Name $\qquad$

## 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 $(x+b)^{2}+(y-c)^{2}=d$ ?
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 $(x-1)^{2}+(y+2)^{2}=9$.
a. $A(0,1)$
b. $B(3,-3)$
c. $C(-2,-1)$
d. $D(-2,-2)$
$\qquad$

## 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.)

Name $\qquad$ Date $\qquad$

## Technology Activity Keystrokes

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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.
