# Guide to:
# Straight line graphs

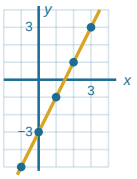
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**Explanation:**

Every straight line has an equation of the form ***y* = *mx* + *c***, where ***m* is the gradient** (steepness) and ***c* is the *y*-intercept** (where the line crosses the *y*-axis at (0, *c*)). To draw a straight-line graph, substitute each *x*-value into the equation to complete a table of values, plot the coordinates, and join them with a ruler.

To find the **gradient *m*** from a drawn line, pick two clear grid points on the line and calculate **Gradient = $\frac{\text{Change in } y \text{ (Rise)}}{\text{Change in } x \text{ (Run)}}$**. Lines sloping downwards from left to right have a **negative** gradient.

**Example 1:** Complete the table and draw ***y* = 2*x* − 3**.

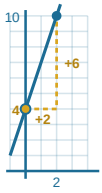



| ***x*** | −1 | 0 | 1 | 2 | 3 |
|---|---|---|---|---|---|
| ***y*** | **−5** | −3 | **−1** | 1 | **3** |

*x* = −1: 2(−1)−3 = **−5**

*x* = 1: **−1**; *x* = 3: **3**

**Example 2:** A line passes through **(0, 4)** and **(2, 10)**. Find its equation in the form ***y* = *mx* + *c***.




*y*-intercept: ***c* = 4**

$m = \frac{10-4}{2-0} = \frac{6}{2} = \mathbf{3}$

**Answer: *y* = 3*x* + 4**

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