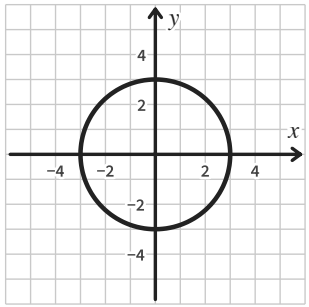
The equation of a circle

ANSWERS

1

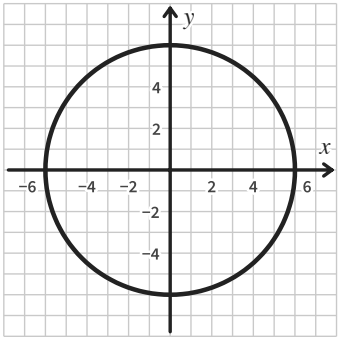
The circle has its centre at the origin. Write down the equation of the circle.



Radius	3
Radius²	9
$x^2 + y^2 =$	9

2

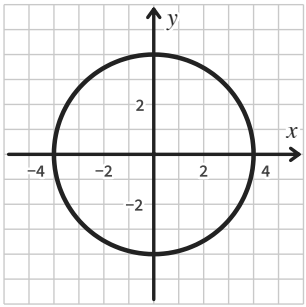
The circle has its centre at the origin. Write down the equation of the circle.



Radius	6
Radius²	36
$x^2 + y^2 =$	36

3

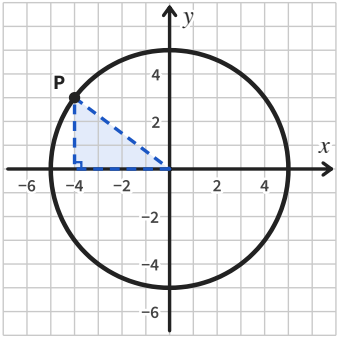
The circle has its centre at the origin. Write down the equation of the circle.



Radius	4
Radius²	16
$x^2 + y^2 =$	16

4 *Notice the change!*

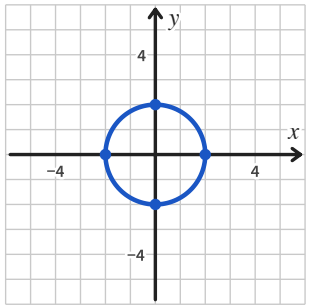
The circle has its centre at the origin and passes through P(−4, 3). Write down the equation of the circle.



$(-4)^2 + 3^2 =$	25
$x^2 + y^2 =$	25

5 *Notice the change!*

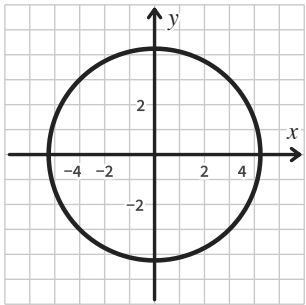
Draw the circle $x^2 + y^2 = 4$.



Radius	2

6

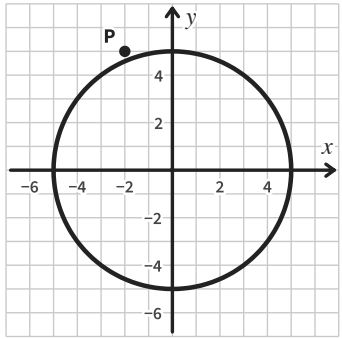
The graph shows the circle $x^2 + y^2 = 18$. Write down its radius. Between which two whole numbers is it?



Radius	$\sqrt{18}$
Between	4 and 5

7 *Notice the change!*

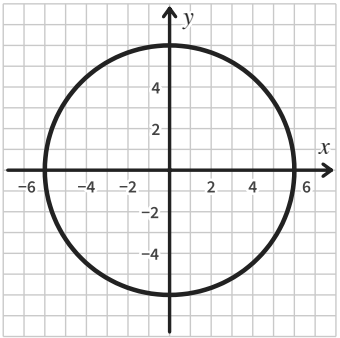
Is P(−2, 5) inside, on or outside the circle $x^2 + y^2 = 25$?



$(-2)^2 + 5^2 =$	29
Compare with 25	29 > 25
Inside, on or outside?	outside

8

Mia says the circle $x^2 + y^2 = 36$ has a radius of 36. Explain her mistake. Write down the radius.



36 is the radius squared

Radius	6

The equation of a circle *further practice*

ANSWERS

9

Is the point (6, −1) inside, on or outside the circle $x^2 + y^2 = 40$?
Show how you know.

$6^2 + (-1)^2 = 36 + 1 = 37$

$37 < 40$, so inside

Answer inside

10

A circle has its centre at the origin and passes through (−2, −7).
Write down its equation.

$(-2)^2 + (-7)^2 = 4 + 49 = 53$

Answer $x^2 + y^2 = 53$

11

Write down the coordinates of the four points where the circle $x^2 + y^2 = 49$ crosses the axes.

radius $\sqrt{49} = 7$

Answer (7, 0), (−7, 0), (0, 7), (0, −7)

12

The point $(k, -2)$ is on the circle $x^2 + y^2 = 29$. Find the two possible values of k.

$k^2 + 4 = 29$, so $k^2 = 25$

Answer $k = 5$ or $k = -5$

13

On a plan of a room, a circular rug has the equation $x^2 + y^2 = 6.25$, in metres, with its centre at the origin.
How wide is the rug?

radius $\sqrt{6.25} = 2.5$ m

diameter $2 \times 2.5 = 5$ m

Answer 5 m

14

Which point is further from the origin, P(4, −6) or Q(−7, 1)? Use $x^2 + y^2$ to explain.

P: $16 + 36 = 52$, Q: $49 + 1 = 50$

$52 > 50$, so P is on a bigger circle

Answer P

15

Find the coordinates of the two points where the line $y = 3$ meets the circle $x^2 + y^2 = 25$.

$x^2 + 9 = 25$, so $x^2 = 16$

$x = 4$ or $x = -4$

Answer (4, 3) and (−4, 3)

16

Amir says the point (2, 1) is on the circle $x^2 + y^2 = 9$, because $2 + 1 = 3$ and the radius is 3. Is he right? Explain.

he did not square: $2^2 + 1^2 = 5$

$5 < 9$, so (2, 1) is inside

Answer No: it is inside