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# MAKE A BALLOON POWERED RECYCLED CAR

*Make a fun balloon powered DIY car from just a few pieces of recycled materials, like a juice box and bottle tops. Chances are you have all the materials you need for this entertaining craft right at home. It's also an easy project that young children can make from start to finish.*

*At Idaho National Laboratory, recycling is an important aspect of our work. The goal of INL's recycling program is to reduce materials headed for the landfill and the consumption of raw materials.*

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## GRADE LEVELS: K-5

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### VOCABULARY

**RECYCLING-** *the action or process of converting waste into reusable material.*

**AIR PRESSURE-** *force exerted onto a surface by the weight of the air.*

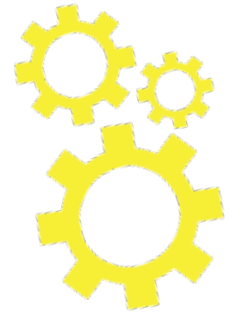
**POTENTIAL ENERGY-** *the energy possessed by a body by virtue of its position relative to others, stresses within itself, electric charge, and other factors.*

**KINETIC ENERGY-** *energy which a body possesses by virtue of being in motion.*

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# MATERIALS

- Empty juice box
- 4 bottle tops (the ones from fruit or baby squeezers)
- Small piece of molding clay (any type will do)
- Two small skewers, or one long one you can cut down to size
- 3 straws (one needs to have the flexible head)
- Duct tape
- Balloon
- Felt fabric, glue (optional if you want to decorate your box, but not necessary)



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# PROCEDURE

1. Wrap your juice box in your felt fabric and glue down (optional and purely decorative).
2. Add some clay to your caps.
3. Prepare your car axles. You want to cut two skewers that are slightly longer than your straws and that will extend over your juice box. Place your skewer inside the cut straw and then attach to the "wheels" or caps pushing down the clay to hold the skewer in place.
4. Take a straw and place your balloon over the bendable head part. Secure down with duct tape, leaving no gaps so you can use the straw to blow up the balloon.
5. Use duct tape to place your axles and wheels on your juice car. They will still roll: the tape holds the straw down, but the skewer will still roll as the car moves.
6. Use duct tape to place the straw with balloon on top of your car.
7. You're done! Now it's time to blow up the balloon and watch the car go!

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# THE SCIENCE BEHIND IT

The inflated balloon stores potential energy in the form of the stretched rubber of the balloon and the compressed air inside the balloon. The more the balloon is inflated, the more potential energy it stores. The balloon's stored potential energy is converted to kinetic energy, the energy of motion. An object's kinetic energy depends on its mass and the square of its velocity. For example, if two objects are moving at the same speed, the heavier one has more kinetic energy.

This balloon's kinetic energy is gradually converted to thermal energy as friction slows it down. The balloon may also collide with an object like a wall or desk, which exerts a force to stop the balloon (and converts the remaining energy into thermal energy).

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# EXTENSIONS



*Make more balloon cars with slight variations and race each other.  
Which one was faster? Were there numerous differences between the designs?*

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# RESOURCES

- <https://www.hellowonderful.co/post/MAKE-A-BALLOON-POWERED-RECYCLED-JUICE-BOX-CAR/>
- <https://www.sciencebuddies.org/teacher-resources/lesson-plans/balloon-car>

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