Name:_____

GCSE (1 - 9) Equation of a Circle and Tangent to a Circle	Solutions:

These questions are compiled from released Pearson Edexcel GCSE maths exam papers

They contain exam questions from up until the ***November 2023*** exam series

More recent exam papers do exist but are withheld for mock exams

As new exam papers are released these worksheets will gradually be updated

The **most current** version of these worksheets will always be available at: kennethstafford.co.uk

Past Papers:	Similar Worksheets:
Solutions:	This worksheet:

1

L is the circle with equation $x^2 + y^2 = 4$

$P\left(\frac{3}{2}, \frac{\sqrt{7}}{2}\right)$ is a point on **L**.

Find an equation of the tangent to **L** at the point P.

.....

(Total for Question 23 is 3 marks)

[Edexcel, GCSE, Summer 2017, Paper 2H, Q23]

2

The equation of a curve is $y = a^x$

A is the point where the curve intersects the y-axis.

(a) State the coordinates of A.

(..... , ...)

(1)

The equation of circle **C** is $x^2 + y^2 = 16$

The circle **C** is translated by the vector $\begin{pmatrix} 3 \\ 0 \end{pmatrix}$ to give circle **B**.

(b) Draw a sketch of circle **B**.

Label with coordinates
the centre of circle **B**
and any points of intersection with the x-axis.

(3)

(Total for Question 20 is 4 marks)

[Edexcel, GCSE, Summer 2017, Paper 3H, Q20]

3

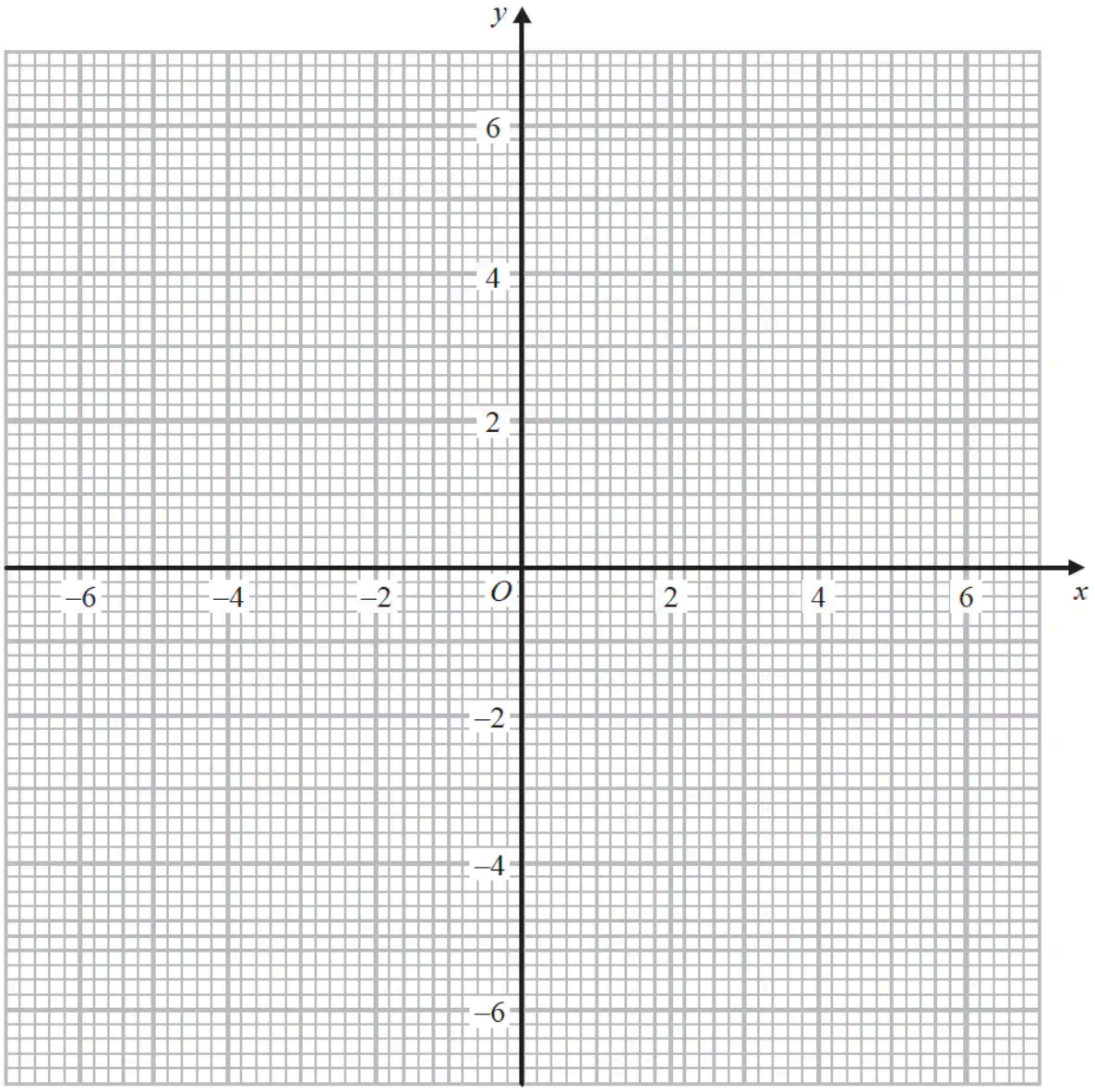
Prove algebraically that the straight line with equation $x - 2y = 10$ is a tangent to the circle with equation $x^2 + y^2 = 20$

