# MiniLAB

## **EXPLORE ECCENTRICITY**

#### How does eccentricity of an ellipse change as

#### the radius changes?

Eccentricity is the ratio of the distance between

the foci to the length of the major axis. In other words, how oval the ellipse is.

How does this change as the size of the ellipse changes?

### Procedure 🚾 🛐 🖾 🐮

- 1. Gather the following materials: piece of cardboard, string (or a shoelace, ribbon or floss),1 piece of paper, 2 push pins (or nails or anything you can put into the cardboard), colored pencils (or different colored pens, markers, crayons), ruler
- 2. Tie a 30 cm piece of string into a loop that fits on a piece of cardboard when it is laid out in a circle.
- 3. Place a sheet of **paper** on the cardboard.
- 4. Stick two **pins** through the paper close to the center but separated from each other by 5 centimeters. Use caution when using sharp objects!
- 5. Loop the string over the pins and use the pencil to trace around them. Keep the string taut. Label this diagram 5 centimeters.
- 6. Repeat steps 5 and 6 changing the distance between the pins to 2 centimeters and then 0.4 centimeters. Use a different colored pencil each time. Be sure to keep one pin in the same position each time, only moving one of the pins to change the distance between them. Be sure to label each of these diagrams as 2 centimeters and 0.4 centimeters, respectively.

#### Analysis

1. **Identify** what the two pins represent.

Write your answer here:

2. Explain how the eccentricity changes as the distance between the pins changes.

Write your answer here:

**3. Predict** the shape of the figure formed and the eccentricity if the two pins were at the same location.

Write your answer here:

