Clay Center

GALLERY EXPLORATION

ACTIVE LEARNING GUIDE

HEALTHY ME

Basketball Potential Energy

Whenever you hold a ball in the air, the ball has an amount of **Potential Energy**. That means that the ball has stored energy because of its position in the air. If you were standing on the roof of your house and you held the ball out to drop it to the ground, the ball would have a lot of **Potential Energy**. However, if you only held the ball an inch above the ground it would have low **Potential Energy**. In this experiment, you will see how stored energy cause balls to bounce in certain ways.

If you drop a ball to the ground without forcing down, you will notice that the ball doesn't bounce up to the starting height. This is because when the ball is dropped, the **Potential Energy** is transferred into **Kinetic Energy** because it's moving. Whenever it hits the ground, some of that energy is left in the ground and the ball as heat. Therefore, the ball doesn't bounce all the way back up, some of the energy has been left behind on the ground. In this experiment you will be able to see some ways to transfer energy in unexpected ways.

What You Need:

- Two balls of different sizes (A basketball and tennis ball work very well)
- Masking Tape
- Tape Measure or Yard Stick

Activity Steps:

1. Mark a place on the wall with a small piece of masking tape so you can have a uniform drop height.
2. Drop the different balls and measure how high they bounce back. You'll notice that the balls never quite make it back to the same height.

Note: *Be sure to just drop the ball and not push it down like you are dribbling a ball. You don't want to add any additional force to the drop because that will skew the experiment.*

3. After you see how much energy is lost, place one ball on the top of the other ball and drop it. You want the balls to stay sitting on top of each other when they fall so this can take some practice to get it right.
4. If you've done the drop correctly, you should notice that:

a. The ball on the top should bounce higher than normal

b. The ball on the bottom should not bounce very high at all

5. You can even use a camera to make a video of the ball bounces so that you can go back and view your experiment again. Try switching out the balls for different sizes and materials and see how they bounce!