

Hot and Cold Balloons

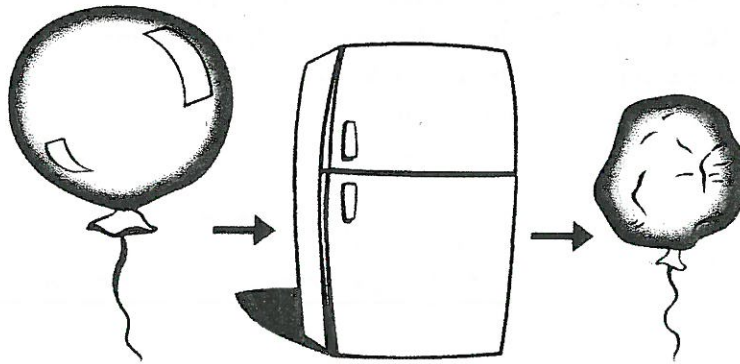
Name: _____ Date: _____ Period: _____

LT: I can use what I know about the movement of molecules at different temperatures and the effect of the movement on pressure to make an inference about a real world situation.

Physical Science and Nature of Science Assessment Probes



Hot and Cold Balloons



Moira filled a balloon with air. She tightly tied the balloon so no air could get in or out of the balloon. She kept the balloon in a warm room. An hour later she put the balloon in a cold freezer. When she took the balloon out 30 minutes later, it was still tied tightly shut. No air escaped from the balloon; however, the balloon had shrunk.

Moira wondered if the mass of the balloon (including the air inside it) also changed. Circle the answer that best matches your thinking.

- A The mass of the warm balloon is less than the mass of the cold balloon.
- B The mass of the warm balloon is greater than the mass of the cold balloon.
- C The mass of the warm balloon is the same as the mass of the cold balloon.

Describe your thinking. Provide an explanation for your answer.

The mass of the balloon has not changed. What has changed is the spacing of the gas molecules. The molecules are closer together, so there is not ~~the~~ as many collisions with the inside of the balloon causing it to "shrink".