

## INFORMATION CENTER

### Choose a graphic image.

Choose an image that has a distinct contour and can fit comfortably onto the Polar Coordinate Graph.

### Trace your image onto the Polar Coordinate Graph.

Center your image so that the center of the graph (the *pole*) is near the center of your image and trace it onto the Polar Coordinate Graph.

### Determine the polar coordinates for the image.

Now you need to determine the polar coordinates of each point at which your image intersects the angles of the Polar Coordinate Graph.

- Review of polar coordinates  
To represent any point in polar coordinates, first find the *polar distance*: how far it is from the *pole*, the vertex of all the angles. Then identify the angle the point is on. (Angles are measured in a counterclockwise direction from the horizontal line that corresponds to the positive  $x$ -axis in the Cartesian coordinate system.) The polar coordinates for the point are given by an ordered pair, with the distance from the pole written first and then the angle.
- Establishing a scale for the polar distances  
Determine what distance from the center each circle on the polar graph will represent. First look at the number/note reference key on your Polar Coordinate/Musical Note Interface worksheets. Use this key to turn the polar distances into notes. What is the highest number you see on the key? Now examine your image on the Polar Coordinate Graph and locate the point farthest from the center. How many circles from the center is this point? Based on this information, decide what polar distance each circle should represent.
- Dividing duties within your group  
Let one person in your group find the polar distances for every 10 degrees from 0 to 180 degrees and another find the distances from 190 to 360 degrees. Note the distance of your image from the pole along the 0-degree line; record that distance, rounded to the nearest whole number, under "0°" on the interface worksheet. This number is the first note of the melody. The number corresponding to the second note is determined by the point at which the image

**Information Center (continued)**

outline intersects the 10-degree line. Transfer the distances for all intersection points to the space below the appropriate angles on the coordinate/note interface chart.

**Convert the polar coordinates to musical notes.**

Musical notes can be thought of like numbers on a number line. For this activity each note has been assigned a number. The number/note reference key shows the musical notation for notes corresponding to polar distances. Draw the corresponding note on the staff directly above each polar distance.

**Give the notes rhythm and accompaniment.**

The notes for your image could be played right off the chart as written, but will be more interesting if you give them a rhythm and an accompaniment. Your teacher will explain guidelines for this.