Name: _____

ASM Tuition Academy

Perpendicular Lines

Instructions:

- Use **black** ink or ball-point pen.
- Answer all questions.
- Answer the questions in the spaces provided
  - there may be more space than you need.
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- You must **show all you're working out.**

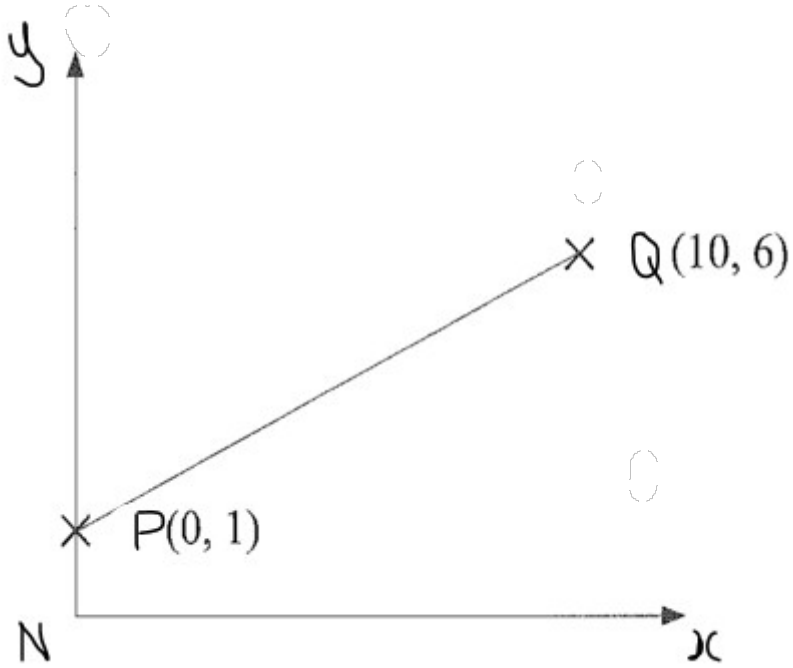
Information:

- The marks for each question are shown in brackets
  - use this as a guide as to how much time to spend on each question.

Advice:

- Read each question carefully before you start to answer it.
- Keep an eye on time.
- Try to answer every question.
- Check your answers if you have time at the end.

Q1-



P is the point (0, 1)

Q is the point (10, 6)

The equation of the straight line through P and Q is $y=\frac{1}{2}x+1$

a) Write down the equation of another straight line parallel to $y=\frac{1}{2}x+1$

(1)

b) Write down the equation of another straight line that passes through the point (0, 1)

(1)

c) Find the equation of the line perpendicular to PQ passing through Q.

(3)

(Total for Question 1 is 5 marks)

Q2- A straight line, M, passes through the point with coordinates (5, 8) and is perpendicular to the line with equation $y = 3x + 4$.

Find the equation of the straight-line M.

(Total for Question 2 is 3 marks)

Q3- A straight line passes through the points (0, 4) and (2, 16).

Find an equation of the straight line

(Total for Question 3 is 3 marks)

Q4- Show that line $4y = 5x - 15$ is perpendicular to line $5y = -4x + 50$

(Total for Question 4 is 3 marks)

Q5- Here are the equations of 5 straight lines.

P: $y = 3x + 6$

Q: $y = -3x + 6$

R: $y = x + 7$

S: $y = -1/3x + 6$

T: $y = ½x + 4$

a) Write down the letter of the line that is parallel to $y = x + 8$

(1)

b) Write down the letter of the line that is perpendicular to $y = 3x - 1$

(1)

(Total for Question 5 is 2 marks)

Q6- The point P has the coordinates (3,6) The point Q has the coordinates (5,8)

Find the mid point of PQ

(2)

Find the gradient of the line that passes through PQ

(2)

Find the equation of the perpendicular bisector to PQ

(3)

(Total for Question 6 is 7 marks)

Q7- A circle O has centre (3,6) The point A (12, 9) lies on the circumference of the circle

Find the equation of the tangent to the circle at A

(5)

(Total for Question 7 is 5 marks)

Q8- A circle has the equation $x^2 + y^2 = 6$

a) Write down the centre of the circle

(1)

b) Write down the exact length of the radius of the circle

(1)

