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RAT RACE! ACTIVITY GUIDE

LISTEN:

<https://tinkercast.com/podcasts/rat-race/>

CRAFT: CARDBOARD TUBE RAT-RACERS

In [this episode](#), Mindy tells Guy about a group of scientists that designed rodent-sized electric cars and taught actual live rats how to drive them.

With this simple craft you can turn a cardboard tube into your very own rat-racer? Or build a fleet of rat-racers and race them against each other in the Mindy 500. These cardboard tube rat-racers are easy to make and lots of fun to play with!

MATERIALS:

- cardboard tube from toilet paper
- paint, markers or stickers for decorating
- hole punch
- scissors
- 4 plastic bottle caps or pouch caps per car
- 2 toothpicks per car
- recycled straw
- hot glue gun

WOW-TO:

1. Start by decorating your cardboard tube with paint, markers or stickers.
2. Trim your straw so that you have two equal pieces that are just slightly shorter than the toothpicks.
3. Punch 4 holes (2 on each side) into your cardboard tube for the wheels.
4. Thread your straw pieces through the holes.
5. Insert the toothpicks through into the straw pieces.
6. Now it's time to punch some small holes in the center of the caps. You'll want a grown-up to help you with this step.
7. Attach the wheels to the toothpicks using a drop of glue.
8. Cut out a hole in the center of the tube for the driver. Then find a little friend who wants to take a ride and tell them you're headed to the Mindy500!

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EXPERIMENT: GO CAR, GO

This simple STEM experiment is an excellent way to explore the wonders of physics. Use a cardboard tube Rat-Racer (or a matchbox car) to test how the height of a simple ramp affects the distance traveled by the car.

MATERIALS:

- cardboard tube Rat-Racer or any matchbox car
- driving "road" (see step 1 in the wow-to below)
- something to lean your road on (like some wooden blocks or a stack of books)
- measuring tape

WOW-TO:

1. Decide what material you will use for your road. We suggest using a piece of hot wheel track, a flat rectangular block or a hardcover book.
2. Prop your "road" up on a stack of blocks or books to make a simple ramp.
3. Drop your car down the ramp.
4. Measure the distance from the end of the ramp to the back of the car.
5. Record the data on the recording sheet below.
6. Now adjust the ramp to make it slightly higher or slightly lower and try it again.
7. Record your second trial on the recording sheet below.
8. Compare the two trials and think about what happened?
9. Continue to adjust the angle of the ramp and test drop the car.

	What distance did the car travel?
Trial 1	
Trial 2	
Trial 3	
Trial 4	
Trial 5	

After five test-drop trials, what conclusions can you draw about how the angle of the ramp affects the distance travelled by the car? _____

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WOWING ME NOW:

While listening to [Rat Race](#), what made you say, "Wow!"?
Was it the fact that scientists were able to get actual rats to drive?
Maybe it was something else? Draw a picture of what is wowing you now.

RECIPE: MINDY'S MARSHMALLOW-FROOT HOOP BARS

In [this episode](#), Mindy sets up her own Rat Race involving a Fruit Hoop finish line. In the real research study conducted at the University of Richmond that inspired this episode, the driving rats were rewarded with Froot Loop cereal pieces when they drove their cars forward. After you experiment with your Cardboard Rat Racers, we have the perfect reward for you... these delicious cereal bars!

INGREDIENTS:

- 6 cups of fruit flavored cereal
- 3 tablespoons butter
- cooking spray
- 10 ounce bag of marshmallows

WOW-TO:

1. Prepare your baking dish by spraying with cooking spray.
2. Melt the butter in a large pot over low heat (be patient).
3. Add marshmallows to melted butter and stir until fully combined
4. Remove marshmallow mixture from heat and stir in cereal.
5. Press into your prepared baking dish.
6. Let cool.
7. Cut into bars and enjoy!!!

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D.I.WOW: DESIGN YOUR OWN RESEARCH GEAR

In [this episode](#), Mindy explains how a group of scientists built electric, rat-sized race cars to help them understand more about the human brain. If you were a brain scientist, what wow-worthy invention would you create for your lab rats? Please describe and/or draw your invention below.

My wow-worthy invention is : _____ .

What is it used for? What is it made from? What does it look like?

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READ: RAT RACE BOOKLIST

In [this episode](#), we learned all about what in the world happened when scientists created tiny rodent-sized cars and taught rats how to drive. What questions came up for you while listening? Let your curiosity lead you to a local library or bookstore to explore more about rats.

[The Infamous Ratsos](#) (Series), by Kara Lareau and Matt Myers (4-8). Well-meaning (if misguided) brothers Louie and Ralphie Ratso impart moral lessons relatable to young readers in these heartfelt and humorous titles for early readers.

[The New Neighbors](#), by Sarah McIntyre (4-8). Much to the bunnies' delight, a family of rats has moved into their apartment building; will the other neighbors conquer their prejudices to welcome the new neighbors? Fiction.

[The Rat: The Disgusting Critters Series](#), by Elise Gravel (4-8). Offbeat and amusing rat facts in an early reader format with appeal for young readers seeking a cartoonish option. Nonfiction.

[Oh, Rats!](#), by Tor Seidler and Gabriel Evans (7+). Kidnapped by a hawk and de-furred after an unfortunate crash landing in tar, squirrel Phoenix falls in with wharf rats in Manhattan and joins the effort to save their home from demolition. Also by the same author: [A Rat's Tale](#). Fiction.

[The Year of the Rat](#), by Grace Lin (7-10). The Year of the Dog was a good one for Pacy Lin, but the new year brings unexpected challenges to Pacy's friendships and dreams; illustrated, second in a series. Fiction.

[Mouseheart](#), by Lisa Fiedler and Vivienne To (8+). A utopian subterranean rat civilization welcomes an escaped pet store mouse, but rebels threaten the city's peace; first in a series. Fiction.

[Mrs. Frisby and the Rats of NIMH](#), by Robert C. O'Brien (8+). Escaped lab rats help a mouse mother move her children to safety, sharing along the way tales of the experiments that rendered them literate and of their friendship with Mrs. Frisby's late husband. Fiction.