



Ice Cube Exam

materials

Per student:

- 1 ice cube
 - 1 clear cup filled halfway with cold water
 - 1 piece of wax paper
 - 1 paper towel
 - 1 magnifying glass
- For Discussion:
- Globe
 - Picture of snowflake
 - Picture of iceberg or sea ice

background

Most students know that ice is made from water, but have not had experiences in examining the properties of ice. Water molecules are attracted to each other and stick together when they get close enough. The molecules have spaces between them and the spaces change depending on their temperature. When water freezes, the molecules form a hexagonal structure that is not flexible. The frozen molecules can't crowd together (as in the liquid form) and therefore take up more space when frozen. This changes the density; the density of water is 1.0 and ice is .92. Ice floats because it is not as dense as water. The molecules in water, because they are closer together, actually hold up the ice to make it float.

activity time:
20 minutes



directions

1. Place an ice cube on wax paper.
2. Use a magnifying glass to look at all sides of ice cube.
3. Write or state a prediction about where the ice will be once it is put in cup.
4. Put ice in the cup of water.
5. Use a magnifying glass to look at the water and ice.



discussion

- What is ice made of?
- How is ice made?
- Is ice a solid or a liquid?
- What parts of the world would you find ice? (Polar regions and glaciers in mountain ranges)
- What do you think happens to water molecules when they freeze? Show picture of ice crystals.
- Why does ice float? (Ice molecules have changed into a hexagon shape and can't fit together like water molecules)
- Was your ice cube above or below the water?
- Is more of it on top or below? (Around 90% of ice is below-show picture of iceberg)



vocabulary

Liquid - a substance that flows whose shape can be changed but not its volume

Solid - a substance that maintains its shape and size.



extension

Try this same experiment with salty ice cubes (3 tablespoons of salt to 1 cup water). Students will see salt crystals on the outside of the ice cubes. When water freezes, it pushes out the salt that is in the water. This happens in sea ice as well.



related activity

“Salty Water”

“Water Expansion”

alignment to national science standards

Unifying Concepts and Processes, Standards A, B, D, E

alignment to kansas science standards

Science as Inquiry: K-2: 1.1.1, 1.1.3, 1.1.4, 1.1.5; 3-4: 1.1.1, 1.1.3, 1.1.4; 5-7: 1.1.1, 1.1.2, 1.3.1

Physical Science: K-2: 2.1.3; 3-4: 2.1.1, 2.1.2 ,2.1.4; 5-7: 2.1.1, 2.1.3

Earth Science: K-2: 4.1.1 3-4: 4.1.3; 5-7: 4.1.1, 4.1.2

History and Nature of Science: K-2: 7.1.1; 3-4: 7.1.1