

Linear Graphs: Notes

A linear equation is an equation where the graph is a **straight line**. It can be written in different forms:

1. Slope-intercept form:

$$y = mx + c$$

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

2. General form:

$$ax + by = c$$

- Rearranged into slope-intercept form for graphing

Steps to Draw a Linear Graph

1. Make a table of values (choose 2 or 3 x-values and calculate y).
2. Plot the points on a coordinate grid.
3. Join the points with a **straight line**.
4. Extend the line and add arrows to show it continues.

Examples

Example 1: $y = -2x + 5$

1. Choose x-values: $x = -1, 0, 1, 2$

2. Calculate y-values:

| x | $y = -2x + 5$ |
|----|---------------|
| -1 | 7 |
| 0 | 5 |
| 1 | 3 |
| 2 | 1 |

3. Plot these points and draw the straight line.

Example 2: $y = 7 - 4x$

Same as $y = -4x + 7$

| x | $y = -4x + 7$ |
|---|---------------|
|---|---------------|

| | |
|---|---|
| 0 | 7 |
|---|---|

| | |
|---|---|
| 1 | 3 |
|---|---|

| | |
|---|----|
| 2 | -1 |
|---|----|

Plot and connect with a straight line.

Example 3: $3x + 2y = 5$

1. Rearrange to get y:

$$2y = -3x + 5 \Rightarrow y = -\frac{3}{2}x + \frac{5}{2}$$

| x | $y = -\frac{3}{2}x + \frac{5}{2}$ |
|---|-----------------------------------|
|---|-----------------------------------|

| | |
|---|-----|
| 0 | 2.5 |
|---|-----|

| | |
|---|---|
| 1 | 1 |
|---|---|

| | |
|---|------|
| 2 | -0.5 |
|---|------|

Plot and draw the line.