Past Papers Worksheet P2 & P4 Coordinate Geometry IGCSE Math 0580



[Q1 – Q23]

1. The point A has co-ordinates (– 4, 6) and the point B has co-ordinates (7, –2).
   Calculate the length of the line AB in surd form . [3]
   0580/21/M/J/15 Q8)

2. A is the point (7, 12) and B is the point (2, -1) . Find the length of AB in surd form [3]
   0580/23/M/J/19 Q15)

3. Find the mid-point of AB where A (w, r) and B (3w, t).
   Give your answer in its simplest form in terms of w, r and t [2].
   0580/22/O/N/18 Q10

4. A line has gradient 5. M and N are two points on this line.
   M is the point (x , 8) and N is the point (k, 23).
   Find an expression for x in terms of k. [3]
   0580/21/M/J/17 Q12)

5. Find the equation of the line passing through the points with co-ordinates (5, 9) and (–3, 13). [3]
   0580/23/M/J/14 Q13)

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6. (a) Find the co-ordinates of the point where the line $y = 3x - 8$ crosses the y-axis. [1]

   (b) Write down the gradient of the line $y = 3x - 8$ [1]

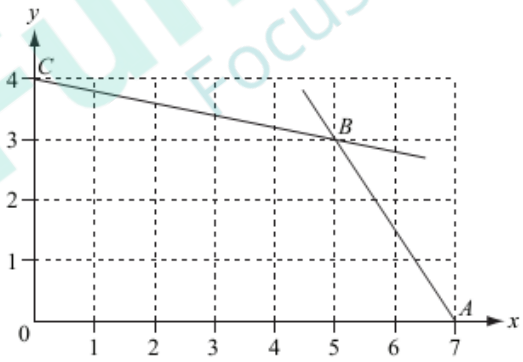
   0580/23/M/J/19 Q5)

7. Find the gradient of a line that is perpendicular to $8y + 4x = 5$ [2]

   0580/21/O/N/20 Q14)

8. The lines AB and CB intersect at B.

   (a) Find the co-



   ordinates of the midpoint of AB. [1]

   (b) Find the equation of the line CB. [3]

   0580/22/M/J/11 Q18

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9. A (5, 23) and B (–2, 2) are two points.
   (a)Find the co-ordinates of the midpoint of the line AB.
   [2]
   (b)Find the equation of the line AB. [3]
   (c)Show that the point (3, 17) lies on the line AB. [1]
   0580/22/O/N/13 Q18

10. (a) A has coordinates $(-2,7)$, B has coordinates $(1,-5)$ and C has coordinates $(5,4)$.
   (i) Find the coordinates of the midpoint of the line AB.
   [2]
   (ii) ~~Find $\overrightarrow{AC}$.~~ [2]
   (iii) ~~Find $|\overrightarrow{AC}|$.~~[2]
   (iv) Find the equation of the line AB. Give your answer in the form $y = mx + c$.[3]
   (v) Find the equation of the line perpendicular to AB that passes through C. Give your answer in the form $y = mx + c$. [3]
   0580/43/M/J/22 Q8

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11. Two points A and B have co-ordinates A (3, 2) and
B (5, 6)
(a) B is the mid-point of the line AC.
Find the co-ordinates of C. [2]
(b) Find the equation of the straight line that passes through A and B. [3]
(c) The straight line that passes through A and B cuts the y -axis at D.
Write down the co-ordinates of D. [1]
0580/43/O/N/18 Q1

12. (a) Find the co-ordinates of the midpoint of the line joining
A(–8, 3) and B(–2, –3). [2]
(b) The line $y = 4x + c$ passes through (2, 6).
Find the value of c. [1]
(c) The lines $5x = 4y + 10$ and $2y = kx - 4$ are parallel.
Find the value of k. [2]
0580/22/M/J/12 Q17)

