Name: _____

G.GPE.B.4: Circles in the Coordinate Plane

1 What are the coordinates of the center of a circle if the endpoints of its diameter are $A(8,-4)$ and $B(-3,2)$?
1) $(2.5,1)$
2) $(2.5,-1)$
3) $(5.5,-3)$
4) $(5.5,3)$

2 Segment AB is the diameter of circle M. The coordinates of A are $(-4,3)$. The coordinates of M are $(1,5)$. What are the coordinates of B?
1) $(6,7)$
2) $(5,8)$
3) $(-3,8)$
4) $(-5,2)$

3 Line segment AB is a diameter of circle O whose center has coordinates $(6,8)$. What are the coordinates of point B if the coordinates of point A are $(4,2)$?
1) $(1,3)$
2) $(5,5)$
3) $(8,14)$
4) $(10,10)$

4 The center of circle Q has coordinates $(3,-2)$. If circle Q passes through $R(7,1)$, what is the length of its diameter?
1) 50
2) 25
3) 10
4) 5

5 In circle O, a diameter has endpoints $(-5,4)$ and $(3,-6)$. What is the length of the diameter?
1) $\sqrt{2}$
2) $2\sqrt{2}$
3) $\sqrt{10}$
4) $2\sqrt{41}$

6 In the coordinate plane, the points $(2,2)$ and $(2,12)$ are the endpoints of a diameter of a circle. What is the length of the radius of the circle?
1) 5
2) 6
3) 7
4) 10

7 A circle whose center is the origin passes through the point $(-5,12)$. Which point also lies on this circle?
1) $(10,3)$
2) $(-12,13)$
3) $(11,2\sqrt{12})$
4) $(-8,5\sqrt{21})$

8 A circle has a center at $(1,-2)$ and radius of 4. Does the point $(3.4,1.2)$ lie on the circle? Justify your answer.

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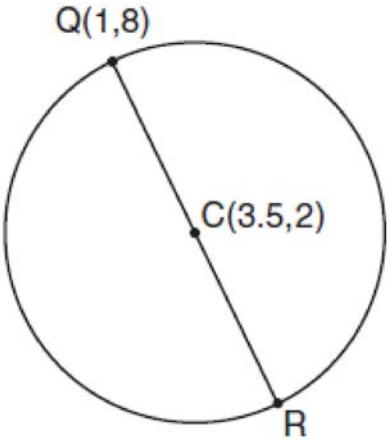
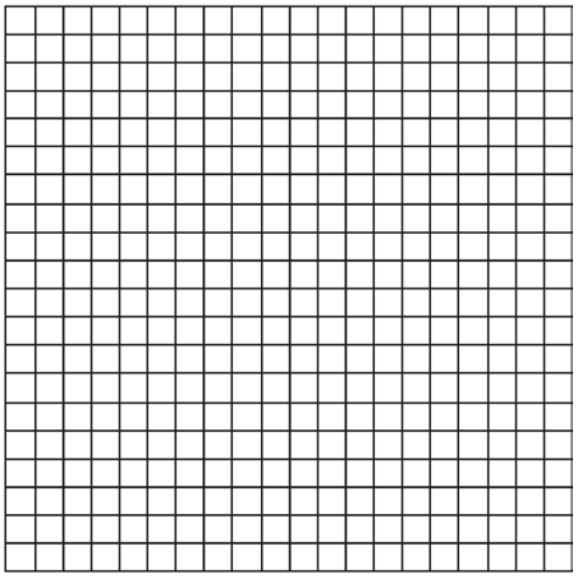
9 In circle O, diameter $\overline{RS}$ has endpoints $R(3a, 2b-1)$ and $S(a-6, 4b+5)$. Find the coordinates of point O, in terms of a and b. Express your answer in simplest form.

