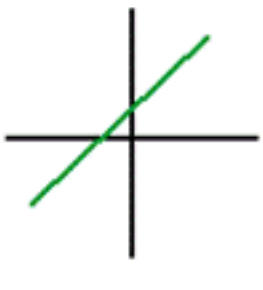
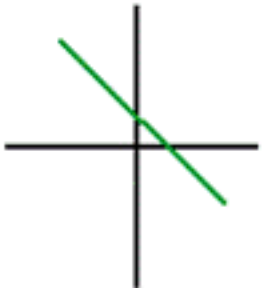
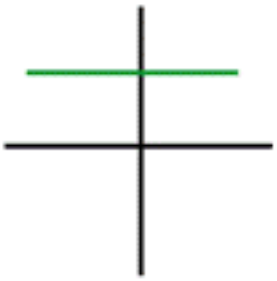
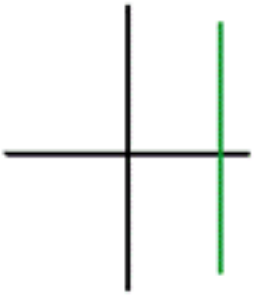
Equation of straight line

Gradient = Slope

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

Positive Slope	Negative Slope	Zero Slope	Undefined Slope
			

1. A straight line L passes through A(4, –2) and B(8, 5). Find the gradient of line L.

2. A straight line L passes through A(0, –4) and B(7, –10). Find the gradient of line L.

Straight line equation

Slope intercept form**: y = mx + c**

m is slope
c is y-intercept

General form: **Ax + By +C = 0**

1. A straight line L passes through A(4, 0) and B(6, 10).
Find the equation of line L in the form y = mx + c and ax + by + c = 0.

2. A straight line L passes through A(2, 6) and B(4, 2).

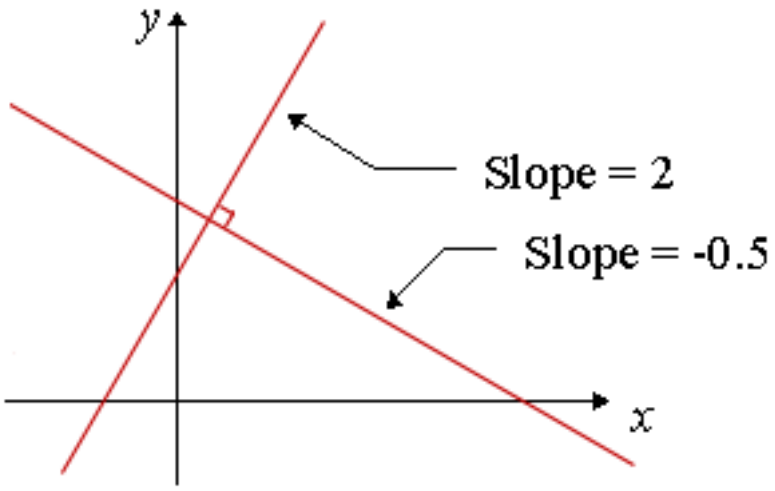
Find the equation of line L in the form $y = mx + c$ and $ax + by + c = 0$.

