



## Curiosity Guide #403

### Kinetic Energy

Accompanies Curious Crew, Season 4, Episode 3 (#403)

#### Twin Pendulums

Investigation #6

#### Description

Demonstrate energy transfer with these super pendulums!

#### Materials

- 2 identical water bottles with caps
- Measuring cup
- Water
- String
- One 2 by 4 wooden board, cut into the following:
  - 2 blocks, 18 inches long
  - 2 blocks, 4 inches long
- 2 c-clamps
- Drill
- 4 screws
- Scissors
- Tape
- Measuring tape
- Table

#### Procedure

1. Measure and fill each bottle a quarter full of water. Set aside.
2. Screw each of the short wood blocks onto the end of the long blocks so that the short blocks are perpendicular to the long blocks. The short blocks will act as "feet."

3. Use the c-clamps to clamp the short blocks on the edge of a table so that each long block is vertical and separated by a distance of two feet.
4. Tie one end of a string around the top of one long block, stretch the string to the top of the second block, and tie the string off.
5. Secure the string with a piece of tape to prevent the string from sliding down the block.
6. Cut two lengths of string, each 12 inches long.
7. Tie a knot around the top of each bottle.
8. Hang each bottle by its string to the suspended string, spacing the two hanging bottles about 12 inches apart.
9. Pull one bottle back and let it swing.
10. Watch what happens. Does the second bottle begin to swing?  
Why?
11. What would happen if one of the strings was longer or one of the bottles had more water?

My Results

## Explanation

Pulling the bottle back creates potential energy. Letting the bottle swing transfers the potential energy to kinetic energy. Because the bottle's string is tied to the suspended string, some of the energy travels into the suspended string and into the string of the second bottle. As the energy moves, the second bottle begins to swing until both bottles have equal kinetic energy, and both bottles swing a similar amount. Eventually the first bottle stops swinging, and the second has more kinetic energy before the energy begins to transfer back again. The total energy doesn't change, but it does transfer through the string.

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