Circle Graphs - Worksheet

Skill

Group A - Using the equation of a circle

Find the radius of the circle:

1) $x^2 + y^2 = 16$

2) $x^2 + y^2 = 64$

3) $x^2 + y^2 = 1$

4) $x^2 + y^2 = 121$

5) $x^2 + y^2 = 49$

6) $x^2 + y^2 = 169$

7) $x^2 + y^2 = 225$

8) $x^2 + y^2 = 289$

9) $x^2 + y^2 = 256$

10) $x^2 + y^2 = 324$

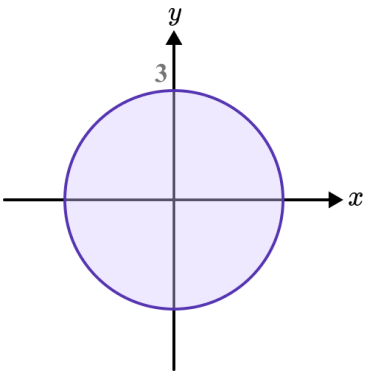
11) $x^2 + y^2 = 400$

12) $x^2 + y^2 = 529$

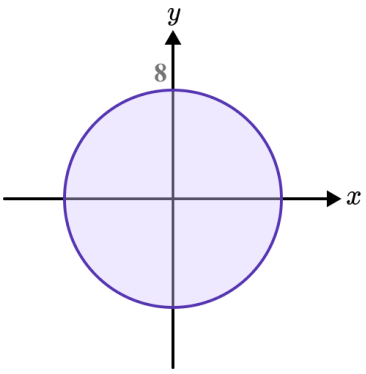
Group B - Using the equation of a circle

What is the equation of these graphs?

1)



2)



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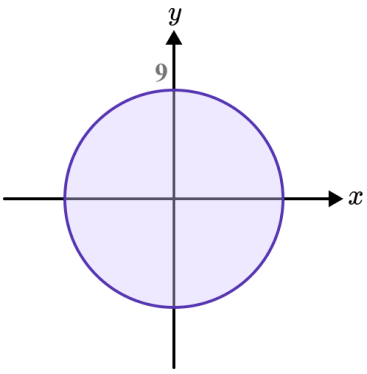

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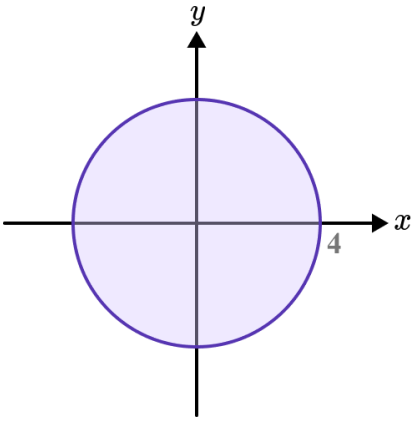

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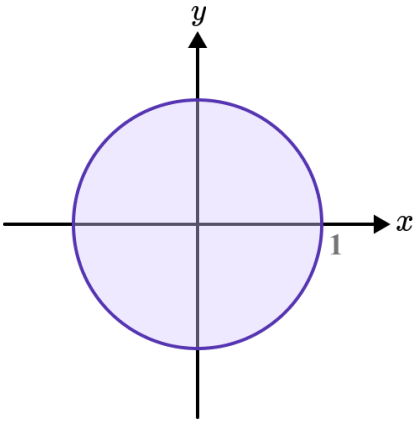

