Name:

Exam Style Questions

Equation of a Circle

Corbettmaths

Equipment needed: Pen, Calculator, Pair of Compasses

Guidance

1. Read each question carefully before you begin answering it.
2. Check your answers seem right.
3. Always show your workings

Video Tutorial

www.corbettmaths.com/contents

Video 12

Answers and Video Solutions

1. The equation of a circle C, with centre O, is:

$x^2 + y^2 = 225$

(a) Find the coordinates of the centre O.

(..... , ...)

(1)

(b) Find the radius of C.

.....

(1)

(c) Show the point (9, 12) lies on C.

(2)

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2. A circle has centre (0, 0) and radius 6.

(a) Write down the equation of the circle.

.....

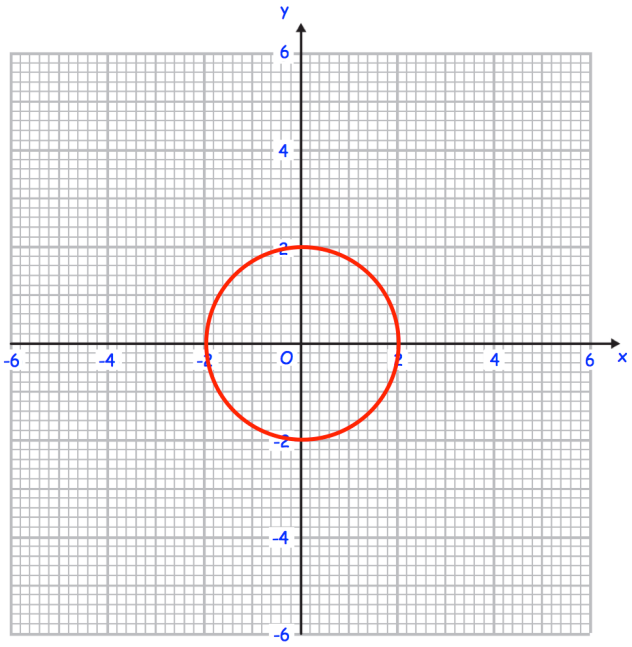
(2)

(b) Does the point (–3 , 5) lie on the circle?

.....

(2)

3. Find the equation of the circle.



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(2)

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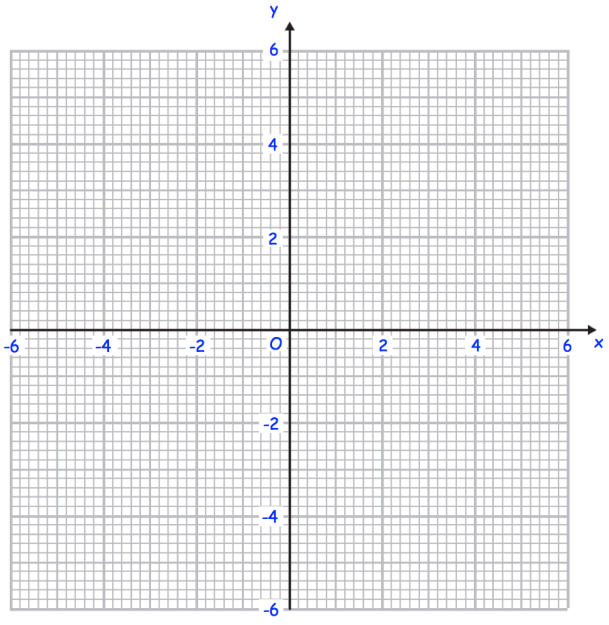
4. Draw the circle with equation $x^2 + y^2 = 16$



(2)

5. A circle has centre (0, 0) and radius 9

Roberto says the equation of the circle is $x^2 + y^2 = 9$

(a) Explain Roberto's mistake

.....

.....

.....

