Straight Lines - Lesson 6

Rearranging Straight Line Equations into the Form $y = mx + c$

LI

- Rewrite a straight line equation in the form $y = mx + c$.
- Find gradient and y - intercept.

SC

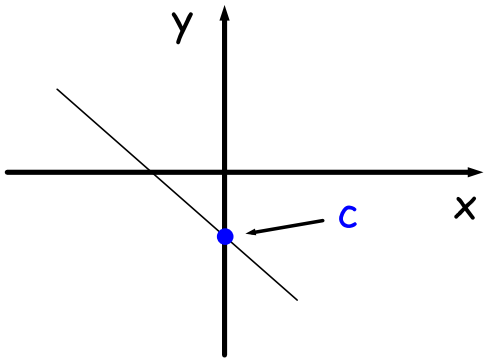
- Reaaranging equations.

The Equation of a Straight Line is :

$$y = mx + c$$

gradient

y - intercept



c is where the line crosses the y - axis

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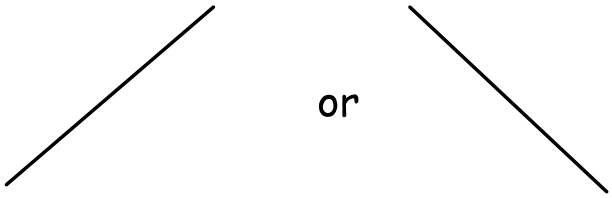
Types of Line Equations

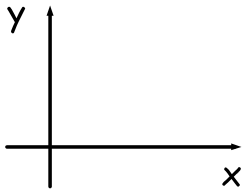
y = number

x = number



or

y = m x + c



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Example 1

Rearrange $4x + 2y - 6 = 0$ into the form $y = mx + c$.

$$4x + 2y - 6 = 0$$
$$-4x \qquad\qquad -4x$$

$$2y - 6 = -4x$$
$$+6 \qquad\qquad +6$$

$$2y = -4x + 6$$
$$\div 2 \qquad \div 2 \qquad \div 2$$

$$\boxed{y = -2x + 3}$$

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Example 2

Rearrange $11x - 5y = 10$ into the form $y = mx + c$.

$$11x - 5y = 10$$
$$-11x \qquad\qquad -11x$$

$$-5y = -11x + 10$$
$$\div(-5) \qquad \div(-5) \qquad \div(-5)$$

$$\boxed{y = \frac{11}{5}x - 2}$$

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Example 3

Find the gradient and y - intercept of the straight line given by $16 - 12x + 8y = 0$.

$$16 - 12x + 8y = 0$$
$$+12x \qquad\qquad +12x$$

$$16 + 8y = 12x$$
$$-16 \qquad\qquad -16$$

$$8y = 12x - 16$$
$$\div 8 \qquad \div 8 \qquad \div 8$$

$$y = \frac{3}{2}x - 2$$

Gradient $= \frac{3}{2}$; y - intercept $= -2$

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Express these in the form $y = mx + c$:	Find the gradient and y - intercept of each of these straight lines :
1) $6x + 3y - 9 = 0$	7) $8x + 6y - 16 = 0$
2) $27x - 9y = 18$	8) $11x - 11y = 121$
3) $4y + 16x + 2 = 0$	9) $9y + 7x - 6 = 0$
4) $21 = 14x - 7y$	10) $66 = 99x - 33y$
5) $20x - 3y + 15 = 0$	11) $210x - 7y + 15 = 0$
6) $52 = 65x + 13y$	12) $520 = 650x + 130y$

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Express these in the form $y = mx + c$:	Find the gradient and y - intercept of each of these straight lines :
1) $6x + 3y - 9 = 0$ $y = -2x + 3$	7) $8x + 6y - 16 = 0$ $m = -\frac{4}{3}; c = \frac{8}{3}$
2) $27x - 9y = 18$ $y = 3x - 2$	8) $11x - 11y = 121$ $m = 1; c = -11$
3) $4y + 16x + 2 = 0$ $y = -4x - \frac{1}{2}$	9) $9y + 7x - 6 = 0$ $m = -\frac{7}{9}; c = \frac{2}{3}$
4) $21 = 14x - 7y$ $y = 2x - 3$	10) $66 = 99x - 33y$ $m = 3; c = -2$
5) $20x - 3y + 15 = 0$ $y = \frac{20}{3}x + 5$	11) $210x - 7y + 15 = 0$ $m = 30; c = \frac{15}{7}$
6) $52 = 65x + 13y$ $y = -5x + 4$	12) $520 = 650x + 130y$ $m = -5; c = 4$