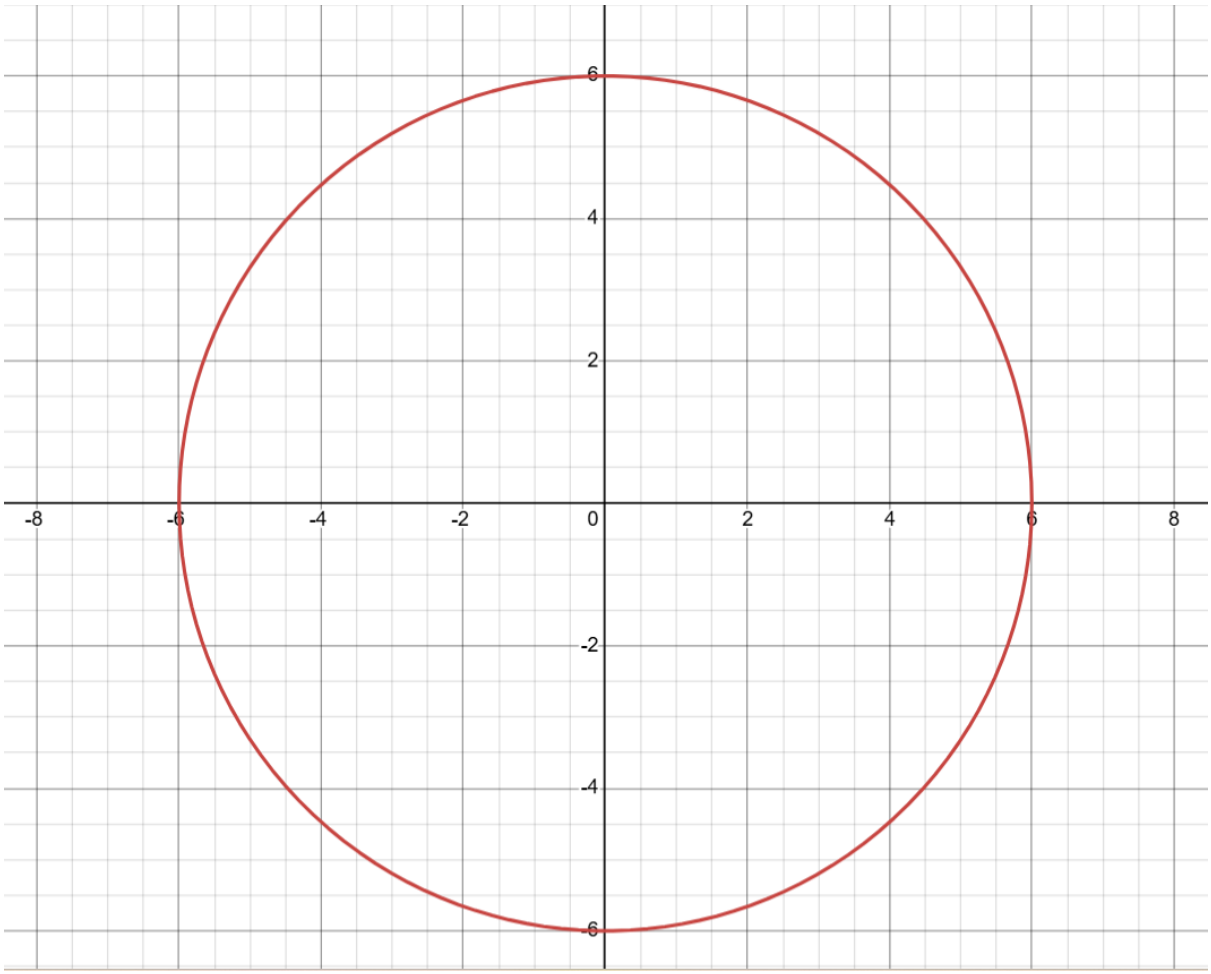
P is the point (1,2) on the circle $x^2 + y^2 = 6$

c) Work out the equation of the tangent to the circle at P

(4)

(Total for Question 8 is 6 marks)

Q9- The diagram shows a circle of radius 6 cm, centre the origin



Find the equation of the tangent to the circle at (4,5)

(5)

(Total for Question 9 is 5 marks)