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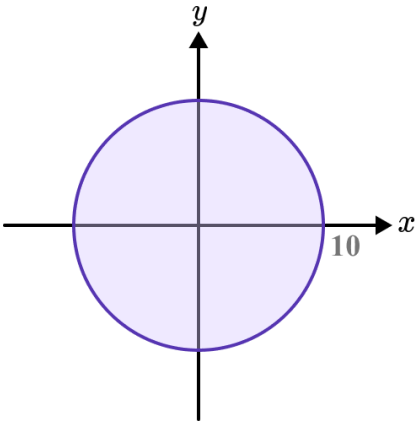
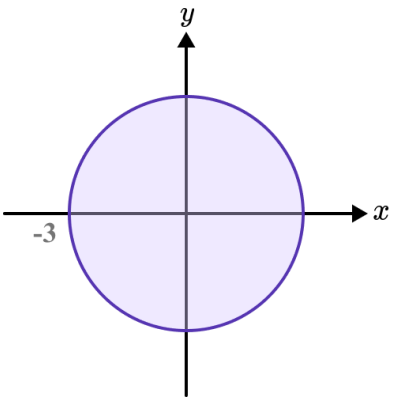
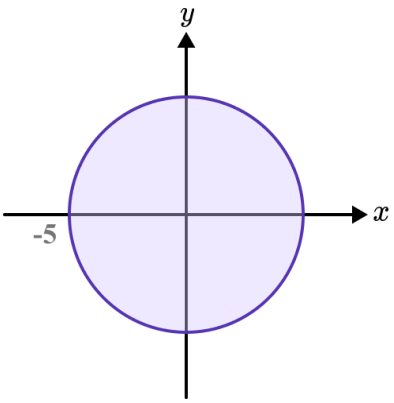


Circle Graphs - Worksheet

7)



8)



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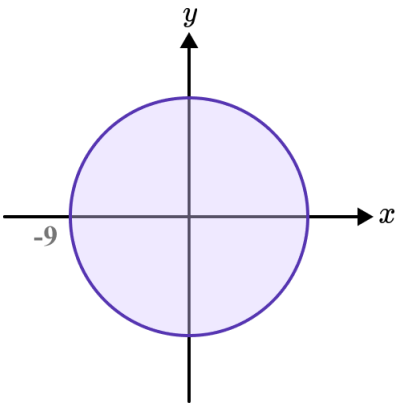

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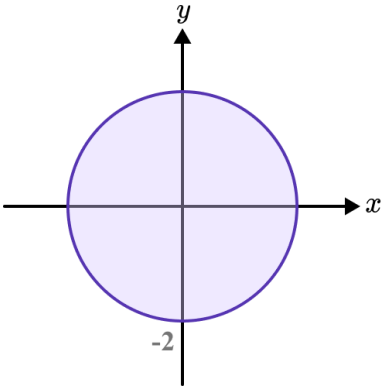

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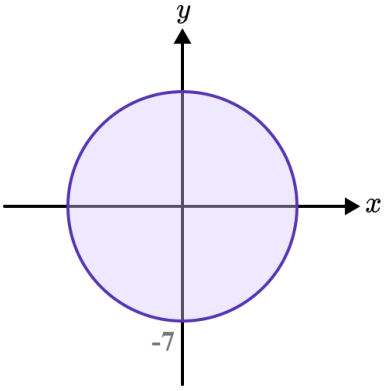
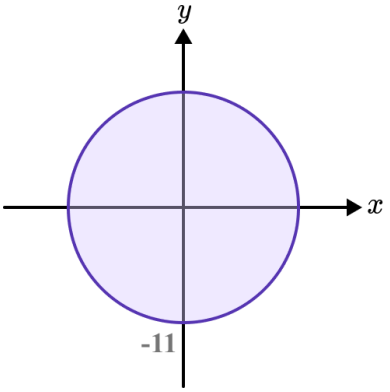


12)



Group C - Using the equation of a circle

Sketch these:

1) $x^2 + y^2 = 4$

2) $x^2 + y^2 = 9$

3) $x^2 + y^2 = 1$

4) $x^2 + y^2 = 49$

5) $x^2 + y^2 = 25$

6) $x^2 + y^2 = 81$

7) $x^2 + y^2 = 144$

8) $x^2 + y^2 = 121$

9) $x^2 + y^2 = 196$

10) $x^2 + y^2 = 324$

11) $x^2 + y^2 = 289$

12) $x^2 + y^2 = 400$

Circle Graphs - Worksheet

Applied

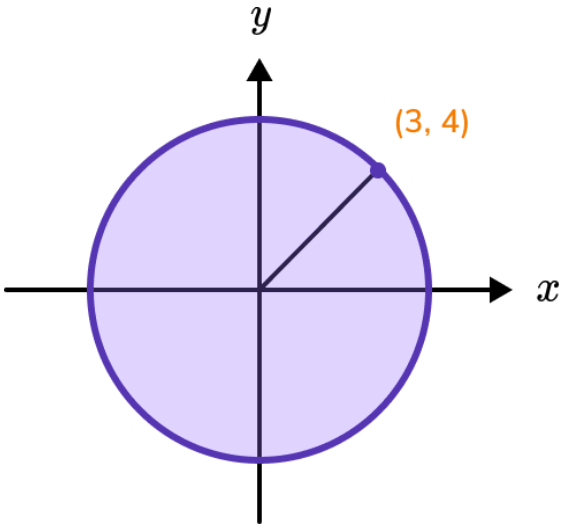
1) **(a)** Calculate the diameter of the circle with the equation $x^2 + y^2 = 25$.

(b) Calculate the diameter of the circle with the equation $x^2 + y^2 = 64$.

2) **(a)** What is the radius of the circle with the equation $x^2 + y^2 = 20$?
Give your answer in the form $a\sqrt{b}$.

(b) What is the radius of the circle with the equation $x^2 + y^2 = 48$?
Give your answer in the form $a\sqrt{b}$.

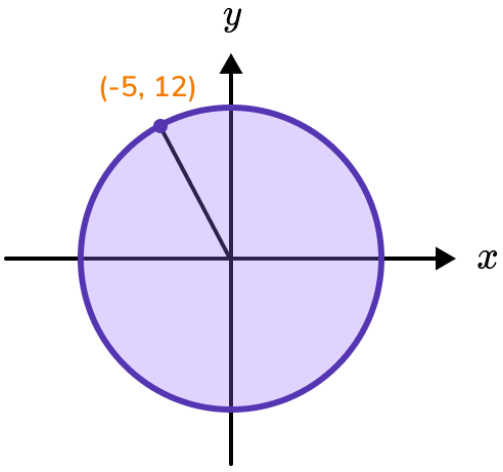
3) The point $(3, 4)$ lies on a circle with centre $(0, 0)$.



(a) What is the equation of the circle?

Circle Graphs - Worksheet

The point $(-5, 12)$ lies on a circle with centre $(0, 0)$.



(b) What is the equation of the circle?

4) (a) The point $(a, 6)$ lies on the circle $x^2 + y^2 = 100$.
Work out the values of a.

(b) The point $(12, b)$ lies on the circle $x^2 + y^2 = 169$.
Work out the values of b

Circle Graphs - Exam Questions

1) What is the diameter of the circle $x^2 + y^2 = 36$?
Circle your answer.

6 12 18 72

(1 mark)

