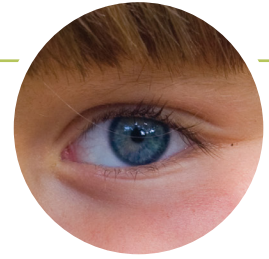


# Ocular Dominance

## A Carolina Essentials™ Activity



### Overview

This short, individual engagement activity introduces the senses, sensation and perception, and evolutionary differences in predator-prey relationships. Students differentiate binocular vision and panoramic vision, determine their own ocular dominance, calculate class data percentages, and determine if a relationship appears to exist between ocular dominance and handedness.

**Life Science**  
**Grades: 8–12**

### Essential Question

How does the brain process information from both eyes?

### Activity Objectives

1. Determine individual student ocular dominance.
2. Analyze class data to determine group ocular dominance.
3. Determine if there is a relationship between ocular dominance and handedness.

### Next Generation Science Standards\* (NGSS)

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
<b>Planning and Carrying Out Investigations</b> <ul style="list-style-type: none"><li>• Conduct an investigation to produce data to serve as the basis for evidence that meet the goals of the investigation.</li></ul>	<b>LS1.D: Information Processing</b> <ul style="list-style-type: none"><li>• Each sense receptor responds to different inputs (electromagnetic, mechanical, chemical), transmitting them as signals that travel along nerve cells to the brain. The signals are then processed in the brain, resulting in immediate behaviors or memories.</li></ul>	<b>Systems and System Models</b> <ul style="list-style-type: none"><li>• Systems may interact with other systems; they may have sub-systems and be a part of larger complex systems.</li></ul>

### Safety Procedures and Precautions

Ensure that students understand and adhere to safety practices. Know and follow all federal, state, and local regulations as well as school district guidelines for the disposal of laboratory wastes. Students should not eat, drink, or chew gum in the lab and should wash their hands after entering and before exiting the lab.

### Teacher Preparation and Disposal

Print or gather the images for the activity. Hang the images at student eye level around the room for easy access by several students at a time. Ensure students stand 2.5 to 3.0 meters (8 to 10 feet) from the image. Prepare a class data table with columns for student, ocular dominance, handedness, and match/nonmatch.

### TIME REQUIREMENTS



**PREP** | **ACTIVITY**  
15 min | 15-30 min

**Teacher Prep:** 15 min

**Student Activity:** 15-30 min

### SAFETY REQUIREMENTS

No PPE required

### MATERIALS (PER GROUP)

5 or 6 geometric images in black and white printed on 8.5" × 11" paper (circles, squares, rectangles, or triangles)—filling the center of the paper; or graphics already in the room

Masking tape

Meter stick, yard stick, or measuring tape

### REFERENCE KITS

[Carolina Visual Perception Kit](#)

# Ocular Dominance

## A Carolina Essentials™ Activity

### Student Procedure

1. Locate an activity image close to you.
2. Stand directly on the line with a clear, straight-ahead view of the graphic.
3. Raise your arm to shoulder height with your arm fully extended in front of you and your thumb pointing up.
4. With both eyes open, hold your thumb at arm's length and "cover" the object with your thumb.
5. Close your right eye.
6. If your thumb appeared to move to the right, the right eye is dominant. If your thumb did not seem to move, your left eye is dominant.
7. Repeat step 5 using the left eye.

### Teacher Preparation and Tips

*Hang geometric images or select in-class images that are at student eye level. Note: You may laminate the images for multiple use.*

*Measure 8 to 10 meters from the image and place a masking tape line on the floor.*

*Clear the visual path from the line to the image.*

*Ensure students are standing directly in front of the image and not to the side.*

*Prepare a class data table on the board, computer, document camera, or an overhead transparency. Headings: Student, Ocular Dominance, Handedness, and Match/Nonmatch.*

### Data and Observations

Eye	Type of movement
Right eye closed	To the right or no movement
Left eye closed	To the left or no movement

### Analysis and Discussion

Ask students the following questions:

1. Which type of ocular dominance do you have? (right eye dominant, left eye dominant, or none) Student answers will vary.
2. Are you right-handed, left-handed, or ambidextrous? Student answers will vary. The choices are right-handed, left-handed, and ambidextrous.
3. Does your ocular dominance match your handedness? Student answers will vary.
4. Record your information on the class data table. Data table columns for class data: Student, Ocular Dominance, Handedness, Match/Nonmatch.
5. Calculate the percentage of right, left, and no ocular dominance. To calculate percentage, add the number of students with right ocular dominance and divide by the total number of students. Repeat for left dominance and no dominance.  
% = number of students in the group/total number of students
6. Calculate the percentage of right- and left-handedness. % = number of students in the group/total number of students
7. Were your class proportions what you expected they would be? If your class proportion is different, why do you think this was so? It is estimated that about two-thirds of all people have a dominant right eye, and one-third have a dominant left eye. In rare cases, neither eye is dominant. Communicate these proportions to students again. Student answers will vary.
8. Based on the class proportions, does there seem to be a relationship between ocular dominance and handedness? Use data to justify your answer. Student answers will vary based on calculated percentages, but ocular dominance is independent of handedness.

# Ocular Dominance

*A Carolina Essentials™ Activity*

## TEACHER NOTES