8 The equation of line l_1 is $2x + 3y + 6 = 0$

(a) Find the gradient of l_1

(1)

The line l_2 is perpendicular to l_1 and passes through the point P with coordinates (7, 2).

(b) Find an equation for l_2

(3)

The lines l_1 and l_2 intersect at the point Q.

(c) Find the coordinates of Q.

(3)

The line l_3 is parallel to l_1 and passes through the point P.

(d) Find an equation for l_3

(2)

The line l_1 crosses the x-axis at the point R.

(e) Show that $PQ = QR$.

(3)

The point S lies on l_3

The line PR is perpendicular to QS.

(f) Find the exact area of the quadrilateral $PQRS$.

(3)

Question 8 continued

Question 8 continued

Question 8 continued

(Total for Question 8 is 15 marks)