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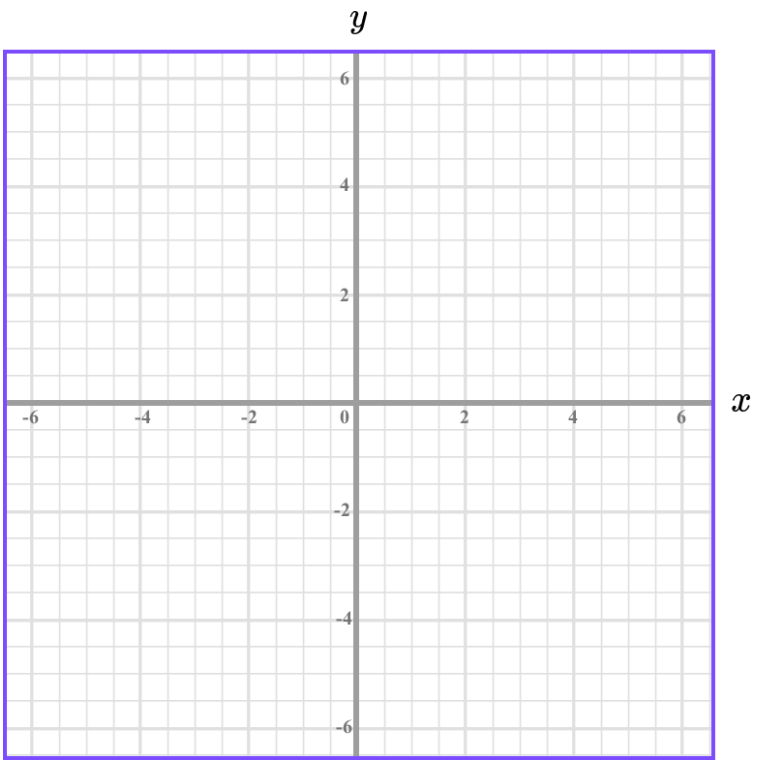
2) A point P $(10, -5)$ lies on a circle $x^2 + y^2 = 125$.
Find the equation of the tangent to the circle at point P.

.....

(3 marks)

Circle Graphs - Exam Questions

3) **(a)** On the grid, draw the graph of $x^2 + y^2 = 25$.



(2)

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

$x^2 + y^2 = 25$
$y = 2x + 1$

.....

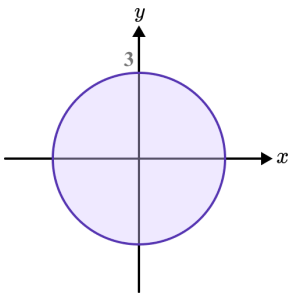
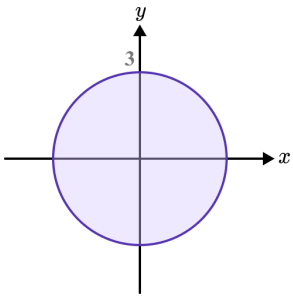
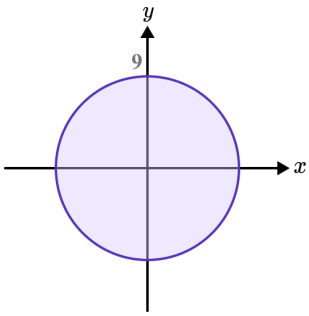
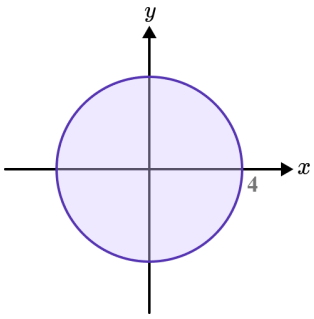
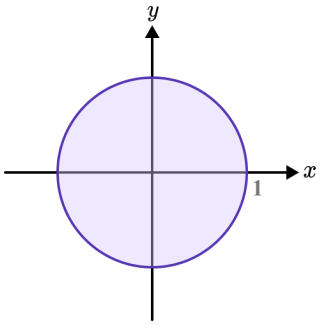
(3)

(5 marks)