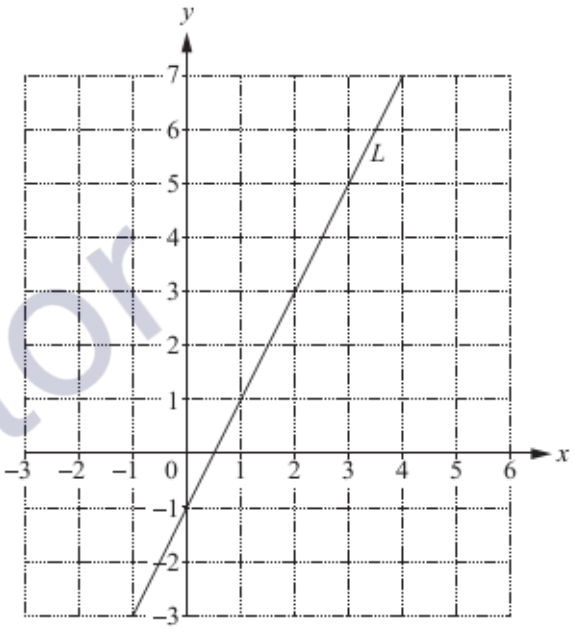
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13. (a) Work out the gradient of the line L. [2]

(b) Write down the equation of the line parallel to the line L that passes through the point (0, 6). [2]

0580/23/M/J/16 Q18)



14. A is the point (2, 3) and B is the point (7, -5).

(a) Find the co-ordinates of the midpoint of AB. [2]

(b) Find the equation of the line through A that is perpendicular to AB.

Give your answer in the form $y = mx + c$ [4]

0580/22/F/M/19 Q23)

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15. A line from the point (2, 3) is perpendicular to the line

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

The two lines meet at the point P.

Find the coordinates of P. [5]

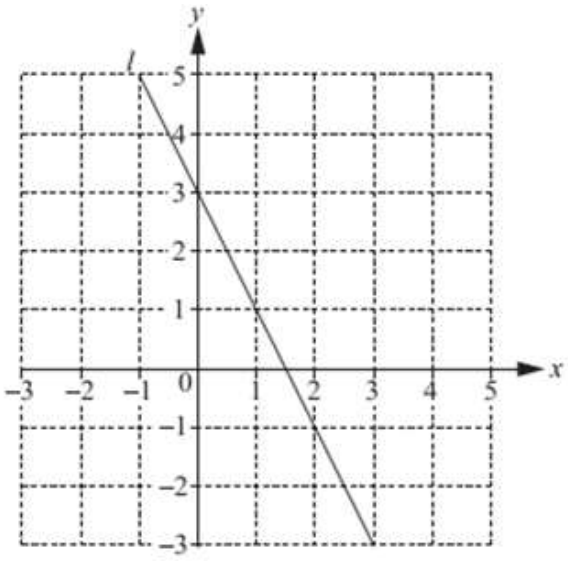
0580/22/O/N/20 Q24)

16. (a) Find the equation of the line l. [3]

(b) A line perpendicular to the line l passes through the point (3, −1). Find the equation of this line.

Give your answer in the form $y = mx + c$. [3]

0580/22/F/M/17 Q20)



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17. A line joins the points A(3,8) and B(2,2) .

(a) Find the co-ordinates of the midpoint of AB. [2]

(b) Find the equation of the line through A and B.
Give your answer in the form $y = mx + c$ [3]

(c) Another line is parallel to AB and passes through the point (0, 7).
Write down the equation of this line. [2]

(d) Find the equation of the line perpendicular to AB which passes through the point (1, 5).
Give your answer in the form $ax + by + c = 0$ where a, b and c are integers. [4]

0580/41/M/J/17 Q7)

18. Line A has equation $y = 5x - 4$
Line B has equation $3x + 2y = 18$

(a) Find the gradient of

(i) line A, [1]

(ii) line B. [1]

(b) Write down the co-ordinates of the point where line A crosses the x-axis. [2]

(c) Find the equation of the line perpendicular to line A which passes through the point (10, 9).
Give your answer in the form $y = mx + c$. [4]

(d) Work out the co-ordinates of the point of intersection of line A and line B. [3]

(e) Work out the area enclosed by line A, line B and the y -axis. [3]

0580/43/O/N/17 Q8)

