

# C O N T E N T S

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## Common Core State Standards .....

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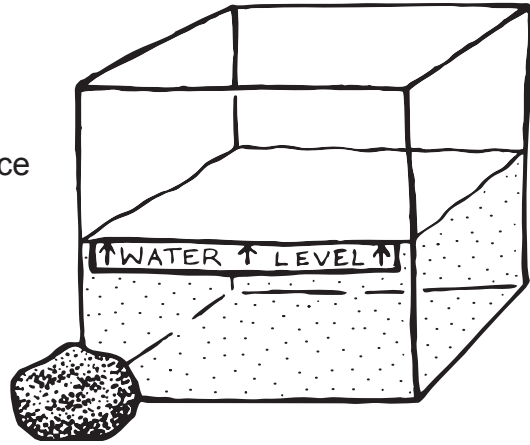
# BOATS AND BARGES

## ARCHIMEDES—SCIENTIST, MATHEMATICIAN, INVENTOR

Archimedes (Are-kim-e-dees) lived in Greece long ago. He solved problems. He figured out why some things float and others sink. His discovery is now called *Archimedes' Principle*. People say he figured it out one day while taking a bath!

### TESTING ARCHIMEDES' PRINCIPLE

1. Fill a container halfway with water.
2. Mark the level of water in the container with a piece of tape.
3. Make a ball using one ounce of clay and place it in the water. Does it sink? It should.
4. Now, flatten out that ball of clay and try again. It should float and it will take up less space in the water!



How would you explain *displacement*? Can you illustrate displacement?

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# AMPLIFYING SOUNDS

**Directions:** Work in teams of two to demonstrate the fact that when sound is concentrated and focused toward the human ear, it is easier to hear. Some sounds seem louder because other sounds are blocked.

## TEAM MATERIALS

- 18" × 12" construction paper or tag board
- paper towel tubes (one per student)
- (one per student)
- plastic wrap
- masking tape
- rubber bands
- markers or colored pencils
- scissors

## MAKE A HEARING AID

1. Find a clean, dry paper towel tube and hold the tube against your ear.
2. Ask your partner to whisper something into the tube and then to speak in a normal voice into the tube.
3. Compare your partner's whisper to his or her normal voice. Describe the difference.



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4. How well did you hear your partner's voice?

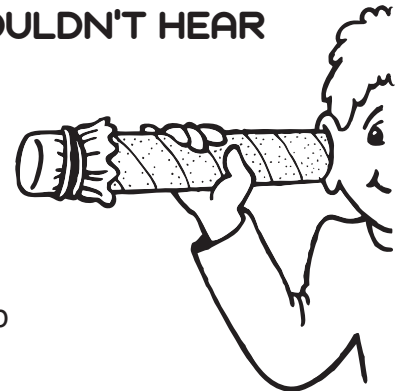
**CLEARLY**

**WITH DIFFICULTY**

**COULDN'T HEAR**

## MODIFY AND TEST THE HEARING AID

1. Fold a piece of plastic wrap around one end of the tube. Make the wrap tight over the opening. Hold the plastic wrap in place by holding the edges down with a tight rubber band.
2. While you hold the tube next to your ear, have your partner tap lightly on the plastic wrap with his or her fingernail or a pencil. Describe the sound you hear.



**THINK:** Is the sound clear?    **YES**    **NO**    Is the sound loud?    **YES**    **NO**

How would you describe it? \_\_\_\_\_

3. Why do you think the tube (covered or uncovered) helps you hear some sounds better?

\_\_\_\_\_

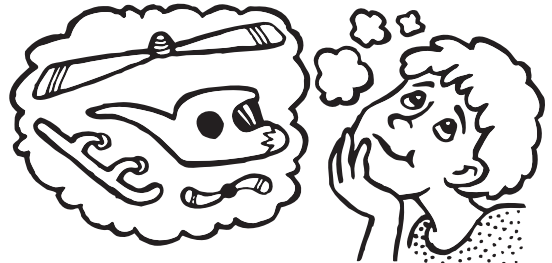
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# MAKING HELICOPTERS

## DESIGN YOUR OWN HELICOPTER

1. Think about a helicopter you would like to make. You could make it bigger, smaller, wider, or shorter than the first two you made. Consider one of the following variations, or one of your own:

- different lengths or widths for the rotor blades
- three or four rotor blades instead of two
- a different body shape
- more weights or a different type of weight



2. Draw a pattern and describe your design.

**HELICOPTER DESIGN 3**

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**DESCRIPTION**

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3. Build your helicopter.
4. Test your helicopter, and make adjustments as needed. Explain the adjustments you made.