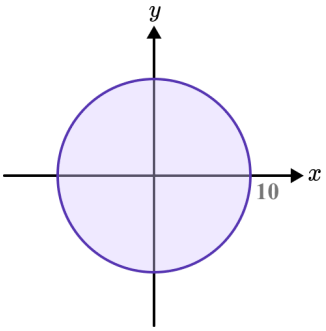
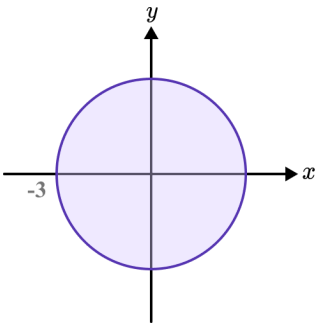
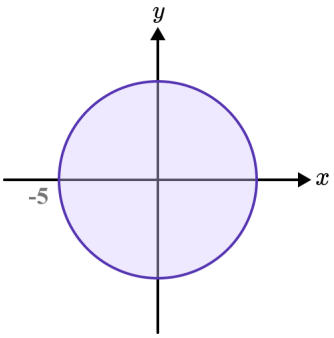
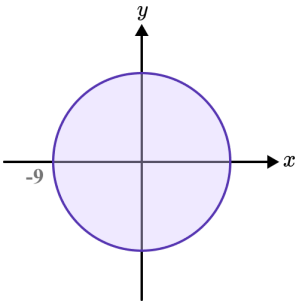
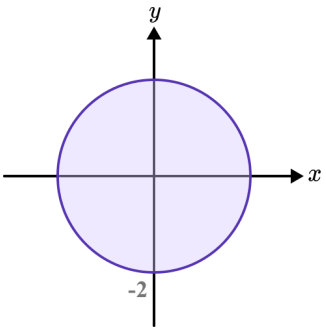
Circle Graphs - Answers

	Question	Answer
	Skill Questions	
Group A	Find the radius of the circle: **1)** $x^2 + y^2 = 16$ **2)** $x^2 + y^2 = 64$ **3)** $x^2 + y^2 = 1$ **4)** $x^2 + y^2 = 121$ **5)** $x^2 + y^2 = 49$ **6)** $x^2 + y^2 = 169$ **7)** $x^2 + y^2 = 225$ **8)** $x^2 + y^2 = 289$ **9)** $x^2 + y^2 = 256$ **10)** $x^2 + y^2 = 324$ **11)** $x^2 + y^2 = 400$ **12)** $x^2 + y^2 = 529$	**1)** 4 **2)** 8 **3)** 1 **4)** 11 **5)** 7 **6)** 13 **7)** 15 **8)** 17 **9)** 16 **10)** 18 **11)** 20 **12)** 23

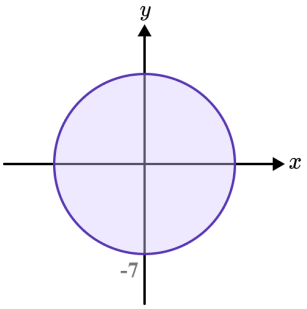
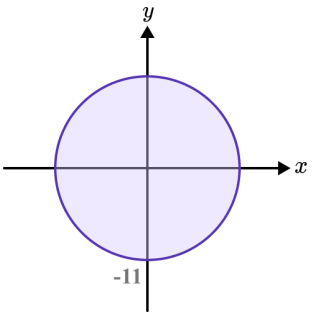
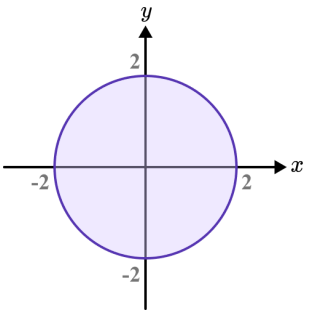
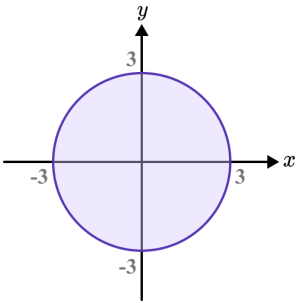
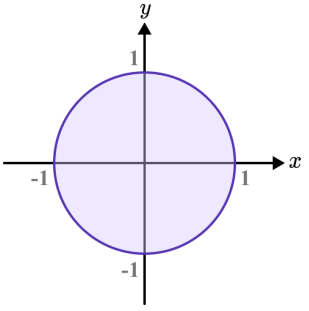
Circle Graphs - Answers

Group B	What is the equation of these graphs?	
	1) 	**1)** $x^2 + y^2 = 9$
	2) 	**2)** $x^2 + y^2 = 64$
	3) 	**3)** $x^2 + y^2 = 81$
	4) 	**4)** $x^2 + y^2 = 16$
	5) 	**5)** $x^2 + y^2 = 1$

