Marble Lab

An exploration in potential and kinetic energy

Marble History

- People have been playing marbles and marble-like games for thousands of years.
- It is thought that marbles started with the cave people playing with small pebbles or balls of natural clay.
- Clay balls have been found in the tombs of Egypt, they have also been found in Native American burial grounds.
- They have also been discovered in the ancient Aztec pyramids.

Problem

Does the number of marbles affect the amount of kinetic energy exerted on a ramp?

Hypothesis

I think that if I roll _____ marble(s) down a ramp, then it will have more kinetic energy than _____and _____ marbles because _____.

I think that if I roll 1 marble down a ramp, then it will have more kinetic energy than 2 or 3 marbles because the energy would not have to transfer between the marbles and therefore be more than if they hit.

Materials

- 2 chairs
- masking tape
- 1 Meter stick
- 3 marbles
- 1 Styrofoam ramp

Data Table

	Number of times the marble traveled back and forth			
Number of marbles	**Attempt #1**	**Attempt #2**	**Attempt #3**	**Average**
1				
2				
3				

Procedure

1. Place the chairs back to back, 1 meter apart.
2. Tape the ends of the track to the chairs so that the center hangs down to the floor like the letter U. Make sure to tape it well enough.
3. Place a marble on one end of the track and let it roll down.
4. Document how many times the marble travels back and forth on the ramp.
5. Repeat with 2 marbles and then with 3.

Answer questions in complete sentences.

1. Was your hypothesis correct? Why or why not?
2. Where was the marble when it had the most potential energy?
3. Where was it when it had the most kinetic energy?

Explore

- Measure the highest point each time the marble rolls up the track. How does this relate to kinetic and potential energy?
- Place one marble at rest on the bottom of the U-shaped track. Roll another marble down the ramp. See what happens to the resting marble. How does this relate to kinetic and potential energy?