

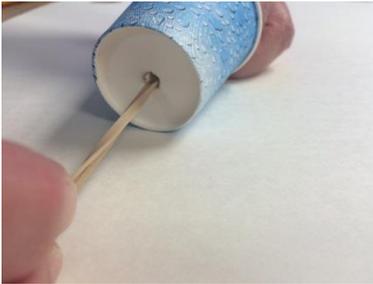
Make an Elastic Car

Explore potential and kinetic energy by making this creative car and investigating how it works.

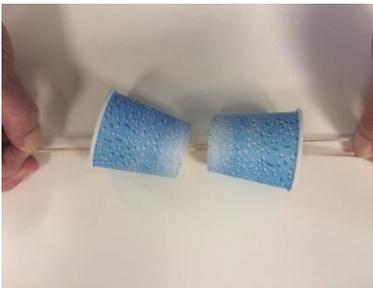
You will need:

2 Dixie cups, Paper clip, Pencil, Boxboard, Scissors, Bead, Elastic, and Duct tape

What to do:



1. Trace two circles on the boxboard using an upside down Dixie cup. Cut the circles out so that they are slightly larger than the open end of the Dixie cups. Find the centre and poke a hole in the middle of both circles. These will be your wheels.



2. Place one Dixie cup inside the other one. Using a sharp pencil, poke a hole in the bottom of both cups.



3. Thread the elastic through the hole in the bottom of one of the cups. Thread the same elastic through the bottom of the second cup so that the bottoms of the cup are touching.

4. Duct tape the two cups together so that the bottom of the cups are together. Several small pieces of tape will work better than one large piece.



5. Slide a bead on one end of the elastic. Thread the other end through one of the wheels. Secure the elastic by placing a paper clip through the loop of the elastic.
6. At the opposite end, remove the bead and thread the elastic through the second wheel. Reattach the bead and then slide the pencil through the loop in the elastic. The bead will be between the wheel and the pencil.
7. Wind the elastic by turning the pencil many times. Place the car on a flat surface, release the pencil and watch the car go!

What is happening?

This experiment allows us to explore potential and kinetic energy. By turning the pencil, we are winding the elastic band. This means that there is now elastic potential energy stored within the car. On releasing the pencil, the elastic begins to unwind and the car starts to move. The elastic potential energy is transformed into the kinetic energy of the moving car. The amount the elastic is turned impacts the distance the car is able to travel.

Extensions:

1. Older students can wind the pencil 10 times, 20 times, 30 times and measure the distance the car travels, graphing their results.
2. Have students change the type of elastic band or the type of cups used to build the car. What combination results in a car that travels the greatest distance?
3. In this experiment, the pencil acts as a rudder and enables the paper cups to spin in a forward direction. What would happen with a shorter or longer pencil? What happens if the pencil is replaced with a straw?