(Total for Question 19 is 5 marks)

[Edexcel, GCSE, Autumn 2017, Paper 3H, Q19]

4

(a) On the grid, draw the graph of $x^2 + y^2 = 12.25$



(2)

(b) Hence find estimates for the solutions of the simultaneous equations

$$x^2 + y^2 = 12.25$$
$$2x + y = 1$$

.....

(3)

(Total for Question 16 is 5 marks)

[Edexcel, GCSE, Summer 2018, Paper 2H, Q16]

5

The equation of a circle is $x^2 + y^2 = 42.25$

Find the radius of the circle.

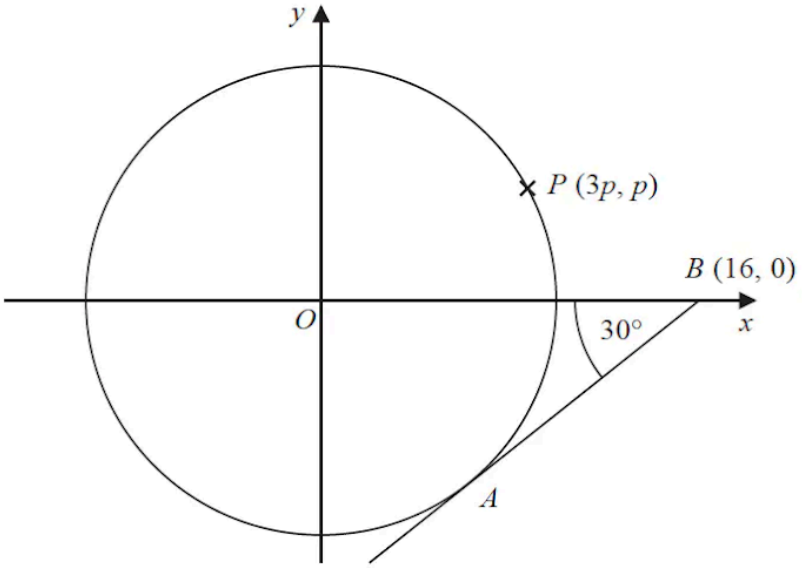
.....

(Total for Question 15 is 1 mark)

[Edexcel, GCSE, Autumn 2018, Paper 2H, Q15]

6

The diagram shows a circle, centre O.



AB is the tangent to the circle at the point A.
Angle $OBA = 30°$

Point B has coordinates $(16, 0)$
Point P has coordinates $(3p, p)$

Find the value of p.
Give your answer correct to 1 decimal place.
You must show all your working.

$p =$ .....

(Total for Question 22 is 4 marks)

[Edexcel, GCSE, Summer 2019, Paper 3H, Q22]

7

C is a circle with centre the origin.

A tangent to **C** passes through the points (–20, 0) and (0, 10)

Work out an equation of **C**.
You must show all your working.

.....

(Total for Question 22 is 5 marks)

[Edexcel, GCSE, Autumn 2020, Paper 2H, Q22]

8

The centre of a circle is the point with coordinates $(-1, 3)$

The point A with coordinates $(6, 8)$ lies on the circle.

Find an equation of the tangent to the circle at A.
Give your answer in the form $ax + by + c = 0$ where a, b and c are integers.

.....

(Total for Question 20 is 4 marks)

[Edexcel, GCSE, Summer 2022, Paper 1H, Q20]

9

A circle has equation $x^2 + y^2 = 25$

The point P with coordinates $(-3, 4)$ lies on the circle.

Alex says that the tangent to the circle at P crosses the x-axis at the point $(-8, 0)$

Is Alex correct?
You must show how you get your answer.

(Total for Question 23 is 4 marks)

[Edexcel, GCSE, Summer 2023, Paper 3H, Q23]

10

A circle has equation $x^2 + y^2 = 12.25$

The point P lies on the circle.
The coordinates of P are $(2.1, 2.8)$

The line **L** is the tangent to the circle at point P.

