Curiosity Guide #405
Basketball Science

Accompanies Curious Crew, Season 4, Episode 5 (#405)

Under Pressure

Investigation #1

Description

Pressure that ball!

Materials

- Basketball
- Air Pump
- Pressure gauge
- Inflation needle
- Cooler that is big enough to hold a basketball
- Bag of ice
- Meter stick

Procedure

1. Inflate the basketball to regulation pressure, which is about 8 pounds per square inch. Check the pressure with the pressure gauge.
2. Test to see how high the ball bounces when dropped from the height of a meter stick.
3. Open the bag of ice. Cover the bottom of the cooler with a layer of ice.
4. Set the basketball on top of the ice.
5. Pour the remaining ice around the ball.
6. Close the lid of the cooler.
7. Wait at least 30 minutes.

8. Remove the ball and drop the ball again.
9. What did you notice? Is the ball as firm?

My Results

Explanation

The air molecules that are in the ball are constantly in motion as they collide with each other and the wall of the ball. The more molecules there are, the more frequently the molecules hit each other and the ball. This is what we call pressure. When the air molecules are heated up, they move faster and increase the pressure in the ball. However, when the air molecules are cooled down, the molecules move more slowly. The molecules then hit each other and the wall of the ball less often and with less force. As a result, the ball seems "flat" and will not bounce back as well. Don't keep a basketball in a hot car! The heat will increase the pressure and make the ball too bouncy. You also shouldn't leave your ball outside on a winter day because the ball will feel flat when you want to use it.

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