(1)

David says the equation of the circle is $x^2 - y^2 = 81$

(b) Explain David's mistake

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(1)

Karl says the equation of the circle is $x + y = 81$

(c) Explain Karl's mistake

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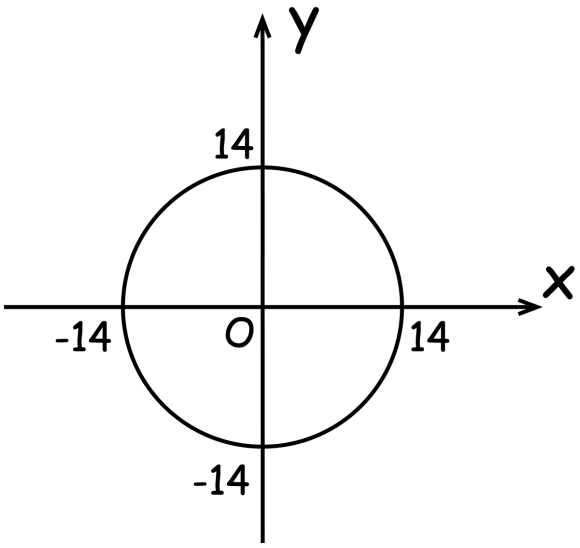
.....

(1)

6.



Write down the equation of the circle.

.....

(2)

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7. A circle has equation $x^2 + y^2 = 144$

Work out the length of the diameter of the circle.

.....

(2)

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8. A circle has equation $x^2 + y^2 = 316.84$

Find the radius of the circle.

.....

(1)

9. A circle C has centre O and passes through the points A (0, 7) and B (0, –7)

AB is a diameter of the circle C.

(a) Find the coordinates of the centre O.

(..... , ...)

(1)

(b) Write down the equation of the circle.

.....

(2)

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10. AB is a diameter of a circle C.

O is the centre of the circle

A has coordinates (–4, 3) and B has coordinates (4, –3).

(a) Find the centre of the circle, O.

(..... , ...)

(1)

(b) Find the equation of C

.....

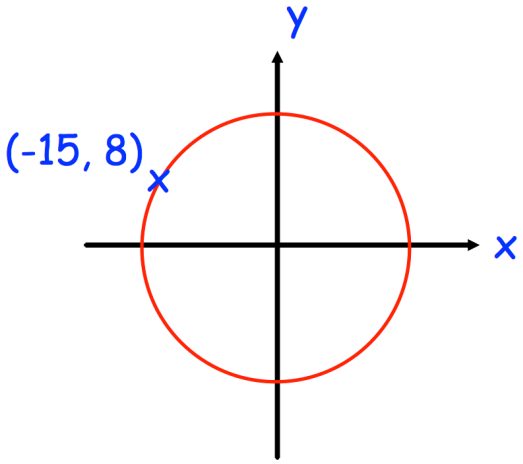
(2)

(c) Show the point D, (–3, –4) lies on C.

(2)

11. The circle below has centre (0, 0).
The point (–15, 8) is a point on the circle.

Find the equation of the circle.



.....

(3)

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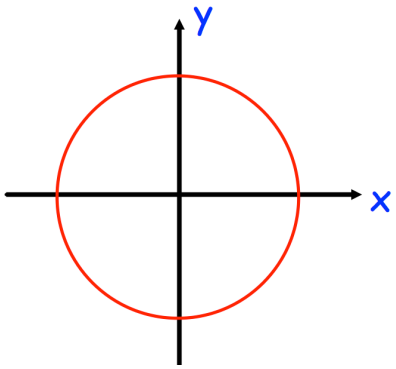
12. The circle shown has $x^2 + y^2 = 36$

Find the circumference of the circle.
Give your answer in terms of π



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(3)

13. A circle has the equation $x^2 + y^2 = 121$

Find the area of the circle.
Give your answer in terms of π

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(3)

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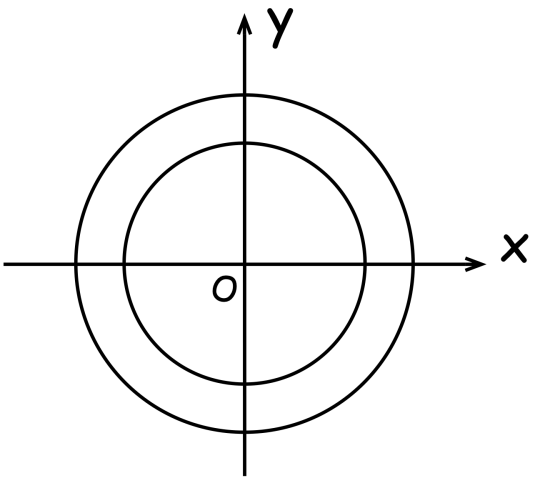
14. Shown below are two circles with centre O.



The equation of the smaller circle is $x^2 + y^2 = 400$

The radius of the smaller circle : the radius of the larger circle = 5 : 6

Work out the equation of the larger circle.