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19. A is the point (-2, 0) and B is the point (0, 4).
    (a) Find the equation of the straight line joining A and B. [3]
    (b) Find the equation of the perpendicular bisector of AB. [4]
    0580/22/M/J/17 Q27

20. A is the point (4, 1) and B is the point (10, 15). Find the equation of the perpendicular bisector of the line AB [6]
    0580/21/M/J/16 Q25)

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21. AB is a line with midpoint M.
    A is the point (2, 3) and M is the point (12, 7).
    (a) Find the coordinates of B. [2]
    (b) Show that the equation of the perpendicular bisector of AB is $2y + 5x = 74$.[4]
    (c) The perpendicular bisector of AB passes through the point N. The point N has coordinates (2,n).
    Find the value of n. [1]
    (d) Points A,M and N form a triangle. Find the area of the triangle. [2]
    0580/42/O/N/22 Q8(a)

22. A kite is drawn on a coordinate grid.
    The diagonals of the kite intersect at the point $(-2, -5)$.
    One diagonal has equation $y = 4x + 3$.
    Find the equation of the other diagonal of the kite.
    Give your answer in the form $y = mx + c$. [3]
    0580/23/O/N/22 Q16)

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23. P is the point (16, 9) and Q is the point (22, 24).
    (a) Find the equation of the line perpendicular to PQ that passes through the point (5, 1).
    Give your answer in the form $y = mx + c$ [4]
    (b) N is the point on PQ such that PN =2NQ.
    Find the co-ordinates of N. [2]
    0580/22/M/J/18 Q25)

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24. (a) Point A has co-ordinates (1, 0) and point B has co-ordinates (2, 5).
    Calculate the angle between the line AB and the x-axis. [3]
    (b) The line PQ has equation $y=3x$ -8 and point P has co-ordinates (6, 10).
    Find the equation of the line that passes through P and is perpendicular to PQ.
    Give your answer in the form $y = mx + c$. [3]
    0580/21/M/J/18 Q24)



[Q24 – Q28]

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25. A line, l, joins point $F(3,2)$ and point $G(-5,4)$.

(a) Calculate the length of line l. [3]

(b) Find the equation of the perpendicular bisector of line l in the form $y = mx + c$. [5]

(c) A point H lies on the y-axis such that the distance $GH = 13$ units.

Find the coordinates of the two possible positions of H.[4]

0580/42/M/J/22 Q3)

26. (a) A rhombus ABCD has a diagonal AC where A is the point (-3, 10) and C is the point (4, -4).

(i) Calculate the length AC. [3]

(ii) Show that the equation of the line AC is $y = -2x + 4$[2]

(iii) Find the equation of the line BD. [4]

0580/41/M/J/20 Q10)

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27. A straight line joins the points A(-2, -3) and C(1, 9).

(a) Find the equation of the line AC in the form $y = mx + c$. [3]

(b) Calculate the acute angle between AC and the x-axis. [2]

(c) ABCD is a kite, where AC is the longer diagonal of the kite. B is the point (3.5, 2).

(i) Find the equation of the line BD in the form $y = mx + c$. [3]

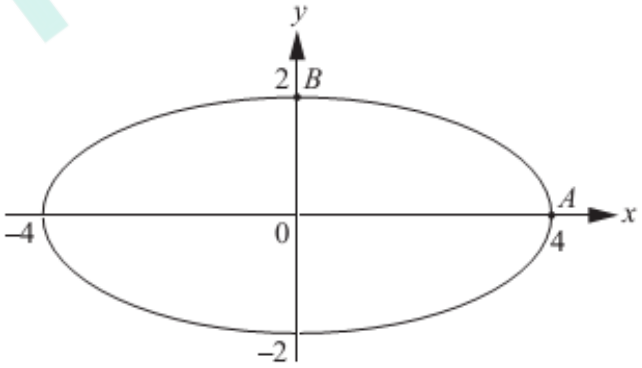
(ii) The diagonals AC and BD intersect at (-0.5, 3).

