All Wound Up

FETCH! with Ruff Ruffman™

Power a racecar with a rubber band? Yup! Power it up and then let it zip across the floor. But try not to get a speeding ticket. Ready, set, roll!

What to Do

❶ Get what you need.
• 1 drinking straw (or a pencil or toothpick) • 1 large spool (at least 1 ¼ inches in diameter) • Masking tape • 1 metal washer (1 inch or less in diameter works best) • 1 rubber band (just a little longer than the spool's height) • 1 small paper clip (shorter than the spool's diameter)

❷ Build your racer.
• Slip the rubber band through the center of the spool. If it gets stuck, use the straw to push it through.

• Slide the paper clip through one loop of the rubber band. Tape it down.
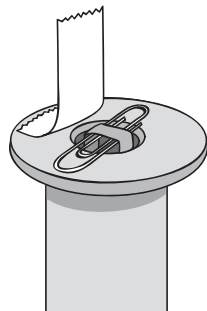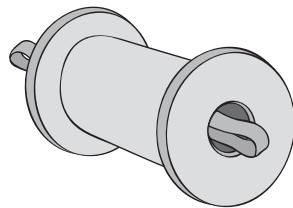
• Pull the other end of the rubber band through the washer. Then, slide the straw through the rubber band loop.
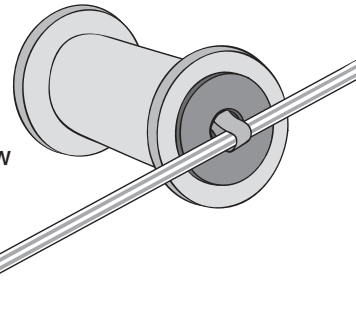
❸ Energize your racer. At first, the rubber band may be so loose that the straw slips out. Wind up the straw 20 times or so. The rubber band will get tighter and pull everything together.

❹ Launch your racer. Put the racer on the floor or a tabletop and let it go. Does it move in a straight line? Does it spin? Adjust the racer's parts to make it move the way you want.

❺ Race your friends. Test whose racer goes the fastest, farthest, or straightest. Try it on a rug. How do different surfaces affect the way the racer moves?

Chew on This

When you wind up the rubber band, you store energy in it. As the rubber band unwinds, this stored energy (called *potential* energy) changes into motion energy (called *kinetic* energy). The more potential energy that gets turned into kinetic energy, the farther and faster your racer will go. Notice that when the straw tries to spin, it hits the table, which stops it from turning. But the other end of the rubber band (attached to the paper clip) can spin freely. When it unwinds, it pushes on the spool, making it spin.

Dig Deeper

* Hit a target: Make a target, such as a crumpled ball of paper. Wind up your racer, set it two feet away from the target, aim, and try to hit your target. How can you make your racer drive straight every time?

* Climb a hill: Make a ramp from a piece of cardboard. Set your racer at the bottom and see if it can climb to the top. Experiment with gentle and steep ramps. How can you improve your racer's traction and power?

* Push a ball: Set a small, light ball, such as a Ping-Pong ball, in front of your racer. See how far it can push the ball.

* Like making things that move on their own? Get the Balloon Car challenge from the ZOOM Web site at pbskids.org/zoom/activities.

PBS KIDS GO! SM

Watch FETCH! on PBS KIDS GO! (check local listings) and visit the FETCH! Web site at pbskidsgo.org/fetch.

Oh, I get it! This is just like my wind-up cat toy. I wind it up and when I let go, it walks off the table.

WGBH   **nsf**   **Arby's**   **greendog**

Fold

FeTcH! All Wound Up

Rubber band-powered cars? I don't know. Where would you go to fill up your gas tank with rubber bands? On the other hand, I DO have a lot of rubber bands on my desk that I'd like to get rid of. Let's give it a try. Build me a car that runs on rubber bands!

GooO FETCH!

Rubber Bands

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