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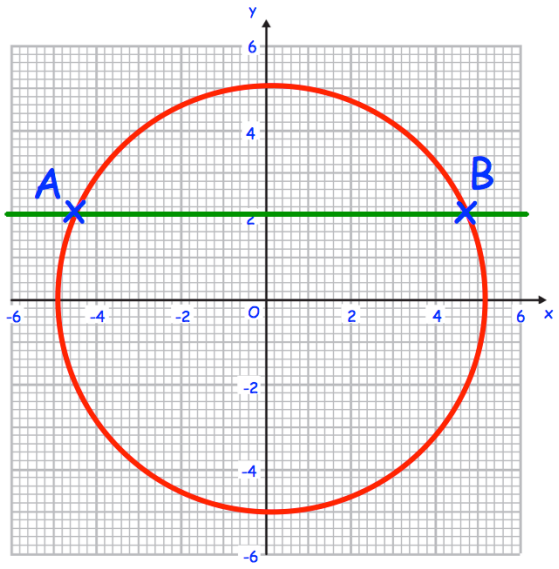
(3)

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

A straight line meets the circle at the points A (a, 2) and B (b, 2).



(a) Write down the equation of the straight line.

.....

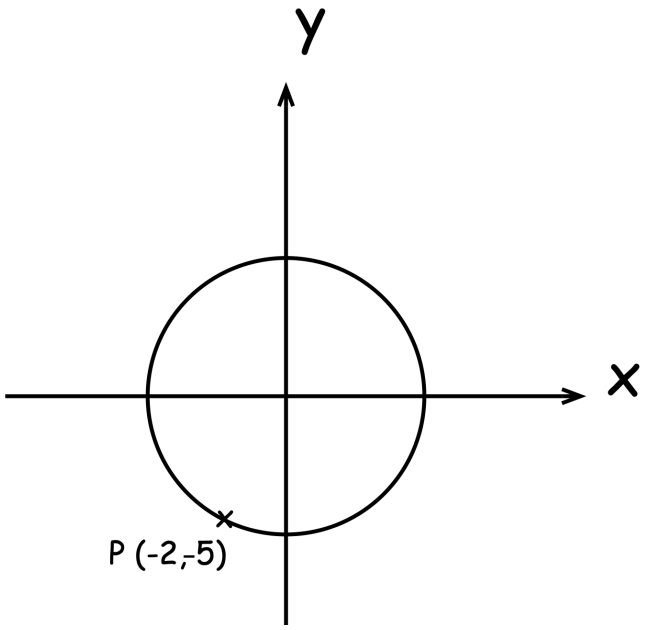
(1)

(b) Find the coordinates of the points A and B.
Give your answers in surd form.

A = ... and B = ...

(4)

16.



The point P (–2, –5) is a point on a circle with centre (0, 0).

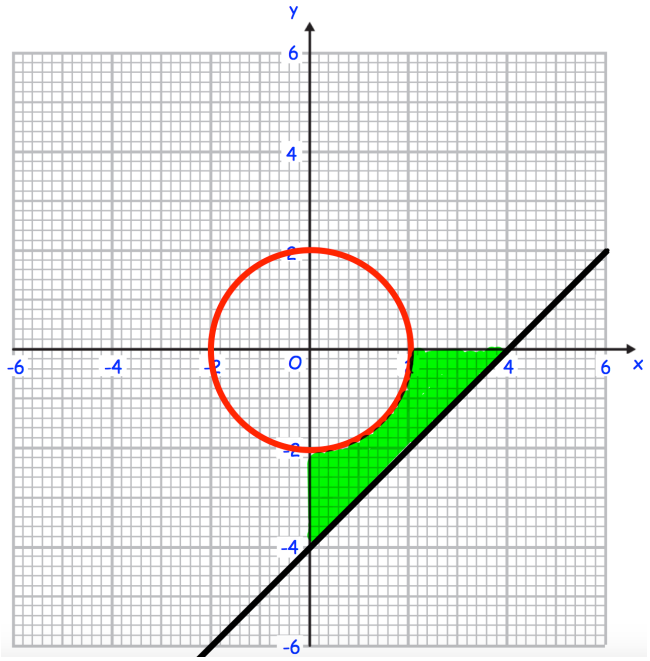
Work out the diameter of the circle.
Give your answer as a surd.

.....

