Cambridge Senior Mathematics for the Australian Curriculum/VCE
Chapter 2 Coordinate geometry and linear relations: **Assignment**

1 Find the equation of the line with gradient 3 and which passes through the point with coordinates (1, 4).

2 For the line with equation $3x + 6y = 12$, find:

a the gradient of the line

b the x-axis intercept of the line

c the y-axis intercept of the line.

3 Find the equation of the line that is perpendicular to the line with equation $y = -2x + 6$ and passes through the point with coordinates (1, 6).

4 If 8 kilograms of potatoes and 5 kilograms of carrots cost $28, and 2 kilograms of potatoes and 3 kilograms of carrots cost $11.20, what is the cost of 1 kilogram of each item?

5 **a** Find the midpoint of the line segment joining the points with coordinates (3, 5) and (–2, 8).

b The point with coordinates (4, –6) is the midpoint of the line segment AB. The coordinates of the endpoints are $(1, a)$ and $(b, -4)$. Find the values of a and b.

c Find the distance between the points (1, –4) and (11, 8).

6 The cost, $\$C$, of electricity is determined by the number, n, of units used. The rule for determining the cost is of the form $C = pn + q$. It is known that the cost of 200 units of electricity is $200 and of 500 units $380. Find the values of p and q.

7 The points A, B and C have coordinates $A(0, 7)$, $B(6, -1)$ and $C(6, 9)$.

a Find the length of line segment AC.

b Calculate the gradient of AC.

c Find the equation of line AC.

d $ACPB$ is a quadrilateral with BC its axis of symmetry. Find the coordinates of P.

e Find the area of quadrilateral $ACPB$.

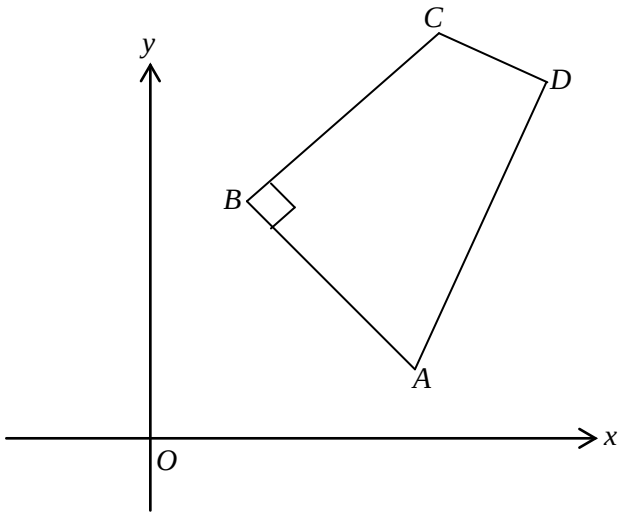
8 Find the magnitude of the acute angle between the lines with equations $y = 2x + 3$ and

$y = -\frac{1}{3}x + 3$.

9 Points A and B have coordinates (7, 0) and (0, 9). Find the midpoint of the line segment AB and the equation of the perpendicular bisector of AB.

10 *ABCD* is a quadrilateral with angle *ABC* a right angle. *D* lies on the perpendicular bisector of *AB*. The coordinates of *A* and *B* are (7, 2) and (2, 5) respectively.

The equation of line *AD* is $y = 4x - 26$.



a Find the equation of the perpendicular bisector of the line segment *AB*.

b Find the coordinates of point *D*.

c Find the gradient of the line *BC*.

d Find the value of the second coordinate, *c*, of point *C*(8, *c*).

e Find the area of quadrilateral *ABCD*.