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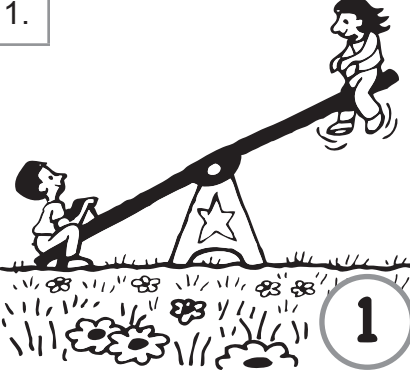

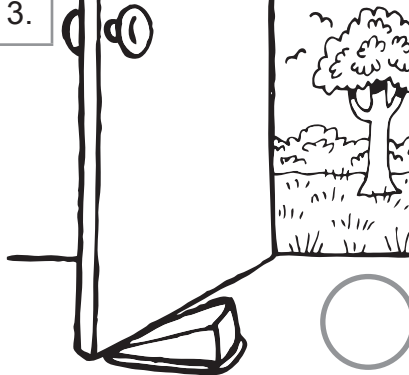
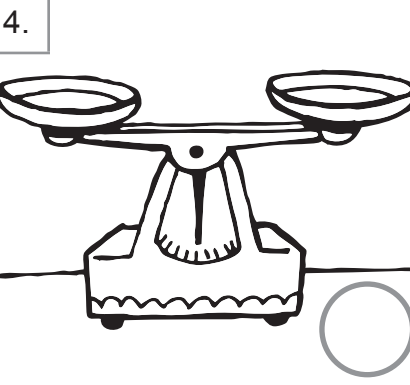

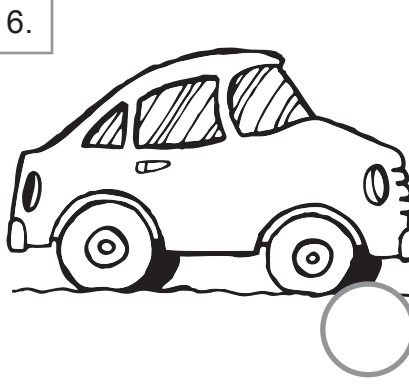
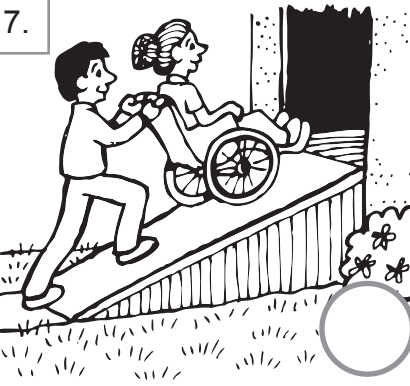
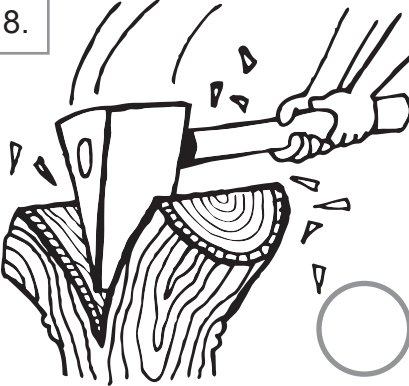
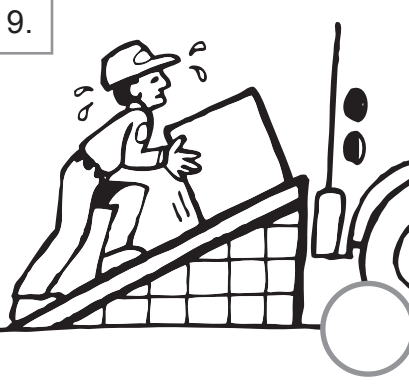
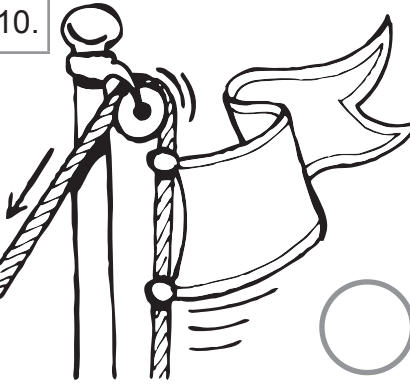
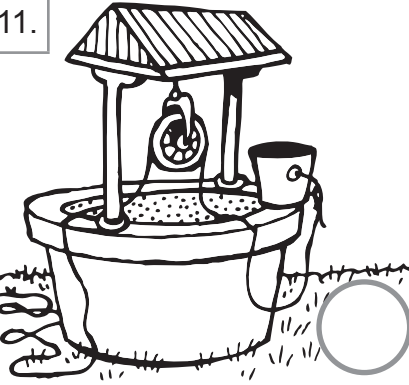
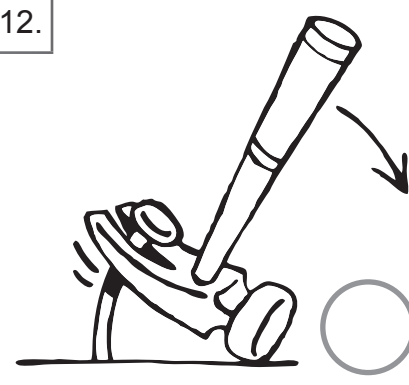
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# SIMPLE MACHINES

**Directions:** Use with page 114. Look at the pictures of machines we use. Write the number of the simple machine you see from page 114. The first one has been done for you.

|  |   |  |
|--|---|--|
| <p>1.</p>  <p>1</p> | <p>2.</p>     | <p>3.</p>     |
| <p>4.</p>          | <p>5.</p>    | <p>6.</p>    |
| <p>7.</p>         | <p>8.</p>   | <p>9.</p>   |
| <p>10.</p>        | <p>11.</p>  | <p>12.</p>  |