Find an equation of **L**.
Give your answer in the form $ax + by = c$, where a, b and c are integers.

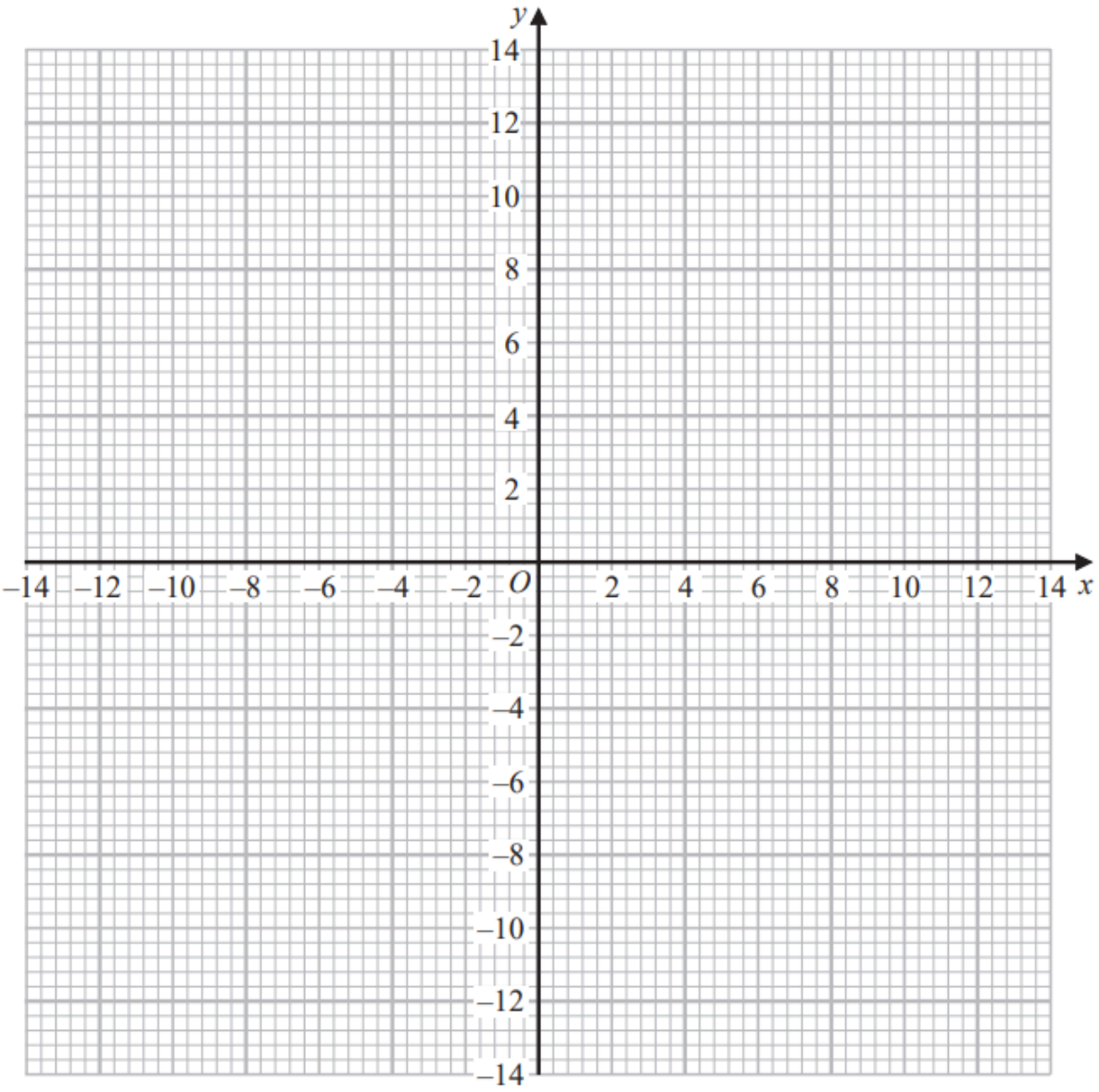
.....

(Total for Question 24 is 4 marks)

[Edexcel, GCSE, November 2022, Paper 2H, Q24]

11

(a) On the grid, draw the graph of $x^2 + y^2 = 169$



(2)

(b) Use your graph to find estimates for the solutions of the simultaneous equations

$$x^2 + y^2 = 169$$
$$2y = 3x$$

.....

(3)

(Total for Question 21 is 5 marks)

[Edexcel, GCSE, November 2023, Paper 1H, Q21]