

Name _____

Conservation of Mass during Melting

How is an ancient game like a real-world phenomenon we see every day?

Chinese Checkers

After watching the marble demonstration, answer the following questions with your group.

1. What happened to make the marbles fall into place?

2. Could the jiggling stop and the marbles still be out of place? Give a real world example using water that is like this analogy. _____

3. Could you jiggle the board and the marbles still stay in place? Give a real world example using water that is like this analogy. _____

4. Think of the shape and nature of marbles. What is different about water molecules? _____

Melting Ice

5. Predict which weighs more, an ice cube or the puddle of liquid water it becomes when melted.

6. In the space below, draw a picture of what the particles (molecules) of an ice cube looks like before and after it melts. Be sure to show how the particles (molecules) are arranged and how they move.

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7. Why do you think your prediction is correct?

8. Next, take an ice cube from your teacher. Put it in a Styrofoam cup. Mass the cup and cube quickly. Then place it in a warm place in the room. Cover your cup with a square of paper to reduce evaporation.

9. Was there a change in mass during melting? _____

10. Think of the investigation you did in Lesson 2. Is the volume of ice different than the same amount of water? _____

11. Describe what happens at the molecule level during melting. Explain what happens to the mass of the ice cube when it melts.

12. Imagine melting a piece of butter on the stove. Which would weigh more – the solid butter or the liquid it melts into?

Thinking about Matter

13. What happens if you put a sealed bottle of water into the freezer to cool it quickly? Explain, using the results of your investigations in Lesson 2 and Lesson 3. Use the words “mass,” “volume,” and density in your answer.

14. You go into the freezer to get the special pizza you bought for yourself a month ago. It is covered with small ice crystals, which fall all over when you pull it out.

15. Look at the table below that shows the temperatures at which several substances are liquid. What does this tell you about the structure of these elements?

Temperature Ranged at which Selected Substances Are Liquid--° Celsius		
Substances	Lowest-Liquid	Highest-Liquid
Methane CH ₄	-182	-164
Water H ₂ O	0	100
Table Salt NaCl	801	1413
Mercury Hg	-39	357
Copper Cu	1083	2567
Iron Fe	1535	2750
