

Crazy Quarter

AT A GLANCE:

Use the properties of air molecules to make a quarter dance and blow up a balloon with no hands!

STUDENTS WILL BE ABLE TO:

Demonstrate the process of science by posing questions and investigation phenomena through language, methods and instruments of science.

BACKGROUND INFORMATION:

When air gets cold, it contracts, or takes up less space. As it warms it expands, taking up more space.

DETAILED EXPLANATION:

By putting the bottle in the freezer, you cause the bottle becomes filled with cold air. This air is contracted. In other words, more air squeezes into the bottle. When the bottle is removed, the air inside warms and expands. This spreading out of the air molecules causes the quarter placed on top of the bottle to “dance” as the expanding air forces its way out.

MATERIALS:

- Empty 2-liter bottle
- Freezer
- Quarter
- Water

PROCEDURE:

1. Put the 2-liter bottle in the freezer for at least 30 minutes
2. Take the bottle out and place on a flat surface
3. Wet the quarter and place it on top of the bottle, covering the opening
4. Hold your hands around the sides of the bottle and wait while the air inside warms up
5. Watch your quarter dance!

Try this:

Fill a large bowl with ice and water. With an adult’s help, fill a 2-liter bottle with very hot (not boiling) water. Let the water set in the bottle for about 3 minutes, then pour it out. Stretch the end of a balloon over the mouth of the bottle. Set the balloon in the icy water.

What do you notice or observe?

What conclusions can you make?

What can you do differently next time?