

NAME: \_\_\_\_\_

1. Describe a real-world situation where circles are used.
2. Describe how you can use the center and one point on a circle to write an equation for the circle.
3. Write the equation of a circle that does *not* have its center at the origin.
4. Write an equation of the circle with center  $(a, b)$  and radius  $r$  and then describe the points inside and outside the circle.
5. Is the equation  $x^2 - 4x + y^2 + 6y - 12 = 0$  the equation of a circle? Explain.

Answers may vary. Sample: to show the area affected by an earthquake or the area in which a siren or horn will be heard

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Answers may vary. Sample: The equation of a circle with center  $(h, k)$  and radius  $r$  is  $(x-h)^2 + (y-k)^2 = r^2$ . Find the radius of the circle by using the distance formula to find the distance between the center and the given point. Then substitute  $h, k$  and  $r$  in the equation in standard form.

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Answers may vary. Sample:  $(x-2)^2 + y^2 = 4$

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$(x-a)^2 + (y-b)^2 = r^2$ ; the points inside the circle are less than  $r$  units from the center and the points outside the circle are greater than  $r$  units from the center.

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Yes, it can be written in the form  $(x-2)^2 + (y+3)^2 = 25$  by completing the squares.

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