Curiosity Guide #303
Momentum
Accompanies Curious Crew, Season 3, Episode 3 (#303)

Ramp Rollers
Investigation #4

Description
It's a race! On your mark, get set, go!

Materials
- 2 balls of differing mass but similar size, like a golf ball and a ping pong ball
- Plastic matchbox race track
- Tape
- 2 meter sticks
- Empty, matching boxes
- Scissors
- Small box
- Stopwatch
- Ruler

Procedure 1:
1) Place the box on the floor.
2) Place one end of the plastic track so that it is supported on the top of the box and the other end is on the floor.
3) Tape the track in place.
4) Time how long it takes the golf ball to roll from the top to the bottom of the track.
5) Repeat with the ping pong ball.
6) Are the times similar?

Procedure 2:

1) Place the matching little boxes at the base of the track to catch the rolling balls.
2) Place the meter sticks in line with the ramp on either side of the tape semicircle. This will form a track to move within.
3) Roll the golf ball down the ramp so that the ball hits the box.
4) Measure how far the golf ball travels.
5) Repeat with the ping pong ball.
6) What do you notice?

My Results

Explanation

Even though both balls are rolling with a similar speed or velocity, their mass is different. The golf ball has more mass than the ping pong ball. Because each ball is moving, they both have momentum. However, the golf ball has more momentum because of its extra mass. Momentum is determined by both speed and mass, so if there is more of either, the momentum is higher. When the golf ball strikes the box, some of the momentum is transferred. This causes both the box and the ball to move, but the ball loses some of its speed, and the friction on the table surface causes the energy to be transferred further until both objects stop moving.

Parents and Educators: use #CuriousCrew #CuriosityGuide to share what your Curious Crew learned!

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