Parallel line

$$m_1 = m_2$$

Perpendicular line

$$m_1 \mathbf{x}\, m_2 = -1$$

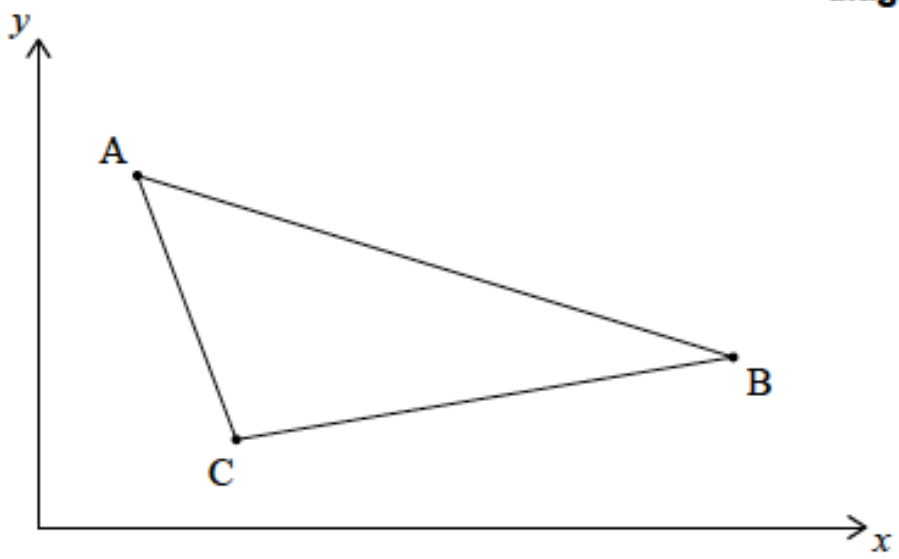


1. A straight line L with equation y = 3x – 4 is **parallel** to line P.
   Find the slope of line P.

2. A straight line L with equation $y = -\frac{2}{3}x + 4$ is **perpendicular** to line P. Find the slope of line P.

1. The diagram shows a triangle defined by the points A(3, 9), B(15, 6) and C(5, 3).

diagram not to scale

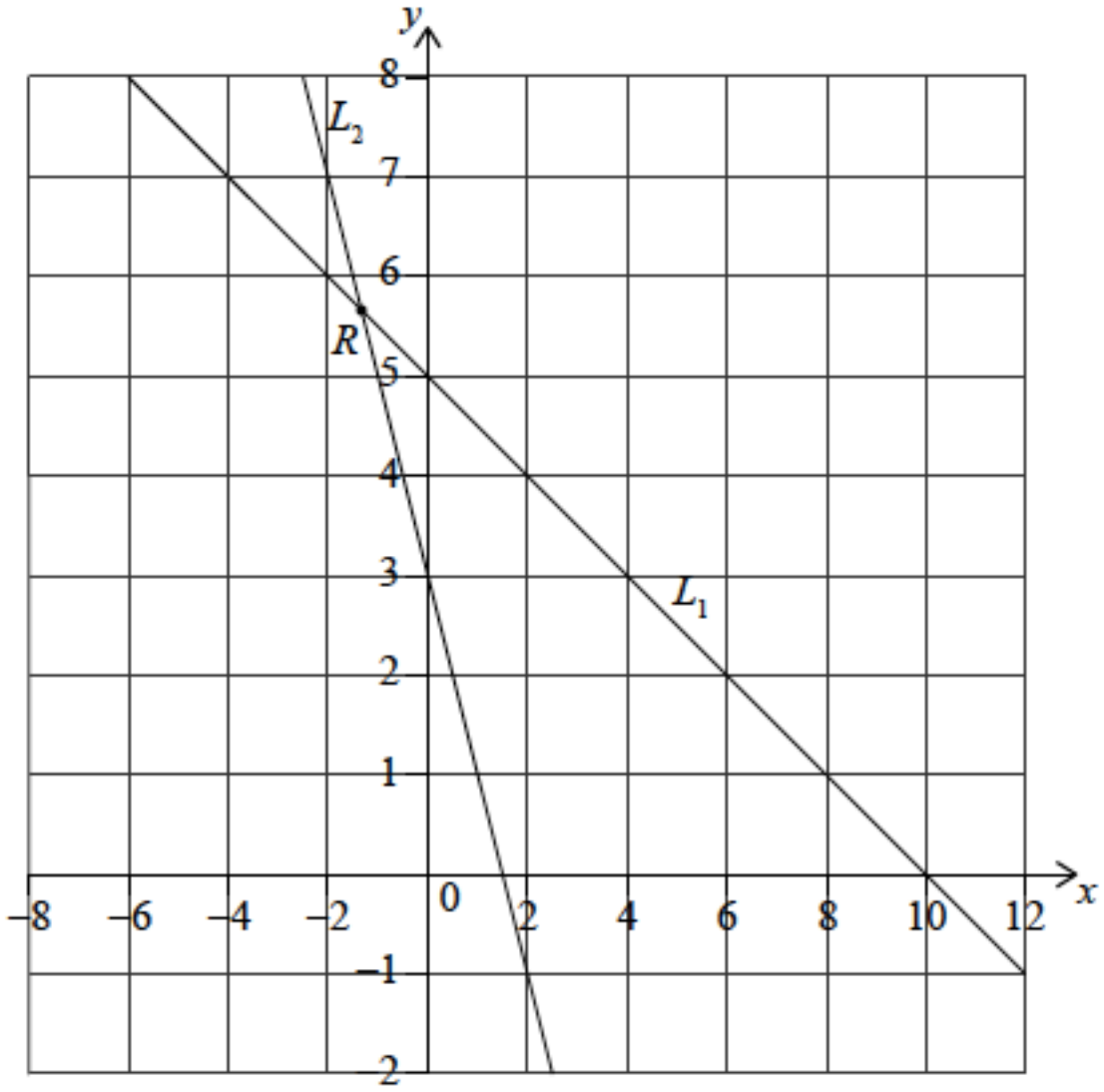


(a) Calculate the gradient of the line AC.

(b) Determine, giving a reason, whether angle ACB is a right angle.
The straight line, *L*, is parallel to BC and passes through A.

(c) Find the equation of *L*.
Give your answer in the form $ax + by + d = 0$, where a, b and d are integers.

2. Consider the straight lines L_1 and L_2. *R* is the point of intersection of these lines.



The equation of line L_1 is *y = ax + 5.*

(a) Find the value of a.

The equation of line L_2 is *y = –2x + 3.*

(b) Find the coordinates of *R*.

Line L_3 is parallel to line L_2 and passes through the point (2, 3).

(c) Find the equation of line L_3. Give your answer in the form *y = mx + c.*