

Straight Lines - Lesson 2

Straight Line Equations
(Given Coordinate and y - intercept)

LI

- Find the equation of a straight line.

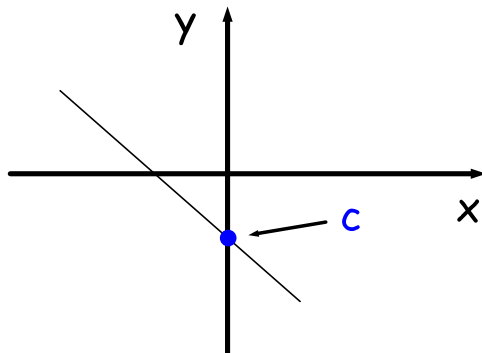
SC

- Find gradient (m).
- Substitution.

The Equation of a Straight Line is :

$$y = m x + c$$

gradient y - intercept



c is where the line crosses the y - axis

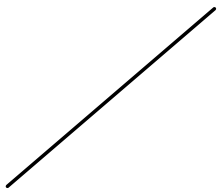
Types of Line Equations



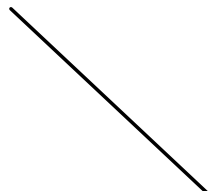
$$y = \text{number}$$



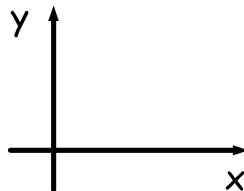
$$x = \text{number}$$



or



$$y = mx + c$$



Example 1

Find the equation of the straight line with y - intercept 4 and passing through the point (2, 6).

$$c = 4$$

$$\begin{array}{l} (2, 6) \\ x \quad y \end{array}$$

$$y = m x + c$$

$$6 = 2 m + 4$$

$$2 = 2 m$$

$$\underline{m = 1}$$

$$\therefore \boxed{y = x + 4}$$

Example 2

Find the equation of the straight line with y - intercept -7 and passing through the point $(-6, 3)$.

$$c = -7$$

$$\begin{array}{cc} (-6, 3) \\ x & y \end{array}$$

$$y = mx + c$$

$$3 = -6m - 7$$

$$10 = -6m$$

$$m = 10 \div (-6)$$

$$\underline{m = -5/3}$$

$$\therefore \boxed{y = -5/3x - 7}$$

Example 3

Find the equation of the straight line with y - intercept 0 and passing through the point $(8, -16)$.

$$c = 0$$

$$\begin{array}{cc} (8, -16) \\ x & y \end{array}$$

$$y = mx + c$$

$$-16 = 8m + 0$$

$$m = -16 \div 8$$

$$\underline{m = -2}$$

 \therefore

$$y = -2x$$

Example 4

Find the equation of the straight line with y - intercept 8 and passing through the point $(58/17, 8)$.

$$c = 8$$

$$\begin{array}{cc} (58/17, 8) \\ x & y \end{array}$$

$$y = mx + c$$

$$8 = (58/17)m + 8$$

$$0 = (58/17)m$$

$$\underline{m = 0}$$

 \therefore

$$y = 8$$

Find the equations of the straight lines with y - intercept and point :

1) $c = 2, (3, 8)$

2) $c = -8, (8, 0)$

3) $c = 3, (-1, -2)$

4) $c = -2, (10, 28)$

5) $c = 40, (1, 40)$

6) $c = 0, (100, 300)$

7) $c = -1, (-6, -4)$

8) $c = 4, (4, 6)$

9) $c = 1/2, (1, 3)$

10) $c = 1/3, (1, 8)$

11) $c = 0, (3, 393)$

12) $c = -2/5, (1, -1/5)$

13) $c = -3/7, (1, 8/7)$

14) $c = -8/9, (2, 20/9)$

15) $c = -13/17, (1, 20/17)$

16) $c = 13/17, (1, 13/17)$

Find the equations of the straight lines with y - intercept and point :

$$1) c = 2, (3, 8) \quad y = 2x + 2$$

$$2) c = -8, (8, 0) \quad y = x - 8$$

$$3) c = 3, (-1, -2) \quad y = 5x + 3$$

$$4) c = -2, (10, 28) \quad y = 3x - 2$$

$$5) c = 40, (1, 40) \quad y = 40$$

$$6) c = 0, (100, 300) \quad y = 3x$$

$$7) c = -1, (-6, -4) \quad y = \frac{1}{2}x - 1$$

$$8) c = 4, (4, 6) \quad y = \frac{1}{2}x + 4$$

$$9) c = \frac{1}{2}, (1, 3) \quad y = \frac{5}{2}x + \frac{1}{2}$$

$$10) c = \frac{1}{3}, (1, 8) \quad y = \frac{23}{3}x + \frac{1}{3}$$

$$11) c = 0, (3, 393) \quad y = 131x$$

$$12) c = -\frac{2}{5}, (1, -\frac{1}{5}) \quad y = \frac{1}{5}x - \frac{2}{5}$$

$$13) c = -\frac{3}{7}, (1, \frac{8}{7}) \quad y = \frac{11}{7}x - \frac{3}{7}$$

$$14) c = -\frac{8}{9}, (2, \frac{20}{9}) \quad y = \frac{14}{9}x - \frac{8}{9}$$

$$15) c = -\frac{13}{17}, (1, \frac{20}{17}) \quad y = \frac{33}{17}x - \frac{13}{17}$$

$$16) c = \frac{13}{17}, (1, \frac{13}{17}) \quad y = \frac{13}{17}$$