Straight line graphs 2 - Edexcel Past Exam Questions

1.

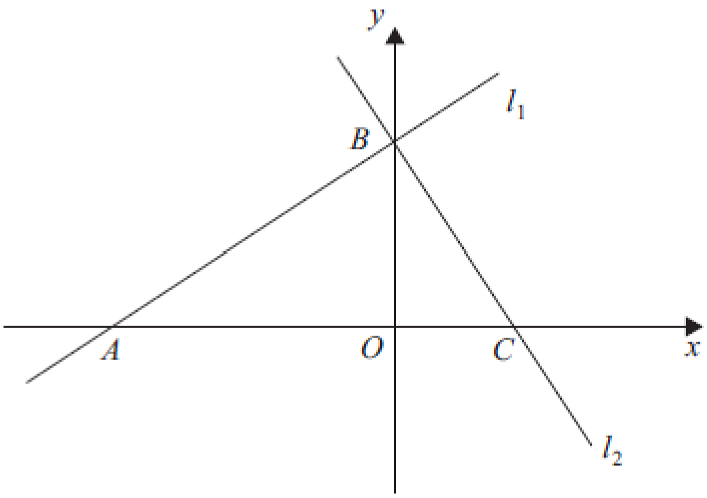

Figure 1

The line l_1 has equation $2x - 3y + 12 = 0$.

(a) Find the gradient of l_1. **(1)**

The line l_1 crosses the x-axis at the point A and the y-axis at the point B, as shown in Figure 1.

The line l_2 is perpendicular to l_1 and passes through B.

(b) Find an equation of l_2. **(3)**

The line l_2 crosses the x-axis at the point C.

(c) Find the area of triangle ABC. **(4)**

Jan 12 Q6

2. The line L_1 has equation $4y + 3 = 2x$.

The point A $(p, 4)$ lies on L_1.

(a) Find the value of the constant p. **(1)**

The line L_2 passes through the point C $(2, 4)$ and is perpendicular to L_1.

(b) Find an equation for L_2 giving your answer in the form $ax + by + c = 0$, where a, b and c are integers. **(5)**

The line L_1 and the line L_2 intersect at the point D.

(c) Find the coordinates of the point D. **(3)**

(d) Show that the length of CD is $\frac{3}{2}\sqrt{5}$. **(3)**

A point B lies on L_1 and the length of $AB = \sqrt{80}$.

The point E lies on L_2 such that the length of the line CDE = 3 times the length of CD.

(e) Find the area of the quadrilateral $ACBE$. **(3)**

June 12 Q9

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3. The line l_1 has equation $y = -2x + 3$.

The line l_2 is perpendicular to l_1 and passes through the point $(5, 6)$.

(a) Find an equation for l_2 in the form $ax + by + c = 0$, where a, b and c are integers. **(3)**

The line l_2 crosses the x-axis at the point A and the y-axis at the point B.

(b) Find the x-coordinate of A and the y-coordinate of B. **(2)**

Given that O is the origin,

(c) find the area of the triangle OAB. **(2)**

Jan 13 Q5

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4. The straight line L_1 passes through the points $(-1, 3)$ and $(11, 12)$.

(a) Find an equation for L_1 in the form $ax + by + c = 0$, where a, b and c are integers. **(4)**

The line L_2 has equation $3y + 4x - 30 = 0$.

(b) Find the coordinates of the point of intersection of L_1 and L_2 . **(3)**

June 13 Q6

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5. The line L_1 has equation $4x + 2y - 3 = 0$.

(a) Find the gradient of L_1. **(2)**

The line L_2 is perpendicular to L_1 and passes through the point $(2, 5)$.

(b) Find the equation of L_2 in the form $y = mx + c$, where m and c are constants. **(3)**

June 13 (R) Q4

6.

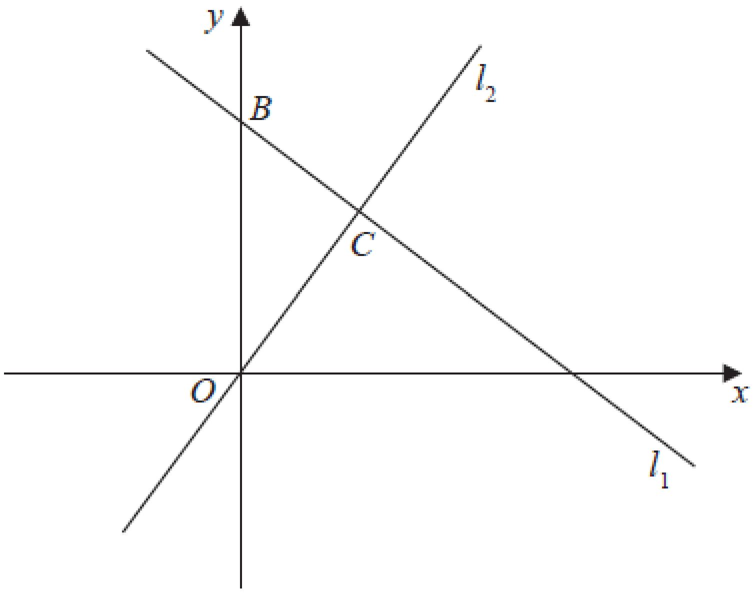

Figure 2

The line l_1, shown in Figure 2 has equation $2x + 3y = 26$.

The line l_2 passes through the origin O and is perpendicular to l_1.

(*a*) Find an equation for the line l_2. **(4)**

The line l_2 intersects the line l_1 at the point C. Line l_1 crosses the y-axis at the point B as shown in Figure 2.

