ACTIVITY 10.6

Developing Concepts

Group Activity for use with Lesson 10.6

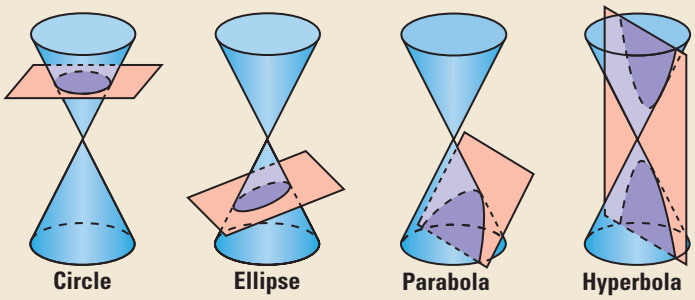
Exploring Conic Sections

GROUP ACTIVITY
Work with a partner.

MATERIALS
- flashlight
- graph paper
- pencil

QUESTION **How do a plane and a double-napped cone intersect to form different conic sections?**

EXPLORING THE CONCEPT **The reason that parabolas, circles, ellipses, and hyperbolas are called *conics* or *conic sections* is that each can be formed by the intersection of a plane and a double-napped cone, as shown below.**



The beam of light from a flashlight is a cone. When the light hits a flat surface such as a wall, the edge of the beam of light forms a conic section.

Work in a group to find an equation of a conic formed by a flashlight beam.

1. On a piece of graph paper, draw x- and y-axes to make a coordinate plane.
2. Tape the paper to a wall.
3. Aim a flashlight perpendicular to the paper so that the light forms a circle. Move the flashlight so that the circle is centered on the origin of the coordinate plane.
4. Holding the flashlight very still, trace the circle on the graph paper. Find the radius of the circle and use it to write the standard form of the equation of the circle.
5. Aim the flashlight at the paper to form an ellipse with a vertical major axis and center at the origin. Trace the ellipse and find the standard form of its equation.

DRAWING CONCLUSIONS

1. Compare the equation of your circle with the equations found by other groups. Are your equations all the same? Why or why not?
2. Compare the equation of your ellipse with the equations found by other groups. Are your equations all the same? Why or why not?