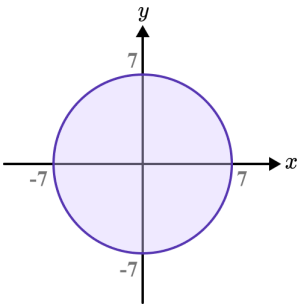
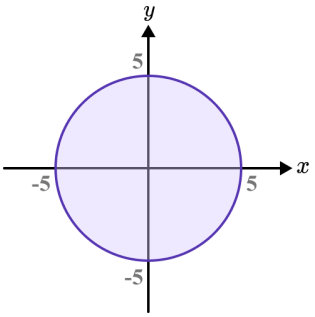
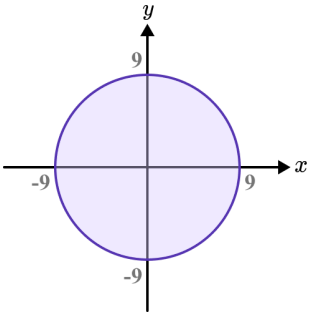
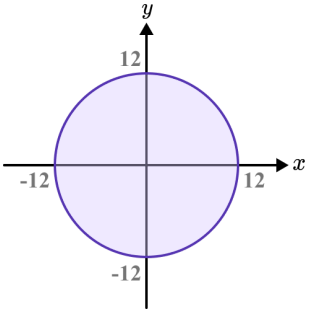
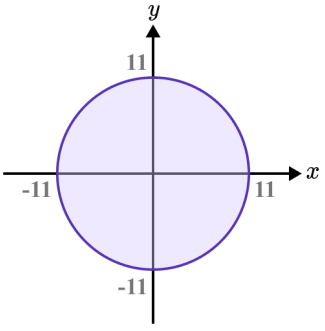
Circle Graphs - Answers

Group B contd	**6)** 	**6)** $x^2 + y^2 = 100$
	7) 	**7)** $x^2 + y^2 = 9$
	8) 	**8)** $x^2 + y^2 = 25$
	9) 	**9)** $x^2 + y^2 = 81$
	10) 	**10)** $x^2 + y^2 = 4$

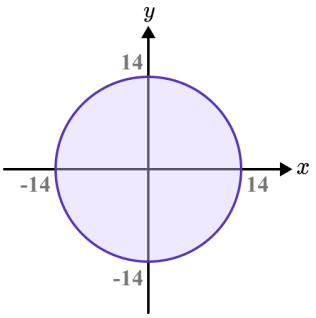
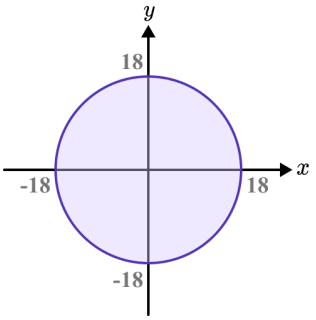
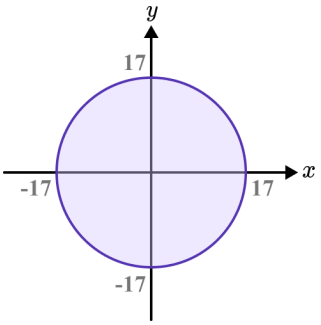
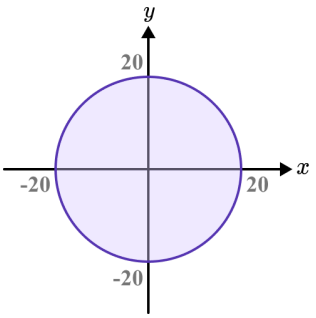
Circle Graphs - Answers