(3)

17. The circle below has equation $x^2 + y^2 = 4$

The line has equation $y = x - 4$



(a) Find the area of the shaded region.

.....

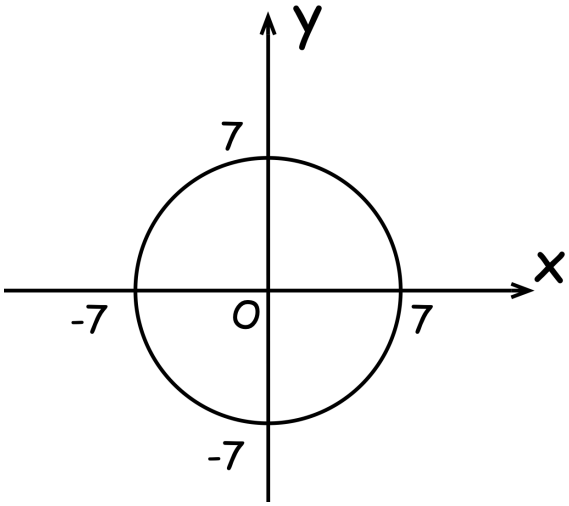
(4)

(b) Find the perimeter of the shaded area.

.....

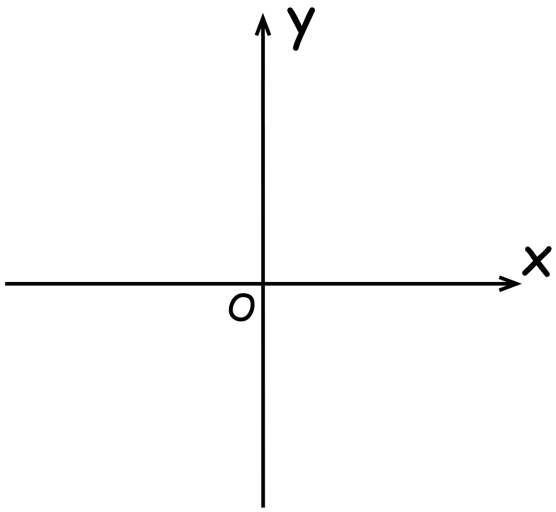
(4)

18. Shown is a sketch of the circle with equation $x^2 + y^2 = 49$



The circle is translated 3 squares downwards.

Sketch the circle and label the coordinates where the circle crosses both the x-axis and y-axis.



(4)

19. A circle has equation $x^2 + y^2 = 40$

A line has equation $y = 3x$

The line intersects the circle at two points, P and Q.

Find the coordinates of P and Q.

.....

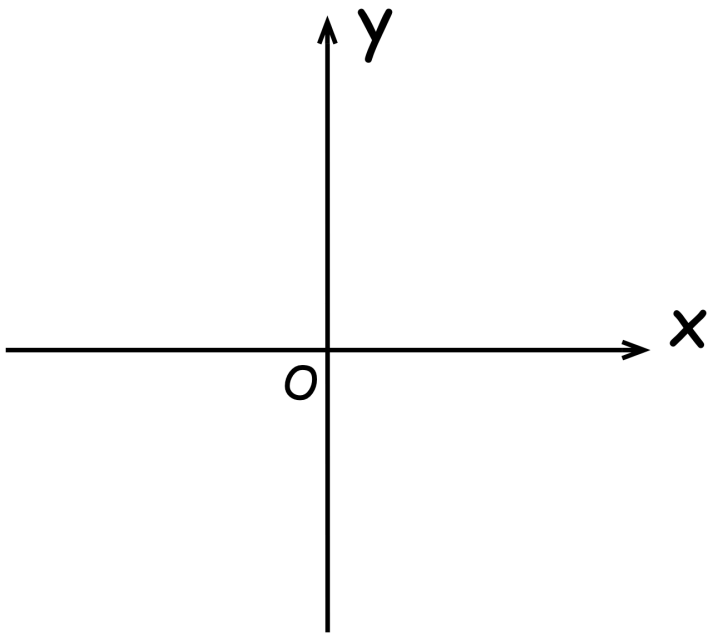
(4)

20. The circle C has equation $x^2 + y^2 = 16$

The circle C is reflected in the line $x = -4$ to give the circle D.

The circle D is translated by the vector $\begin{pmatrix} 0 \\ 2 \end{pmatrix}$ to give the circle E.

Write down the coordinates of the centre of circle E.



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(4)