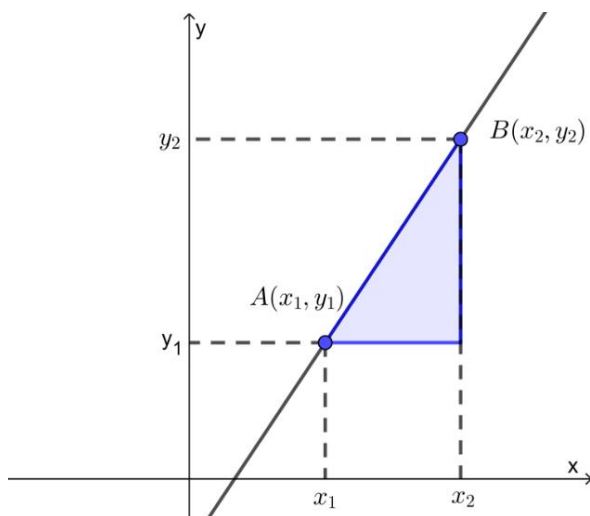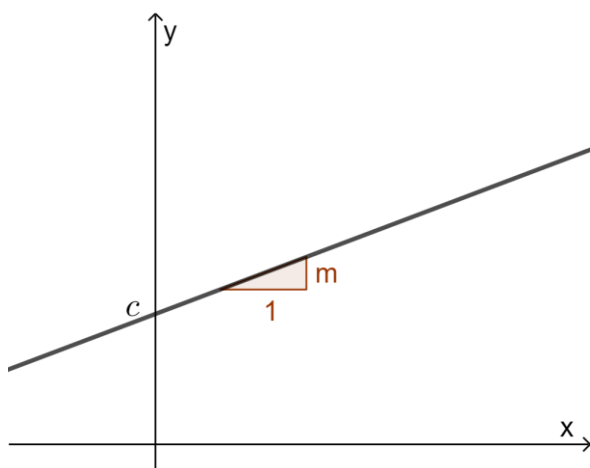# Straight Lines Graphs

We can find the gradient between two points

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$
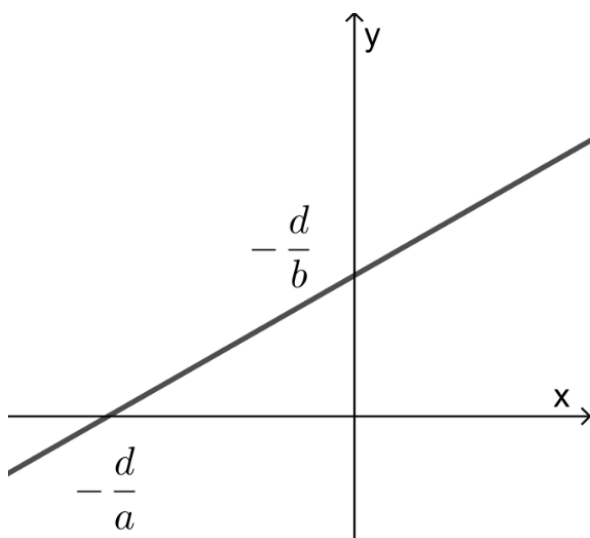
There are 3 forms of the equation of a straight line:
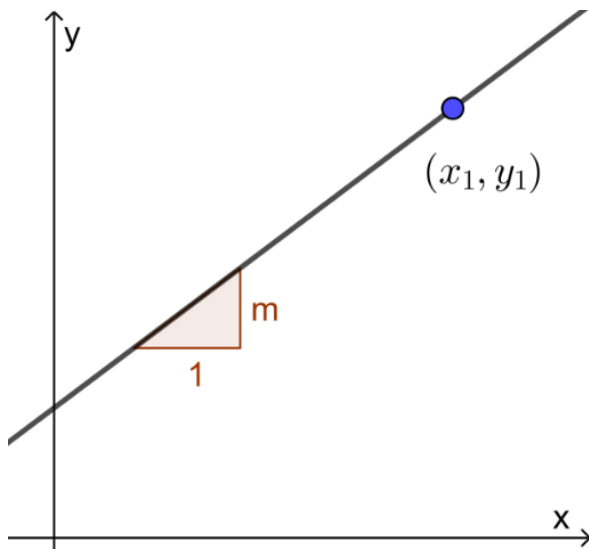