Group B contd	**11)** 	**11)** $x^2 + y^2 = 49$
	12) 	**12)** $x^2 + y^2 = 121$
Group C	Sketch these: **1)** $x^2 + y^2 = 4$ **2)** $x^2 + y^2 = 9$ **3)** $x^2 + y^2 = 1$	**1)**  **2)**  **3)** 

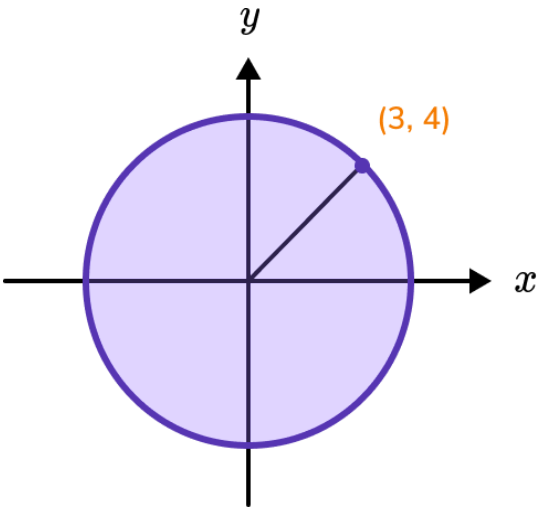
Circle Graphs - Answers

Group C contd	**4)** $x^2 + y^2 = 49$	**4)** 
	5) $x^2 + y^2 = 25$	**5)** 
	6) $x^2 + y^2 = 81$	**6)** 
	7) $x^2 + y^2 = 144$	**7)** 
	8) $x^2 + y^2 = 121$	**8)** 

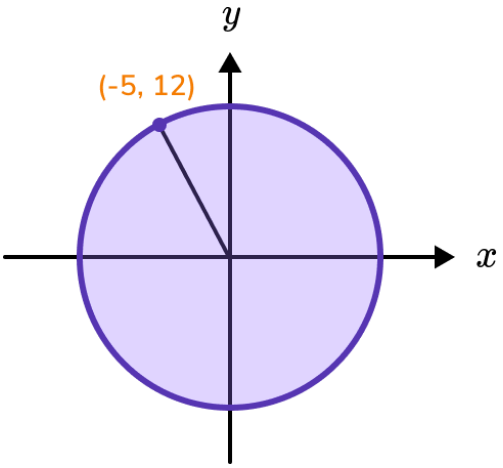
Circle Graphs - Answers

Group C contd	**9)** $x^2 + y^2 = 196$	**9)** 
	10) $x^2 + y^2 = 324$	**10)** 
	11) $x^2 + y^2 = 289$	**11)** 
	12) $x^2 + y^2 = 400$	**12)** 

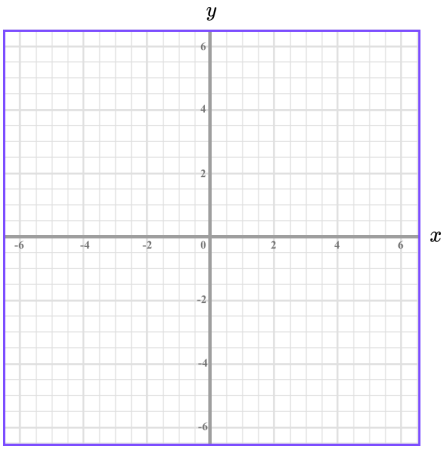
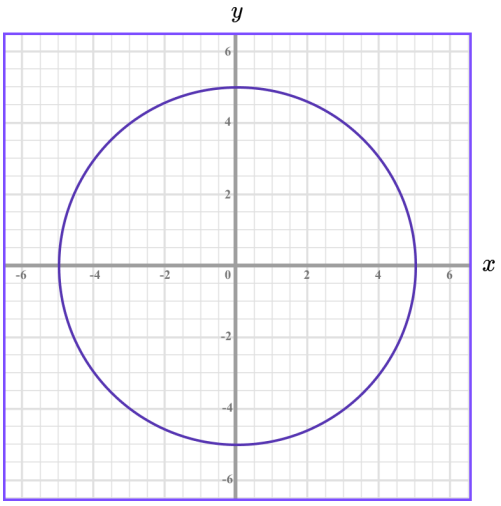
Circle Graphs - Answers

