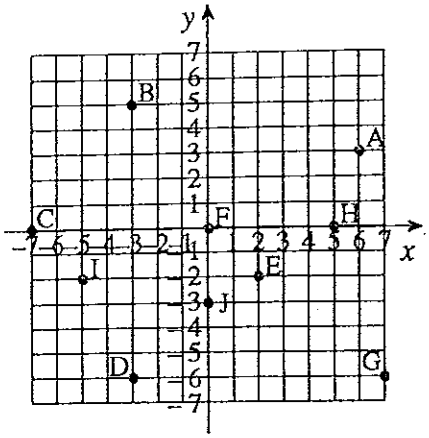
LEVEL 1 — COORDINATE GEOMETRY

Note: Only turn back to page number if you have difficulty

Page

Q1. 

Name the coordinates of the points:

(a) A (f) F
(b) B (g) G
(c) C (h) H
(d) D (i) I
(e) E (j) J

75

Q2. Find the midpoint of the interval joining:

(a) (2, 3) and (6, 9)
(b) (4, 5) and (2, 1)
(c) (7, – 3) and (0, 7)
(d) (– 5, 2) and (9, – 4)
(e) (– 6, – 1) and (5, 3)
(f) (1, – 8) and (– 4, – 3)

76

Q3. Find the distance between the points:

(a) (4, 3) and (2, 9)
(b) (6, 1) and (– 3, 5)
(c) (– 1, 4) and (2, – 8)
(d) (2, – 3) and (– 1, – 4)
(e) (5, – 8) and (– 7, 2)
(f) (0, – 3) and (8, 0)

77

Q4. Find the gradient of the line passing through:

(a) (0, 0) and (6, 3)
(b) (5, 1) and (2, 6)
(c) (– 2, 0) and (7, 1)
(d) (– 4, 1) and (– 2, – 4)
(e) (6, – 6) and (– 1, 3)
(f) (8, – 2) and (– 5, 2)

78

Q5. Graph these lines:

(a) $y = 2x + 1$
(b) $x = 5$
(c) $y = x$
(d) $y = 3 - x$
(e) $y = 4x - 5$
(f) $y = -3$

79, 80

Q6. Find the gradient and y-intercept of the following lines, then sketch each line:

(a) $y = 5x - 2$
(b) $y = -2x + 3$
(c) $y = \frac{3}{2}x - 4$
(d) $y = 1 - \frac{1}{2}x$
(e) $y = -x$
(f) $y = \frac{1}{2} - x$

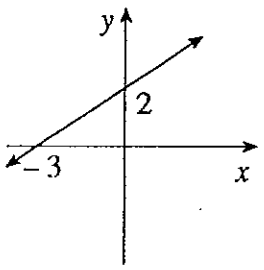
81, 82

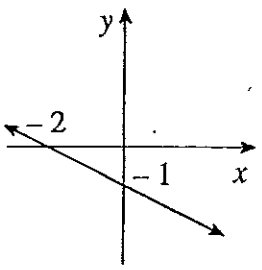
LEVEL 1 — COORDINATE GEOMETRY CONT.

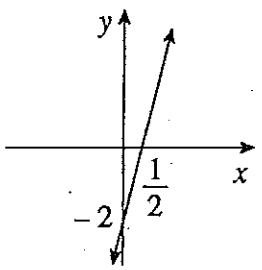
Note: Only turn back to page number if you have difficulty

LEVEL 2 — COORDINATE GEOMETRY

Q1. Find the equation of each line below:

(a) 

(b) 

(c) 

Q2. Find the equation of the straight line passing through the midpoint of the interval joining (6, 2) and (– 2, 4), and the origin.

Q3. The midpoint of an interval is (2, 4). If the coordinates at the ends of the interval are (m, 5) and (8, n), find m and n.

Q4. A and B are the points (– 3, 4) and (6, – 2) respectively. If M is the midpoint of AB, find the distance BM.

Q5. Find the equation of the line which passes through the point (6, – 4) and is parallel to the line $2x - 3y + 3 = 0$.

Q6. Find the equation of the line which passes through the points P(0, a) and Q(a, 2a).

Q7. Find the equation of the line perpendicular to $5x + 2y - 1 = 0$, and passing through the point (– 2, 7).

Q8. Show that the triangle whose vertices are A(3, 6), B(– 2, – 4) and C(– 5, 2) is a right angled triangle. Find the area of the triangle.

Q9. Prove that a quadrilateral ABCD with vertices A(– 1, 4), B(– 3, 3), C(1, 2) and D(3, 3) is a parallelogram.

Q10. The vertices of a quadrilateral are A(– 2, 3), B(5, 4), C(4, – 3) and D(– 3, – 4). Prove that ABCD is a rhombus. Find the area of ABCD.

Q11. Find the equation of the straight line passing through the point (–2, 1) and through the point of intersection of $4x - y - 1 = 0$ and $2x - y + 5 = 0$.

Q12. A, B and C are collinear points and AB = BC. If A is the point (4, 5) and B is the point (1, –1), find the coordinates of C.