$$y = mx + c$$

m = gradient of line

c = y intercept

$$ax + by + d = 0$$

$$y - y_1 = m(x - x_1)$$

m = gradient of line

(x_1, y_1) is a point on the line
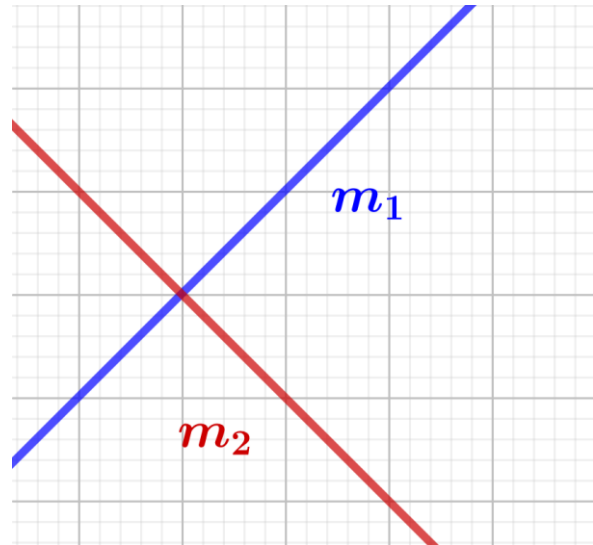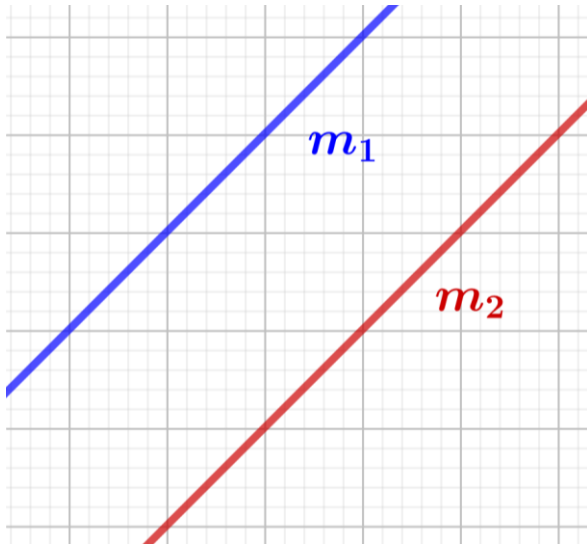
Parallel and Perpendicular Lines

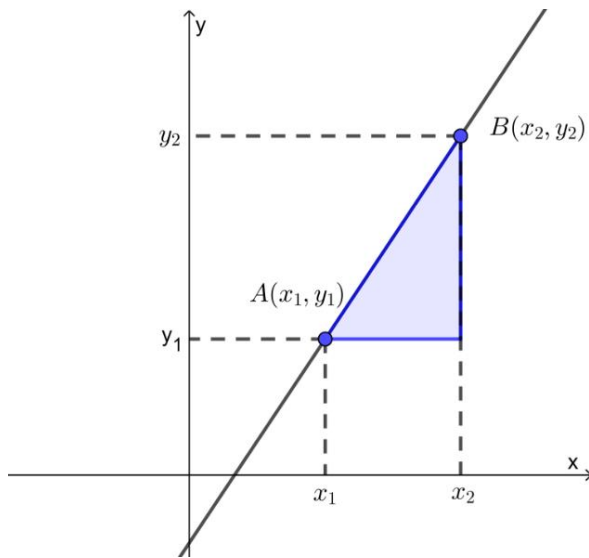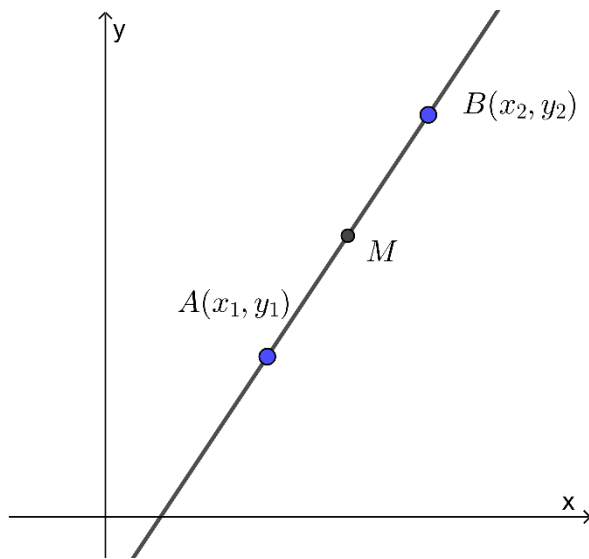| Parallel lines	Perpendicular lines
$m_1 = m_2$	$m_1 \times m_2 = -1$
	$m_2 = -\dfrac{1}{m_1}$

Other Useful Facts for this topic:

Distance between A and B

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Coordinates of the Midpoint

$$\left(\frac{x_2 + x_1}{2}, \frac{y_2 + y_1}{2}\right)$$