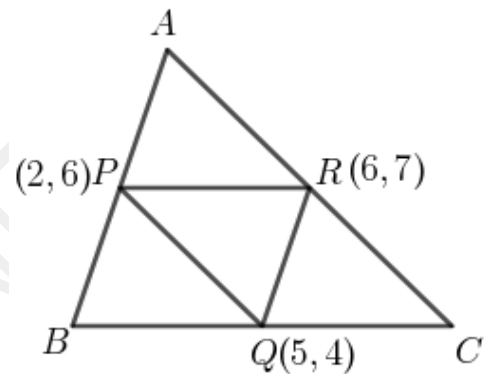**10.7BE**   **GEOMETRY AND ALGEBRA**   **Total Score : 20**
Time : 40 minutes

1. The slope of a line passing through the point (2 , 6) is $\frac{3}{2}$.

  a) What are the coordinates of the point at which the line cuts the x -axis ?

  b) What are the coordinates of the point at which the line cuts the y -axis ?   (2)

2. In the figure P , Q and R are the midpoints of the sides of
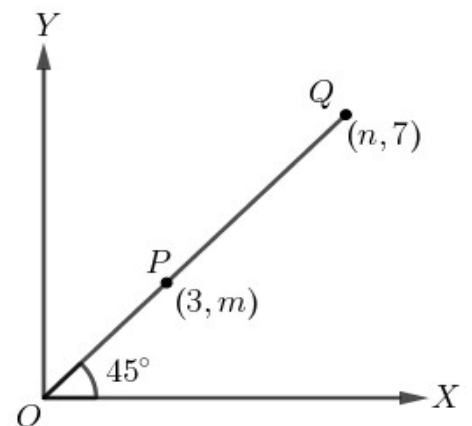
  the triangle ABC .

  a) What are the coordinates of B ?

  b) What are the coordinates of A ?

   (2)

3. In the figure line OQ makes an angle 45^{0} with the

   x -axis ?

  a) What is the slope of the line OQ   ?

  b) What is the value of m ?

  c) What is the value of n ?

   (3)

4. A circle is drawn with the line joining (1 , 4) and (9 , 8) as diameter . The ends of

   a chord of this circle are A (1 , 8) and B (3 , 2) .

  a) What are the coordinates of centre of the circle ?

  b) What are the coordinates of midpoint of the chord AB ?

  c)   What is the distance between the centre of the circle and the chord AB ?   (3)

5. The vertices of a triangle are A (2 , 3) , B (5 , 0) and C (7 , 8) .

   a) What is the length of AB ?

   b) Prove that ABC is a right triangle ?

   c) What are the coordinates of the centre of the circumcircle of the triangle ABC ? (5)

6. In the figure PQRS is a square .

   P (2 , 0) , Q (6 , 1) , R (5 , 5) , S (1 , 4)

   a) What is the slope of the side PQ ?

   b) What is the slope of the side SR ?

   c) What is the slope of the side PS ?

   d) What is the product of the slopes of the sides PQ and QR ?

   e) What is the product of the slopes of the diagonals of the square ? (5)