

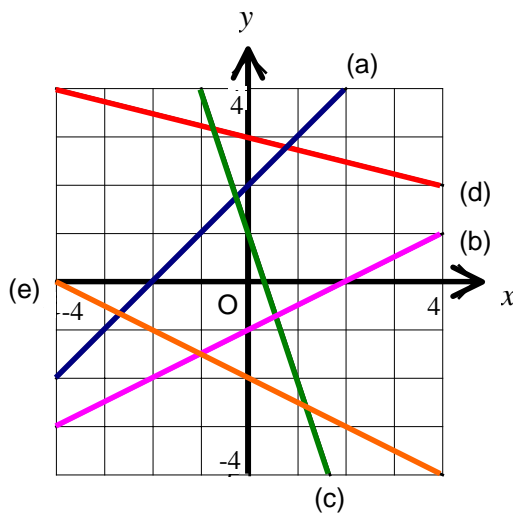
Core 1

Coordinate Geometry

Section 1: Points and straight lines

Exercise B

- Sketch the following lines.
(a) $y = x + 3$ (b) $y = 2x - 1$ (c) $x + y = 5$
(d) $4y = x + 12$ (e) $3y + x + 6 = 0$ (f) $5y = 15 - 2x$
- Find the equations of the lines (a)-(e) in the diagram below.



- Find the equations of the following lines.
(a) parallel to $y = 4x - 1$ and passing through $(2, 3)$
(b) perpendicular to $y = 2x + 7$ and passing through $(1, 2)$
(c) parallel to $3y + x = 10$ and passing through $(4, -1)$
(d) perpendicular to $3x + 4y = 12$ and passing through $(-3, 0)$
(e) parallel to $x + 5y + 8 = 0$ and passing through $(-1, -6)$
- Find the equation of the line AB in each of the following cases.
(a) $A(1, 6), B(3, 2)$ (b) $A(8, -1), B(-2, 3)$
(c) $A(-5, 2), B(7, -4)$ (d) $A(-3, -5), B(5, 1)$
- A quadrilateral has vertices $A(3, 5), B(9, 7), C(10, 4)$ and $D(4, 2)$.
(a) Sketch the quadrilateral.
(b) Find the equation of each of the quadrilateral's sides.
(c) Use your equations to show that ABCD is a rectangle.

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6. A triangle has vertices E(2,5), F(4,1) and G(-2,-3).
- (a) Find the midpoint of each side and hence find the equations of the three medians.
 - (b) Show that the point $(\frac{4}{3}, 1)$ lies on each median.
7. It costs £5000 to produce 100 items and £7000 to produce 350 items. In each case the total cost is made up of the same fixed cost together with the cost of the items produced.
- (a) Sketch the points putting the number of items produced on the horizontal axis and the total cost on the vertical axis.
 - (b) Assuming the points are connected by a linear relationship find the straight line equation.
 - (c) Use your equation to find the fixed cost.
 - (d) What does the gradient of the line represent?
 - (e) What is the total cost of 1000 items?