

NAME

Technology Activity

For use with pages 636-640

GOAL To analyze the relationship between a circle and its equation

If you are given a circle in the coordinate plane, what is the equation of the circle? If you are given an equation of a circle, where is the circle located in the coordinate plane? In this activity you will determine the relationship between a circle and its equation.

Activity

- **1** Turn on the axes and grid.
- 2 Construct a circle with center C and a point on the circle labeled D.
- **3** Use the features of the geometry software to find the equation of the circle.
- **4** Drag the circle and observe the results.
- **5** Drag point *D* and observe the results.

Exercises

- 1. What is the relationship between a circle and its equation?
- 2. What is the center and radius of a circle with an equation of $(x + b)^2 + (y c)^2 = d$?

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- **3.** Name two points on the circle given by the equation $(x 3)^2 + (y 5)^2 = 16$ that have an x-coordinate of 2.
- 4. Determine if the following points are on the circle, inside the circle, or outside the circle if the equation of the circle is $(x - 1)^2 + (y + 2)^2 = 9$.

b. B(3, -3) **c.** C(-2, -1) **d.** D(-2, -2)**a**. A(0, 1)

Date



Technology Activity Keystrokes

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TI-92

- **1.** Turn on grid and axes.
 - **F8** 9 (Set Coordinate Axes to RECTANGULAR and Grid to ON.) **ENTER**
- **2.** Construct a circle with center *C* (at a grid point) and a point on the circle (at a grid point) labeled *D*.
 - **F3** 1 (Move cursor to a grid point.) **ENTER** C (Move cursor until circle is

desired size and at a grid point.) **ENTER** D

- **3.** Find the equation of the circle.
 - **F6** 5 (Place cursor on circle.) **ENTER**
- **4.** Drag the circle and observe the results.
 - **F1** 1 (Place cursor on *C*.) **ENTER** (Use the drag key and the cursor pad to drag the point.)
- **5.** Drag *D* and observe the results.

F1 1 (Place cursor on *D*.) **ENTER** (Use the drag key and the cursor pad to drag the point.)



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SKETCHPAD

- 1. Turn on the grid and axes by selecting **Snap to Grid** from the **Graph** menu.
- **2.** Use the compass tool to construct a circle with center C at a grid point with point D on the circle at a grid point.
- **3.** Use the selection arrow tool to select the circle. Find the equation of the circle by choosing **Equation** from the **Measure** menu.
- **4.** Use the translate selection arrow tool to select the circle and then drag it.
- 5. Use the translate selection arrow tool to select *D* and then drag it.

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