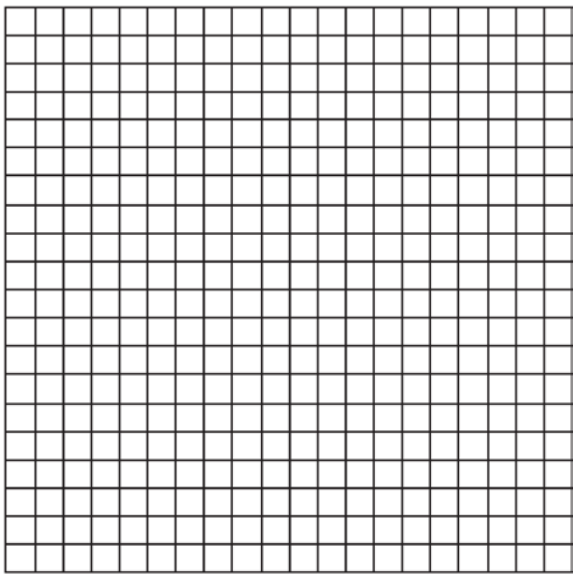
10 In the diagram below of circle C, $\overline{QR}$ is a diameter, and $Q(1,8)$ and $C(3.5,2)$ are points on a coordinate plane. Find and state the coordinates of point R.



11 In a circle whose center is $(2,3)$, one endpoint of a diameter is $(-1,5)$. Find the coordinates of the other endpoint of that diameter. [The use of the accompanying grid is optional.]



12 On the accompanying grid, graph a circle whose center is at (0,0) and whose radius is 5. Determine if the point (5,–2) lies on the circle.



G.GPE.B.4: Circles in the Coordinate Plane
Answer Section

1 ANS: 2

$M_x = \frac{8+(-3)}{2} = 2.5.\ M_Y = \frac{-4+2}{2} = -1.$

REF: 061312ge

2 ANS: 1

$1 = \frac{-4+x}{2}. \qquad 5 = \frac{3+y}{2}.$

$-4+x = 2 \qquad 3+y = 10$

$x = 6 \qquad y = 7$

REF: 081115ge

3 ANS: 3

$6 = \frac{4+x}{2}. \qquad 8 = \frac{2+y}{2}.$

$4+x = 12 \qquad 2+y = 16$

$x = 8 \qquad y = 14$

REF: 011305ge

4 ANS: 3

$r = \sqrt{(7-3)^2 + (1--2)^2} = \sqrt{16+9} = 5$

REF: 061503geo

5 ANS: 4

$d = \sqrt{(-5-3)^2 + (4-(-6))^2} = \sqrt{64+100} = \sqrt{164} = \sqrt{4}\sqrt{41} = 2\sqrt{41}$

REF: 011121ge

6 ANS: 1

Because the diameter is parallel to the *y*-axis, the length of the diameter may be calculated by subtracting the *y* values. If the diameter is 12 – 2 = 10, the radius is 5.

REF: 010426a

7 ANS: 3

$\sqrt{(-5)^2 + 12^2} = \sqrt{169} \quad \sqrt{11^2 + (2\sqrt{12})^2} = \sqrt{121+48} = \sqrt{169}$

REF: 011722geo

8 ANS:

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

$(3.4-1)^2+(1.2+2)^2=16$

$5.76+10.24=16$

$16=16$

REF: 081630geo

9 ANS:

$(2a-3,3b+2)$. $\left(\frac{3a+a-6}{2},\frac{2b-1+4b+5}{2}\right)=\left(\frac{4a-6}{2},\frac{6b+4}{2}\right)=(2a-3,3b+2)$

REF: 061134ge

10 ANS:

$(6,-4)$. $C_x=\frac{Q_x+R_x}{2}$. $C_y=\frac{Q_y+R_y}{2}$.

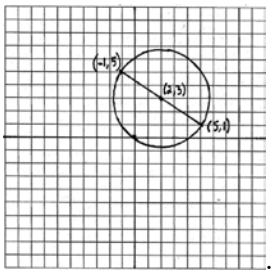
$3.5=\frac{1+R_x}{2}$ $\quad 2=\frac{8+R_y}{2}$

$7=1+R_x$ $\quad 4=8+R_y$

$6=R_x$ $\quad -4=R_y$

REF: 011031ge

11 ANS:

$(5,1)$. 

$C_x=\frac{A_x+B_x}{2}$. $C_y=\frac{A_y+B_y}{2}$.

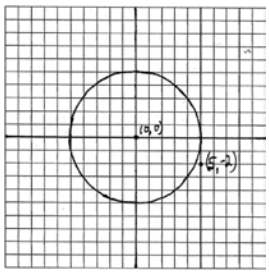
$2=\frac{-1+R_x}{2}$ $\quad 3=\frac{5+R_y}{2}$

$4=-1+R_x$ $\quad 6=5+R_y$

$5=R_x$ $\quad 1=R_y$

REF: 010633a

12 ANS:



The point (5,–2) does not lie on the circle.

REF: 080230a