(*b*) Find the area of triangle OBC. Give your answer in the form $\frac{a}{b}$, where a and b are integers to be determined. **(6)**

June 14 Q9

7.

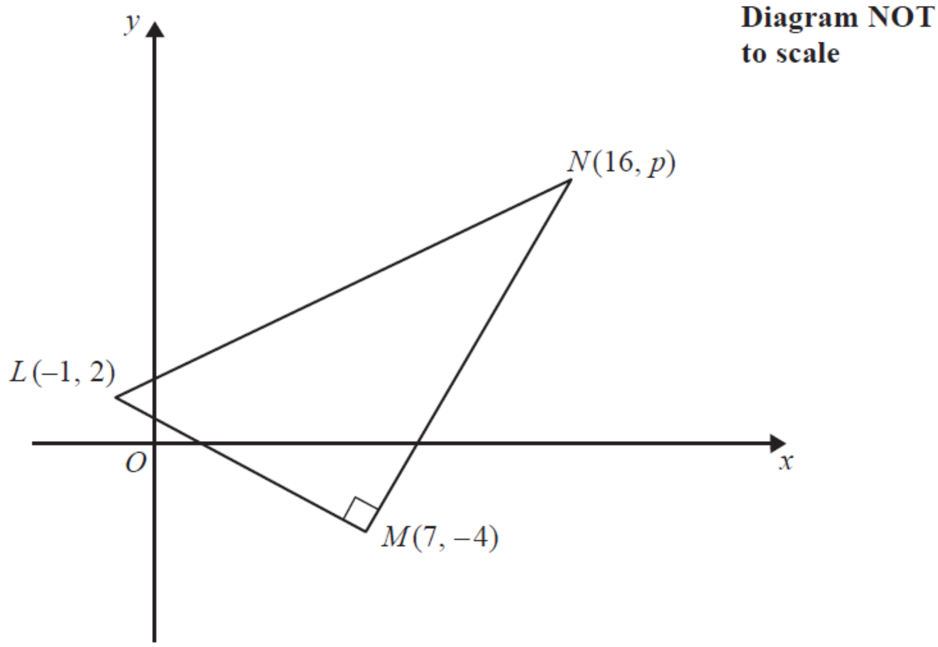

Figure 2

Figure 2 shows a right angled triangle LMN.

The points L and M have coordinates $(–1, 2)$ and $(7, –4)$ respectively.

(a) Find an equation for the straight line passing through the points L and M.

Give your answer in the form $ax + by + c = 0$, where a, b and c are integers. **(4)**

Given that the coordinates of point N are $(16, p)$, where p is a constant, and angle $LMN = 90°$,

(b) find the value of p. **(3)**

Given that there is a point K such that the points L, M, N, and K form a rectangle,

(c) find the y coordinate of K. **(2)**

June 14(R) Q7

8. The curve C has equation $y = \frac{1}{3}x^2 + 8$.

The line L has equation $y = 3x + k$, where k is a positive constant.

(a) Sketch C and L on separate diagrams, showing the coordinates of the points at which C and L cut the axes. **(4)**

Given that line L is a tangent to C,

(b) find the value of k. **(5)**

June 14(R) Q9

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9. (a) Factorise completely $9x - 4x^3$. **(3)**

(b) Sketch the curve C with equation

$$y = 9x - 4x^3.$$

Show on your sketch the coordinates at which the curve meets the x-axis. **(3)**

The points A and B lie on C and have x coordinates of -2 and 1 respectively.

(c) Show that the length of AB is $k\sqrt{10}$, where k is a constant to be found. **(4)**

June 15 Q8

10.

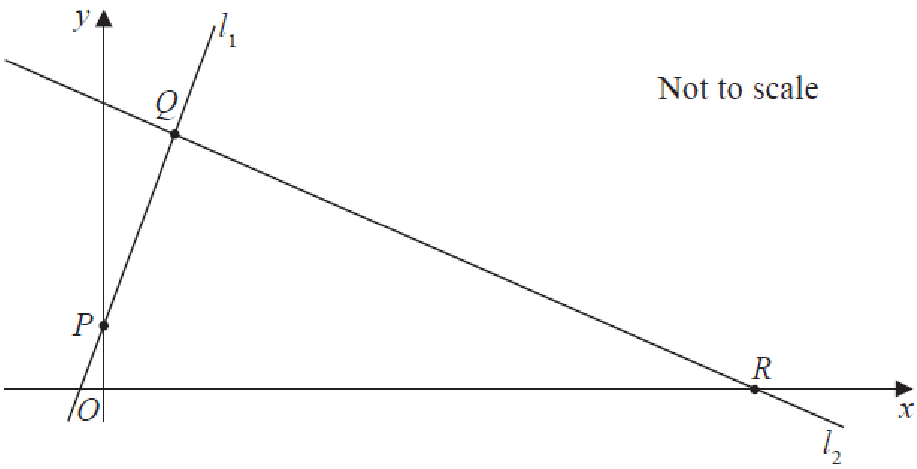

Figure 2

The points P (0, 2) and Q (3, 7) lie on the line l_1, as shown in Figure 2.

The line l_2 is perpendicular to l_1, passes through Q and crosses the x-axis at the point R, as shown in Figure 2.

Find

(*a*) an equation for l_2, giving your answer in the form $ax + by + c = 0$, where a, b and c are integers, **(5)**

(*b*) the exact coordinates of R, **(2)**

(*c*) the exact area of the quadrilateral $ORQP$, where O is the origin. **(5)**

June 16 Q10