Q13. Find the equation of the line which passes through the point of intersection of $5x - 3y + 2 = 0$ and $x + 3y + 1 = 0$, and is parallel to $2x + 3y + 3 = 0$.

Level 1 — Coordinate geometry - ANSWERS

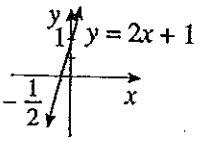
Q1. A(6, 3) B(– 3, 5) C(– 7, 0) D(– 3, – 6) E(2, – 2) F(0, 0) G(7, – 6) H(5, 0) I(– 5, – 2) J(0, – 3)

Q2. (a) (4, 6) (b) (3, 3) (c) $\left(3\frac{1}{2}, 2\right)$ (d) (2, –1) (e) $\left(-\frac{1}{2}, 1\right)$ (f) $\left(-1\frac{1}{2}, -5\frac{1}{2}\right)$

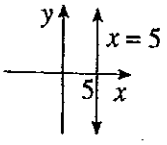
Q3. (a) $2\sqrt{10}$ units (b) $\sqrt{97}$ units (c) $\sqrt{153}$ units (d) $\sqrt{10}$ units (e) $2\sqrt{61}$ units (f) $\sqrt{73}$ units

Q4. (a) $\frac{1}{2}$ (b) $-1\frac{2}{3}$ (c) $\frac{1}{9}$ (d) $-2\frac{1}{2}$ (e) $-\frac{9}{7}$ (f) $-\frac{4}{13}$

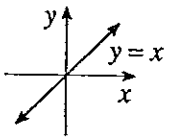
Q5. (a)



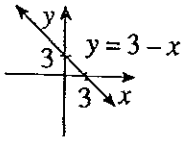
(b)



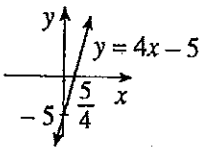
(c)



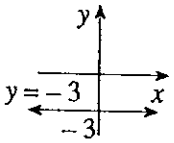
(d)



(e)



(f)



Q6. (a) $m = 5,\ b = -2$ (b) $m = -2,\ b = 3$ (c) $m = \frac{3}{2},\ b = -4$ (d) $m = -\frac{1}{2},\ b = 1$

(e) $m = -1,\ b = 0$ (f) $m = -1,\ b = \frac{1}{2}$

Q7. (a) $m = 2,\ b = 3$ (b) $m = -2,\ b = 3$ (c) $m = -1,\ b = -\frac{2}{3}$ (d) $m = -\frac{1}{5},\ b = 0$

(e) $m = \frac{2}{3},\ b = \frac{1}{3}$ (f) $m = \frac{1}{4},\ b = -1$

Q8. (a) $y = 3x - 9$ (b) $y = -2x + 11$ (c) $y = 5x + 20$ (d) $y = -\frac{1}{2}x + \frac{1}{2}$

(e) $y = \frac{2}{3}x + 5\frac{2}{3}$

(NOTE : Answers may also be written in general form)

Q9. (a) $y = 2x - 3$ (b) $y = -2x + 5$ (c) $y = -4x + 8$ (d) $y = 3x + 2$

(e) $y = -\frac{3}{2}x + 4$ (f) $y = \frac{1}{2}x - 2\frac{1}{2}$

(NOTE : Answers may also be written in general form)

Q10. $2x - y + 1 = 0$ and $4x - 2y + 3 = 0$

Q11. $y = 4x - 3$ or $4x - y - 3 = 0$

Q12. $3y - x + 3 = 0$ and $6y - 2x + 4 = 0$

Q13. $y = -\frac{3}{2}x + 5$ or $3x + 2y - 10 = 0$

Q14. (3, 15), (8, 35) and (4, 19)

Q15. Points lie on line $x - 2y - 6 = 0$

Level 2 — Coordinate geometry - ANSWERS

Q1. (a) $y = \frac{2}{3}x + 2$ (b) $y = -\frac{1}{2}x - 1$ (c) $y = 4x - 2$

Q2. $3x - 2y = 0$

Q3. $m = -4,\ n = -3$

Q4. $\frac{\sqrt{117}}{2}$ units

Q5. $2x - 3y - 24 = 0$

Q6. $x - y + a = 0$

Q7. $2x - 5y + 39 = 0$

Q8. $m_{CA} = \frac{1}{2},\ m_{CB} = -2$ $\therefore$ perpendicular. Area = 30 units^2

(NOTE : Can also use Pythagoras' Theorem)

Q9. AB = CD = $\sqrt{5}$ units; BC = AD = $\sqrt{17}$ units; $m_{AB} = m_{DC} = \frac{1}{2}$ $\therefore$ AB || DC

$m_{BC} = m_{AD} = -\frac{1}{4}$ $\therefore$ BC || AD

Q10. All sides are $5\sqrt{2}$ units; $m_{AB} = m_{CD} = \frac{1}{7}$ $\therefore$ AB || CD;

$m_{BC} = m_{AD} = 7$ $\therefore$ BC || AD.

Q11. $y = 2x + 5$

Q12. (–2, –7)

Q13. $12x + 18y + 5 = 0$