TO SINK OR NOT TO SINK

BENCHMARK and TASKS

SC.A.1.1.1 The student knows that objects can be described, classified, and compared by their composition (e.g., wood or metal) and their physical properties (e.g., color, size, and shape).

- The student demonstrates that water can enable certain objects to float.
- The student classifies objects by their ability to float in water.

KEY QUESTION

What happens when objects are placed in water?

BACKGROUND INFORMATION

Water is one of our most vital natural resources. All living things require water to survive. Although it is the second most abundant substance on earth, the amount of fresh water available for use is very limited. Most of the water on the earth is salt water, which is found in the oceans and the seas.

Water is a liquid and flows easily. All liquids are able to flow, but some liquids flow faster than others. Water also has other observable properties:

- Water is transparent.
- Water is "sticky," causing water drops to combine when they meet.
- Water exerts pressure.
- Water can be poured.
- Water has mass.
- Water can dissolve some materials.
- Water can be absorbed.
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- Water can evaporate.
- Water can act as a filter.

Why objects float:

- Some objects have a density that is less than the density of water. The objects are buoyed up by the denser water and float.
- Some objects float by utilizing the surface tension of water.
- Other objects float because their shape allows them to displace an amount of water equal to their weight.

MATERIALS

Teacher

teddy bear counter
penny
container of water
Sheep on a Ship by Nancy Shaw

Per group

any plastic container for holding water
newspaper
Float or Sink chart
red crayon
blue crayon
variety of objects for exploring sinking and floating

paper clip	rubber band
plastic toy key	metal key
plastic toy	Unifix cubes
vial with cap	meat tray

coin	straw
toothpick	pencil
cork	stone
ping-pong ball	golf ball

TEACHING TIPS

1. Have students cover their desks/tables with newspaper.
2. Tape materials for testing in the **object** column on the *Float or Sink* chart for each group or use the one with pictures. (This will allow groups to work independently from the teacher.)
3. Use additional materials for student experimentation.
4. You may choose to direct the Explore section one object at a time and have the students mark their predictions and discoveries at the same time rather than the groups working on their own.

ENGAGE

1. Read the book *Sheep on a Ship* by Nancy Shaw.
   Ask students what sank and what floated in the story.
2. Ask students to predict what they think will happen when a teddy bear counter is placed on the surface of the water. After students have made predictions, place the teddy bear counter in the water. Have students describe what happens. Use a penny to repeat the investigation, having students predict and describe what happens to the penny.
3. Define the terms "sink" and "float." Demonstrate each definition.
   Sink – to go beneath the surface or to the bottom
   Float – to rest on the surface of a liquid

EXPLORE

1. Be sure student desks are covered with newspaper or do the activity outside.
2. Distribute a *Float or Sink* chart, a container of water, and ten small objects to each group. (Make sure there is a good variety of objects of different sizes and shapes for both floating and sinking.)
3. Tell students to sort the objects into two groups – objects that they think will float on water and objects they think will sink in water. Students should record their predictions on the chart by making an X with a *red* crayon.
4. Students should test their predictions by placing each object, one at a time, in the container of water.
5. After determining whether an object sinks or floats, students can record their discoveries on the chart by making an X with a *blue* crayon.

Float or Sink?

Object	Float	Sink

EXPLAIN

Ask:

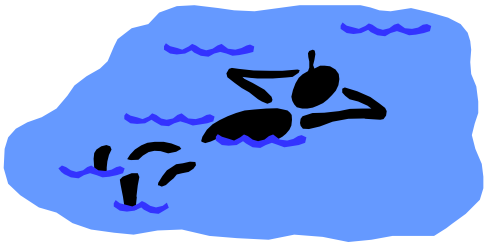
Were you surprised by any of the results of testing your objects?
Which objects floated?
Which objects did not float?
What was similar about objects that floated?
What was similar about objects that sank?
Does size affect floating?
Does shape affect floating?

EXTEND/APPLY

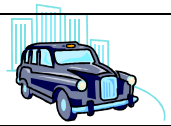
1. Ask:
   Can you make an object that floated, sink?
   Provide time for students to try to make floaters sink, then ask:
   What did you have to do to make it sink?
   What can you do to make something that sank, float?
2. Brainstorm a list of items that are useful because they float (e.g., life jackets, pool rings, rafts, etc.).

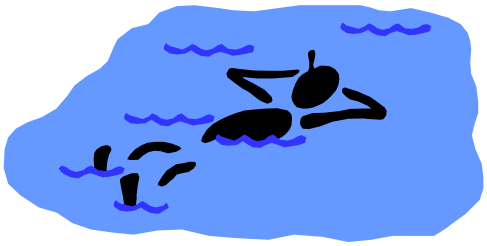
ASSESSMENT

- Provide the student with a limited variety of objects – some sinkers, some floaters.
- Ask the student to choose an item that he/she thinks will float.
- Have the student test the item in a bowl of water.
- Repeat the procedure for an item that sinks.



Float or Sink?

Object	Float	Sink
rubber band 		
paper clip 		
toy animal 		
toy car 		
interlocking cube 		
golf ball 		
pencil 		
rock 		
wiffle ball		
toothpick		
penny 		



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