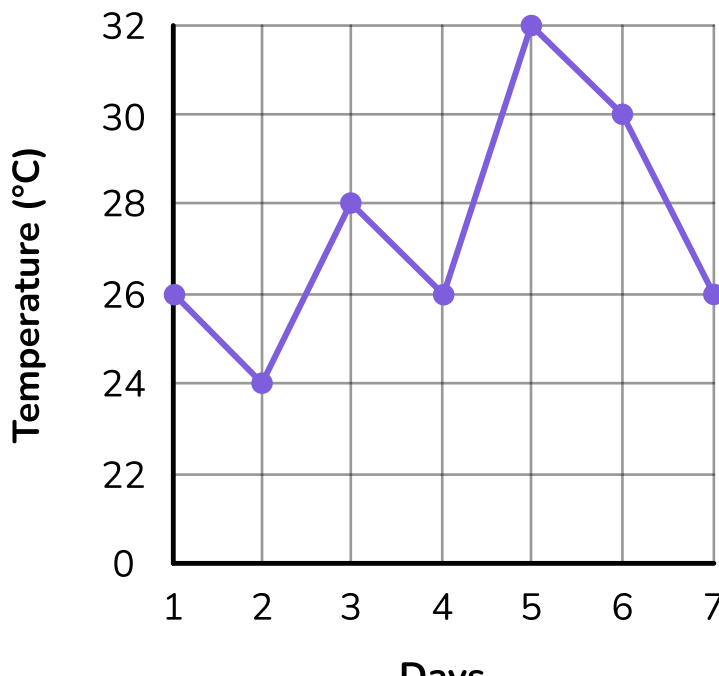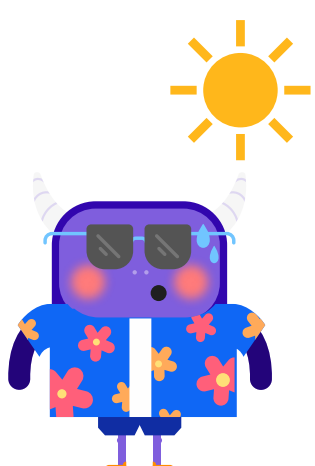**Difference**: 8 cm - 4 cm = **4 cm**

⭐ When questions ask us to **compare different points**, it's helpful to identify some key maths terms that give hints as to how to solve the problem:

'Difference' = **subtract**   'Combined' = **add**

Example Question

Ato records the average daily temperature for 7 days on the line graph below.

Temperature (°C) — Days

What was the range of temperatures that Ato recorded?

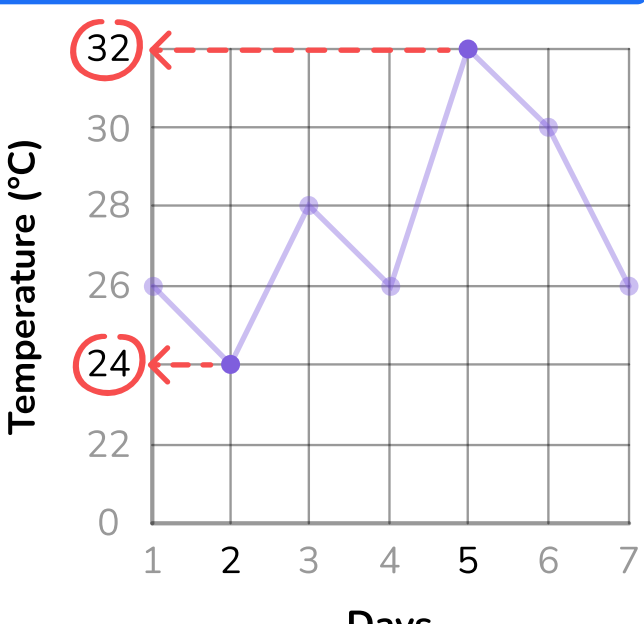**A** 8°C   **B** 10°C   **C** 5°C   **D** 9°C   **E** 12°C

To find the range we need to find the **difference** between the **highest** and **lowest** temperatures.

1 Find the **highest** and **lowest** temperatures.

The **highest temperature** is the **highest point** on the graph. This lines up with **32** on the y-axis, so the highest temperature is **32°C**!

The **lowest temperature** is the **lowest point** on the graph. This lines up with **24** on the y-axis, so the lowest temperature is **24°C**!

2 Calculate the **difference** between the highest and lowest temperature.

To calculate the difference we need to **subtract** the lowest temperature from the highest temperature:

32°C - 24°C = 8°C

✅ The correct answer is **E**! The range of the recorded temperatures Ato recorded was **8°C**!