



## Curiosity Guide #210

### Mechanical Energy

Accompanies Curious Crew, Season 2, Episode 10 (#210)

#### Ramped Up

Investigation #3

#### Description

This "marble-ous" activity demonstrates several kinds of energy!

#### Materials

- Marbles of different sizes and masses
- Ramp
- 2 meter sticks or tape measures
- Stack of books or wood blocks
- Foam or plastic cup
- Scissors
- Ruler

#### Procedure

- 1) Prepare a catch cup by cutting a foam or plastic cup in half. The catch cup should be able to lie on its cut face with a semicircular tunnel opening on one end and a closed end on the other.
- 2) Use one wood block to set up the ramp.
- 3) Flank both sides of the base of the ramp with the meter sticks.
- 4) Place the catch cup at the base of the ramp so that its closed end is at zero on the meter sticks.
- 5) Predict how far the cup will travel with each size of marble.
- 6) Roll the marbles down the ramp, one at a time. Keep track of how far each marble pushed the cup.
- 7) Elevate the height of the ramp with a second block.
- 8) Repeat the experiment with each marble.

- 9) Record your results.
- 10) What do you notice?

### My Results

### Explanation

When the marble is at the top of the ramp, it has potential energy because gravity will pull it down. This is called **gravitational potential energy**. When the marble is released, it begins to move, and the potential energy changes into **kinetic energy**. Objects in motion are said to have kinetic energy. When the marble strikes the catch cup and displaces it, that is described as **mechanical energy**. The higher the ramp is positioned or the more massive the marble, the greater the gravitational potential energy and the further the catch cup will be pushed along.

**Something to think about:** When objects are lifted or stretched, they have potential energy and can do work when they are released. Imagine a crane with a wrecking ball. The crane pulls back the wrecking ball and increases its **potential energy**. When the crane lets the ball go, the ball swings with **kinetic energy** and strikes the building. That force from the wrecking ball does a lot of work. When an object does work by moving another object we say that it has **mechanical energy**. Timber!

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



*Curious Crew is a production of Michigan State University.*

*Learn more at [WKAR.org](http://WKAR.org).*

*© MSU Board of Trustees. All rights reserved.*