

# Vanishing Points

### **Overview:**

Students see how distance affects visual perception. Activity (A) uses vanishing points to illustrate the illusion of distance and depth. Activity (B) demonstrates that distance from an object affects the visual perception of the size of an object. Learning about vanishing points helps students understand shapes of the aurora, such as the corona which appears to touch at the center, and arcs which appear to touch the horizon.

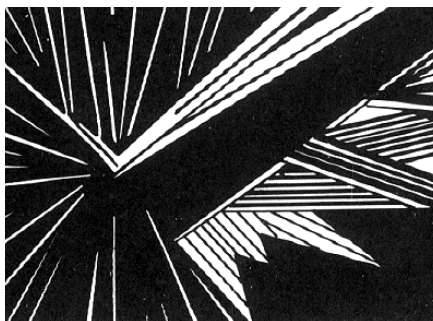
### **Objectives:**

The student will:

- examine the effect of distance and depth on visual observations;
- discover why human sight can result in misleading information and why other methods of data collection (technology) are needed for scientific research; and
- conclude that the corona shape of the aurora is an optical illusion.

### **Materials:**

- Scissors
- Tape
- Tape measure
- VISUAL AID: “Vanishing Points”
- VISUAL AID: “Corona”
- VISUAL AID : “Rayed Bands”
- STUDENT WORKSHEET: “Vanishing Points”
- STUDENT WORKSHEET: “Distance and Depth”



# Vanishing Points

### **Activity A - Procedure:**

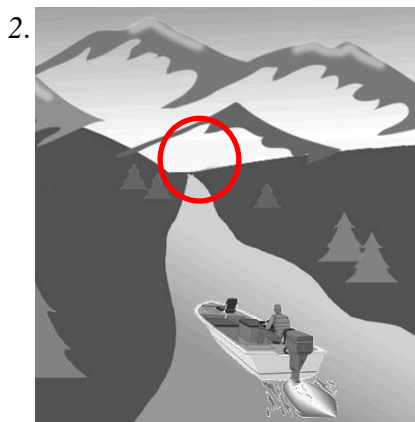
1. Hand out the STUDENT WORKSHEET: “Vanishing Points” and use VISUAL AID: “Vanishing Points” to discuss optical illusions. Explain artists use the term “vanishing point” to describe the place where receding lines appear to meet as they continue off into the distance. Explain artists use vanishing points when drawing an optical illusion.
2. Using the same VISUAL AID, help students find the vanishing points in each illustration. Ask students how each picture creates the appearance of depth and distance. Explain objects, such as trees, appear larger in the foreground and smaller toward the vanishing point.
3. Ask students to pretend to travel in the picture examples. Do the trees really get smaller and the river narrower the farther up river they travel by boat? Ask students if they have seen a railroad track. Does the track get smaller in the distance or stay the same? (Make sure students understand that railroad tracks are parallel and do not come close together.)
4. Show VISUAL AID: “Corona.” Explain the rays of the aurora only appear to come together in the distance. Help students identify the vanishing point in the center of the corona shape.
5. Show VISUAL AID: “Rayed Bands.” Explain that the corona shape is really a Rayed Band shape seen from underneath.
6. Ask students to complete all questions on their worksheets.

### **Activity B - Procedure:**

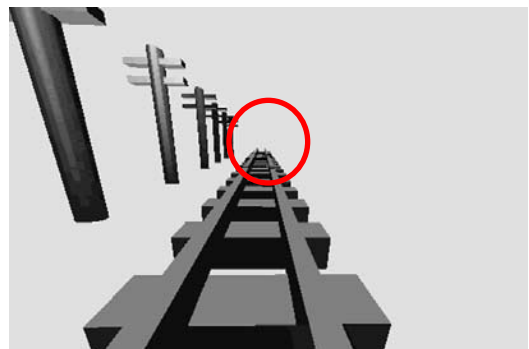
1. Hand out the STUDENT WORKSHEET: “Distance and Depth” and ask students to follow the directions.
2. When students have completed the activity, ask them to use a tape measure to determine at what distance the small circle looked about the same size as the large circle. At what distance did the small circle appear larger than the one on the wall?

### **Answers to Student Worksheet:**

1. *B. corona*



3.



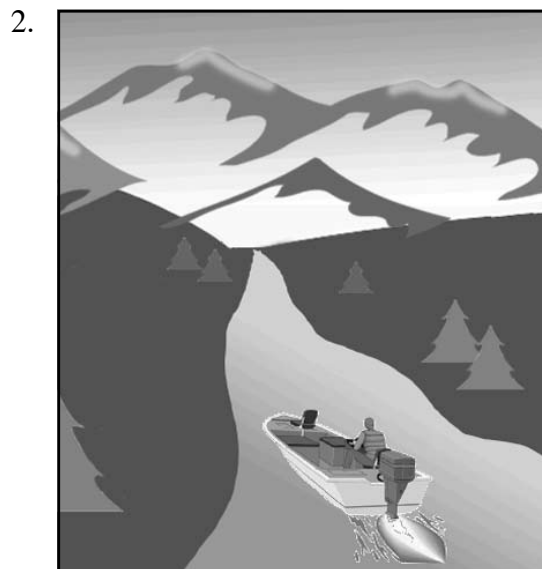
4. *true*

## Vanishing Points

**Circle the correct answer:**

1. Which aurora shape is an optical illusion?  
(Hint: It is the rayed band shape seen from underneath.)
  - A) quiet arc
  - B) corona
  - C) long aurora rays
  - D) patches

Circle the vanishing point in each scene below:



4. True or False: The bars of light of the corona shape aurora appear to come together in the middle, but they actually do not.

## Distance and Depth

**Appearance is affected by distance and depth.**

***Directions:***

1. Cut out both circles.
2. Tape the larger circle to the wall.
3. Hold the small circle in your hand.
4. Compare the circles as you slowly begin to back away.
5. Talk with a partner about the size relationship of the circles. Do they really change sizes as one gets closer, or is this only an optical illusion?