Work out the co-ordinates of D. [2]

0580/43/M/J/19 Q7)

28. The diagram shows a curve with equation $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$

(a) A is the point (4, 0) and B is the point (0, 2)



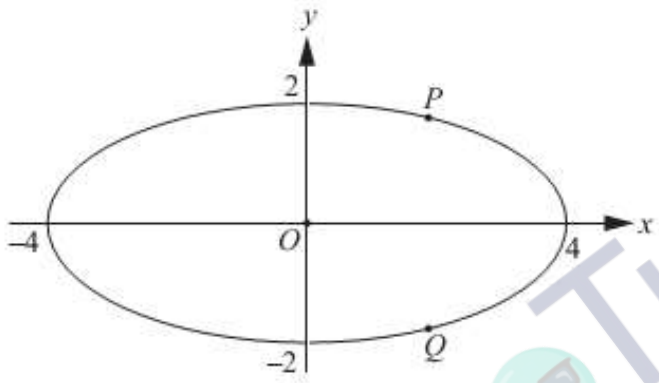
(i) Find the equation of the straight line that passes through A and B.

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Give your answer in the form $y = mx + c$. [3]

(ii) Show that $a^2 = 16$ and $b^2 = 4$. [2]

(b) P(2, k) and Q(2, -k) are points on the curve $\frac{x^2}{16} + \frac{y^2}{4} = 1$



(i) Find the value of k. [3]

(ii) Calculate angle POQ. [3]

(c) The area enclosed by a curve with equation $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ is πab.

(i) Find the area enclosed by the curve $\frac{x^2}{16} + \frac{y^2}{4} = 1$

Give your answer as a multiple of π. [1]

(ii) A curve, mathematically similar to the one in the diagrams, intersects the x-axis at (12, 0) and (-12, 0). Work out the area enclosed by this curve, giving your answer as a multiple of π [2]

0580/41/M/J/16 Q9)

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Answers

1) $\sqrt{185}$	8) (a) (6, 1.5) (b) y = -1/5x + 4	15) (2.4, 1.8)	22) $[y =] -\frac{1}{4}x - \frac{11}{2}$
2) $\sqrt{194}$	9) (a)(1.5, 12.5) (b) y = 3x+ 8	16) (a) y = -2x + 3 (b) y = 1/2x - 5/2	23) (a) y = -2/5x + 3 (b) (20 , 19)
3) (2w , (r + t)/2)	10) (a)(i) (–0.5, 1) (ii) $\begin{pmatrix}7\\-3\end{pmatrix}$ (iii) 7.62 (iv) $[y =] -4x - 1$ (v) $[y =] \frac{1}{4}x + \frac{11}{4}$	17) (a) (2.5, 5) (b)y = 6x - 10(c) y = 6x+ 7 (d) x + 6y - 31 = 0	24) (a) 78.7 (b) y = -1/3x + 12
4) x = k - 3	11) (a) (7, 10) (b)y = 2x - 4 (c) (0, –4)	18) (a)(i) 5 (a)(ii) -3/2 oe (b)(4/5 , 0) (c) y= –0.2x+ 11 (d) (2, 6) (e)13	25) (a)8.25 (b)$y = 4x + 7$ (c) $(0, -8)$ and $(0,16)$
5) y = -0.5x + 11.5 oe	12) (a) (–5, 0) (b)-2 (c)2.5 or $2\frac{1}{2}$	19) (a) y = 2x+ 4 (b) y = -1/2x + 3/2	26) (a)(i)15.7 (iii) $y = \frac{1}{2}x + \frac{11}{4}$
6) (a) (0, –8) (b)3	13) (a) 2 (b) y = 2x+ 6	20) y = -3/7x + 11	27) (a)y = 4x + 5 (b)76.0 (c)(i) y = -1/4x + 23/8 (ii) (–4.5, 4)
7) 2	14) (a) (4.5, −1) (b) y = 5/8 x + 7/4	21) (22,11)(b)(c)32(d)145	28) (a)(i)y = - 1/2x + 2 (b)(i) 1.73 or $\sqrt{3}$ (ii) 81.8 (c) (i) 8π (ii) 72π

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