MATHEMATICS

1. (a) Find an equation of the line p which passes through the point $(-3, 2)$ and which is parallel to the line q with equation $7x - 2y - 14 = 0$.

(3)

The lines p and q meet the y-axis at the points A and B respectively.

(b) Find the distance between AB.

(2)
(Total 5 marks)

2. The straight line l_1 with equation $y = \frac{3}{2}x - 2$ crosses the y-axis at the point P. The point Q has coordinates $(5, -3)$.

(a) Calculate the coordinates of the mid-point of PQ.

(3)

The straight line l_2 is perpendicular to l_1 and passes through Q.

(b) Find an equation for l_2 in the form $ax + by = c$, where a, b and c are integer constants.

(4)

The lines l_1 and l_2 intersect at the point R.

(c) Calculate the exact coordinates of R.

(4)
(Total 11 marks)

3. The points A and B have coordinates $(4, 6)$ and $(12, 2)$ respectively.

The straight line l_1 passes through A and B.

(a) Find an equation for l_1 in the form $ax + by = c$, where a, b and c are integers.

(4)

The straight line l_2 passes through the origin and has gradient -4.

MATHEMATICS

(b) Write down an equation for l_2.

(1)

The lines l_1 and l_2 intercept at the point C.

(c) Find the exact coordinates of the mid-point of AC.

(5)
(Total 10 marks)

4. The points A and B have coordinates (1, 2) and (5, 8) respectively.

(a) Find the coordinates of the mid-point of AB.

(2)

(b) Find, in the form $y = mx + c$, an equation for the straight line through A and B.

(4)
(Total 6 marks)

5. The straight line l_1 has equation $y = 3x - 6$.

The straight line l_2 is perpendicular to l_1 and passes through the point (6, 2).

(a) Find an equation for l_2 in the form $y = mx + c$, where m and c are constants.

(3)

The lines l_1 and l_2 intersect at the point C.

(b) Use algebra to find the coordinates of C.

(3)

The lines l_1 and l_2 cross the x-axis at the points A and B respectively.

(c) Calculate the exact area of triangle ABC.

(4)
(Total 10 marks)