

**G.G.71: Equations of Circles 2: Write the equation of a circle, given its center and radius or given the endpoints of a diameter**

- 1 Which equation represents a circle whose center is  $(3, -2)$ ?
  - 1)  $(x + 3)^2 + (y - 2)^2 = 4$
  - 2)  $(x - 3)^2 + (y + 2)^2 = 4$
  - 3)  $(x + 2)^2 + (y - 3)^2 = 4$
  - 4)  $(x - 2)^2 + (y + 3)^2 = 4$
- 2 Which equation represents circle  $O$  with center  $(2, -8)$  and radius 9?
- 3 What is an equation of a circle with its center at  $(-3, 5)$  and a radius of 4?
- 4 Which equation represents the circle whose center is  $(-2, 3)$  and whose radius is 5?
- 5 What is an equation of a circle with center  $(7, -3)$  and radius 4?
- 6 What is the equation of a circle with center  $(-3, 1)$  and radius 7?
- 7 What is an equation of the circle with center  $(-5, 4)$  and a radius of 7?
- 8 What is an equation of the circle with a radius of 5 and center at  $(1, -4)$ ?
- 9 The equation of a circle with its center at  $(-3, 5)$  and a radius of 4 is
- 10 What is the equation of a circle whose center is 4 units above the origin in the coordinate plane and whose radius is 6?
- 11 The center of a circular sunflower with a diameter of 4 centimeters is  $(-2, 1)$ . Which equation represents the sunflower?
- 12 A graphic designer is drawing a pattern of four concentric circles on the coordinate plane. The center of the circles is located at  $(-2, 1)$ . The smallest circle has a radius of 1 unit. If the radius of each of the circles is one unit greater than the largest circle within it, what would be the equation of the fourth circle?
- 13 Which equation represents a circle whose center is the origin and that passes through the point  $(-4, 0)$ ?
- 14 A circle whose center has coordinates  $(-3, 4)$  passes through the origin. What is the equation of the circle?
- 15 Which equation represents the circle whose center is  $(-5, 3)$  and that passes through the point  $(-1, 3)$ ?
- 16 What is the equation of the circle with its center at  $(-1, 2)$  and that passes through the point  $(1, 2)$ ?
- 17 The coordinates of the endpoints of the diameter of a circle are  $(2, 0)$  and  $(2, -8)$ . What is the equation of the circle?
- 18 The diameter of a circle has endpoints at  $(-2, 3)$  and  $(6, 3)$ . What is an equation of the circle?
- 19 Write an equation of the circle whose diameter  $\overline{AB}$  has endpoints  $A(-4, 2)$  and  $B(4, -4)$ .  
[The use of the grid below is optional.]
- 20 Write an equation of a circle whose center is  $(-3, 2)$  and whose diameter is 10.

**G.G.71: Equations of Circles 2: Write the equation of a circle, given its center and radius or given the endpoints of a diameter****Answer Section**

1 ANS: 2 REF: 060008a

2 ANS:

$$(x - 2)^2 + (y + 8)^2 = 81$$

REF: 011212ge

3 ANS:

$$(x + 3)^2 + (y - 5)^2 = 16$$

REF: 060910ge

4 ANS:

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

REF: 011010ge

5 ANS:

$$(x - 7)^2 + (y + 3)^2 = 16$$

REF: 011116ge

6 ANS:

$$(x + 3)^2 + (y - 1)^2 = 49$$

REF: 010514b

7 ANS:

$$(x + 5)^2 + (y - 4)^2 = 49$$

REF: 081305ge

8 ANS:

$$(x - 1)^2 + (y + 4)^2 = 25$$

REF: 081110ge

9 ANS:

$$(x + 3)^2 + (y - 5)^2 = 16$$

REF: 081209ge

10 ANS:

$$x^2 + (y - 4)^2 = 36$$

REF: 061210ge

11 ANS:

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

REF: 060110b

12 ANS:

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

REF: 010912b

13 ANS:

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

REF: 061524ge

14 ANS:

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

REF: 011511ge

15 ANS:

$$(x+5)^2 + (y-3)^2 = 16$$

REF: 061306ge

16 ANS:

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

REF: 011423ge

17 ANS:

$$(x-2)^2 + (y+4)^2 = 16$$

$$\left( \frac{2+2}{2}, \frac{0+(-8)}{2} \right) = (2, -4) \quad \sqrt{(2-2)^2 + (-8-0)^2} = 8 = d$$

$$4 = r$$

$$16 = r^2$$

REF: 061428ge

18 ANS:

$$(x-2)^2 + (y-3)^2 = 16$$

REF: fall0820ge

19 ANS:

Midpoint:  $\left( \frac{-4+4}{2}, \frac{2+(-4)}{2} \right) = (0, -1)$ . Distance:  $d = \sqrt{(-4-4)^2 + (2-(-4))^2} = \sqrt{100} = 10$

$$r = 5$$

$$r^2 = 25$$

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

REF: 061037ge

20 ANS:

If  $r = 5$ , then  $r^2 = 25$ .  $(x+3)^2 + (y-2)^2 = 25$

REF: 011332ge