



Curiosity Guide #401

Center of Gravity

Accompanies Curious Crew, Season 4, Episode 1 (#401)

Quirky Corks

Investigation #6

Description

Try your skill at balancing a cork on the tip of a pin!

Materials

- Two large corks or small potatoes
- Two forks
- Two straight pins
- Bottle or jar

Procedure

1. Place the first cork in the top of a bottle or jar.
2. Insert one pin into the center of the first cork.
3. Insert the second pin into the second cork so that the head of the pin is in the cork and the tip sticks out.
4. Try to balance the tip of the pin of the second cork on the head of the pin in the cork in the jar.
5. Could you make the second cork balance?
6. To make the action easier, pierce the second cork on either side with each fork so the handles hang down on each side of the cork.
7. Try to balance the point of the pin of the second cork again.
8. Could you get the cork to stay, balancing on its pin? Why?

Additional challenge: You could try this with a pencil that has an eraser, a toothpick, and a piece of cut potato.

My Results

Explanation

When you first tried to balance the second cork on top of the first cork in the bottle, the center of gravity was above the point where the pins met, so the balancing cork was very unstable. Adding the forks to the second cork moves the center of gravity of this cork down below the point of contact and makes the system more stable.

Think about this: Have you ever seen a balancing bird toy that can balance its beak on the tip of your finger? The toy doesn't look like it should be able to balance, but because the wings extend in front of the beak, the body of the bird balances, with the center right at the beak.

What happens if an object has an open center, like a horseshoe or a doughnut? You will think this is strange, but even then, the center of gravity of those objects is in the middle, even when there isn't anything there!

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