The Circle 1

1. Write the equation of the circle with centre (0, 0) and radius:

(a) r = 5 (b) r = 7 (c) r = 15 (d) r = 12 (e) r = 1.5 (f) r = 0.2

2. Write down the equation of the circle using the information shown.

(a) Centre (3, 4), r = 1
(b) Centre (2, 7), r = 5
(c) Centre (1, 6), r = 1.5
(d) Centre (-1, 5), r = 6
(e) Centre (2, -3), r = 7
(f) Centre (-1, -5), r = 2
(g) Centre (-6, -3), r = 2.5
(h) Centre (0, 4), r = 3
(i) Centre (11, 0), r = 0.5

3. Write down the centre point and radius of each circle.

(a) $(x - 1)^2 + (y - 2)^2 = 25$
(b) $(x - 3)^2 + (y - 5)^2 = 36$
(c) $(x - 1)^2 + (y - 4)^2 = 81$
(d) $(x - 4)^2 + (y + 3)^2 = 20$
(e) $x^2 + (y - 3)^2 = 5$
(f) $(x + 12)^2 + (y - 2)^2 = 17$
(g) $(x + 2)^2 + (y + 5)^2 = 21$
(h) $(x + 3)^2 + (y + 6)^2 = 32$
(i) $(x + 2)^2 + y^2 = 18$

4. Each coordinate lies on one of the circles shown. Match the pairs together.

$(x - 2)^2 + (y - 3)^2 = 5$	(3, 0)
$(x - 5)^2 + (y + 1)^2 = 25$	(-1, -4)
$x^2 + (y - 2)^2 = 13$	(2, 4)
$(x + 1)^2 + (y - 1)^2 = 18$	(3, 5)
$(x - 5)^2 + y^2 = 16$	(2, 3)
$(x - 6)^2 + (y + 3)^2 = 50$	(5, -4)

5. Find the equation of the circle given centre, C, and point on the circumference, A.

(a) C(4,2), A(1,5)
(b) C(2,-6), A(4,-4)
(c) C(-7,-2), A(-1,6)
(d) C(-2,-3), A(0,3)
(e) C(5,-1), A(-2,4)

6. The point (k,5) lies on the circle with equation $x^2 + y^2 = 41$. Find two values for k.

7. The point (3,p) lies on the circle with equation $x^2 + y^2 = 21$. Find two values for p.

8. The point (2, a) lies on the circle $(x - 6)^2 + (y + 3)^2 = 20$.What are the possible values of a?

9. The point (-2, b) lies on the circle $(x + 1)^2 + (y - 4)^2 = 1$.What is the value of b? Explain why this has only one value when the previous questions had two.

10. (a) The equation of a circle is $(x + 2)^2 + (y - 5)^2 = 8$. Expand the brackets and rearrange to the form $x^2 + y^2 + px + qy + c = 0$.
(b) Write down the centre point of this circle.
(c) Make a comment about the centre point and the values of p and q.