	Question	Answer
	Applied Questions	
1)	**a)** Calculate the diameter of the circle with the equation $x^2 + y^2 = 25$. **b)** Calculate the diameter of the circle with the equation $x^2 + y^2 = 64$.	**a)** Diameter $= 10$ **b)** Diameter $= 16$
2)	**a)** What is the radius of the circle with the equation $x^2 + y^2 = 20$? Give your answer in the form $a\sqrt{b}$. **b)** What is the radius of the circle with the equation $x^2 + y^2 = 48$? Give your answer in the form $a\sqrt{b}$.	**a)** Radius = $2\sqrt{5}$ **b)** Radius = $4\sqrt{3}$
3)	The point $(3, 4)$ lies on a circle with centre $(0, 0)$.  **a)** What is the equation of the circle?	**a)** $x^2 + y^2 = 25$

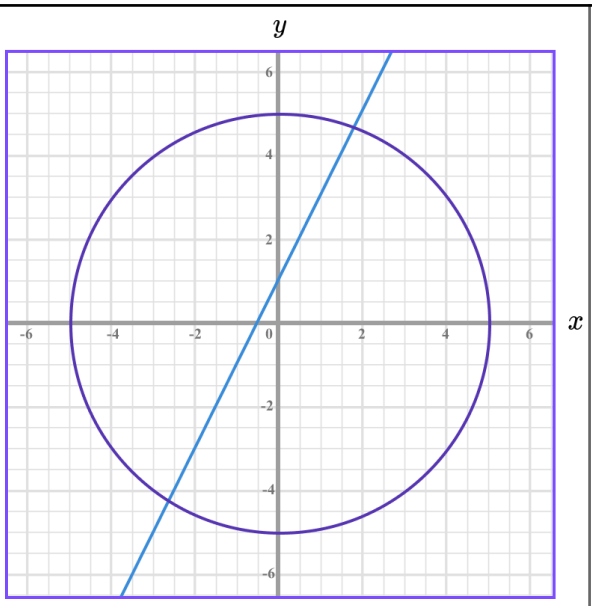
Circle Graphs - Answers

	The point $(-5, 12)$ lies on a circle with centre $(0, 0)$.  **b)** What is the equation of the circle?	**b)** $x^2 + y^2 = 169$
4)	**a)** The point $(a, 6)$ lies on the circle $x^2 + y^2 = 100$. Work out the values of a. **b)** The point $(12, b)$ lies on the circle $x^2 + y^2 = 169$. Work out the values of b	**a)** $a = \pm 8$ **b)** $b = \pm 5$

Circle Graphs - Mark Scheme

	Question	Answer	
	Exam Questions		
1)	What is the diameter of the circle $x^2 + y^2 = 36$? Circle your answer. 6 12 18 72	Radius is $\sqrt{36} = 6$ Diameter $= 2 \times 6 = 12$	**(1)**
2)	A point P $(10, -5)$ lies on a circle $x^2 + y^2 = 125$. Find the equation of the tangent to the circle at point P.	Gradient of OP (the radius) is $-\frac{1}{2}$ Gradient of the tangent is 2 $y = 2x - 25$	**(1)** **(1)** **(1)**
3) (a)	On the grid, draw the graph of $x^2 + y^2 = 25$. 	**(a)**  Circle with centre $(0, 0)$ Radius = 5	**(1)** **(1)**

Circle Graphs - Mark Scheme

(b)	Hence find estimates for the solutions of simultaneous equations: $x^2 + y^2 = 25$ $y = 2x + 1$	**(b)**  $y = 2x + 1$ correctly drawn $x = 1.8$ **and** $y = 4.7$ $x = -2.6$ **and** $y = -4.3$	**(1)** **(1)** **(1)**