📘 Gradient of Linear Graphs – Notes & Examples

1️⃣ What is the Gradient of a Straight Line?

- The **gradient** (also called the **slope**) of a straight line measures **how steep the line is**.
- It tells us **how much the y-value changes for each unit increase in the x-value**.
- Represented by the letter **m** in the equation of a straight line:

$$y = mx + c$$

where:

- m = gradient
- c = y-intercept (where the line crosses the y-axis)

2️⃣ How to Calculate the Gradient from Two Points

If a line passes through two points $A(x_1, y_1)$ and $B(x_2, y_2)$, the gradient m is found using the formula:

$$\text{Gradient (m)} = \frac{y_2 - y_1}{x_2 - x_1}$$

> This is often remembered as "**change in y over change in x**" or "**rise over run**".

✅ Examples

Example 1:

Find the gradient of the line that passes through the points $(2, 3)$ and $(6, 11)$.

$$m = \frac{11 - 3}{6 - 2} = \frac{8}{4} = 2$$

➡️ The gradient is **2**.

⚠ Notes:

- A **positive gradient** means the line slopes **upwards**.
- A **negative gradient** means the line slopes **downwards**.
- A gradient of **0** means the line is **horizontal**.
- An **undefined gradient** (division by zero) means the line is **vertical**.