

Amped Up Energy

Experiment: Comeback Can

Amaze your friends by making them think you can control objects with the power of your mind! Understand how potential and kinetic energy work to make a can change its course in a predictable manner.

MATERIALS

- Round can with a lid (like a coffee tin or oatmeal can)
- Twist tie or short pipe cleaner
- Hex nut (about 1 inch wide)
- Large rubber bands
- Scissors
- Hole punch
- Nail (if the can is metal)
- Paper, markers and craft supplies

INSTRUCTIONS

Use a hole punch to make two holes in the lid. The holes should be near the middle and about an inch apart. Make two similar holes in the bottom of the can. If the can is metal, use a nail to make the holes.

Cut the rubber band so it is one long strip. Thread the rubber band through the holes in the bottom of the can so that both ends are inside the can. Thread the rubber band through the holes in the lid and tie the loose ends together. If one rubber band isn't long enough to reach through the can, tie several together until they're the proper length.

Wrap the pipe cleaner or twist tie through the center of the hex nut and around an edge. You should have two "bunny ears" of equal length sticking up when you're done.

Ask a friend to hold the lid away from the can to stretch the rubber band. Wrap each "bunny ear" around one of the rubber bands that runs through the inside of the can. The hex nut should hang from the middle of the rubber bands.

Put the lid back on. If the rubber bands are loose, pull them through the can and retie them so they are tighter. Decorate the outside of the can creatively.

Place the can on the floor and gently roll it away from you. Watch what happens!

If you time it just right, you can figure out when the can will start to roll back to you. Then you can "tell" the can to come back, so that it looks like the can is doing what you tell it to do!



WHAT'S HAPPENING?

To understand how the comeback can works, you have to understand energy. Energy comes in many forms. One form of energy is motion, called kinetic energy. Another form is stored, or potential energy. The comeback can uses both forms.

When you push the can, you give it kinetic energy and it moves away from you. The hex nut holds one length of rubber band still while the rolling can causes the other rubber band to twist around it. The can rolls until the rubber band is completely twisted. This is when kinetic energy becomes potential energy—the can is not moving, but it has the ability to do so. Potential energy is stored in the twisted rubber band. As the rubber band unwinds, the potential energy again becomes kinetic energy and the can rolls back to you.

SAVE THE DAY!

Have a friend make their own comeback can and challenge them to see whose can rolls the farthest before it returns. Try making a comeback can using different materials. Does changing the thickness of the rubber band, the weight of the hex nut or size of the can affect how far it rolls before coming back to you?

LEARN MORE

Go on a hunt for potential and kinetic energy. Check out the *Idea Factory* or *Swiss Jolly Ball* at MSI for some fun examples.

RECOMMENDED READING

Unmasking the Science of Superpowers! by Jordan D. Brown

The Thrills and Chills of the Amusement Parks, by Jordan D. Brown

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