

Sciencenter At-Home: Roller Coasters

Build and experiment with your own roller coaster!

In this activity, learners will design and test a roller coaster out using balls and foam tubes.

Materials:

- 1" foam pipe insulation tubing or pool noodles
- Painter's tape
- Different balls (ping pong, golf, bouncy, etc.)
- Marbles



Try this:

To prepare:

Cut the insulation or noodles in half lengthwise. The result should be two long pieces of ushaped foam.

Activity:

Work with your child to set up the insulation tube so that a ball can roll down it.

Start simple with a coaster that travels from high to low! Prompt your child with questions like:

- Where should we start?
- Where do you think the ball will go?
- How can we get the ball to move there?



Expand your roller coaster and use tape to add a second piece of insulation tubing. Test it out! Encourage your child to think through any problems with questions like:

- Did the ball get to the end of the roller coaster? Why not?
- What can we change to get the ball to go down?

Try adding different elements to your roller coaster like loops, hills, and curves.



Change it up!

Depending on the age and need of your child, this activity may look different. This is an open-ended and exploratory activity. There is no wrong way to do it!

Here are some activity extensions and adaptations:

- Experiment with balls of different sizes and weights. Measure with rulers (or non-standard units like your child's feet) to compare how far each ball goes.
- Try setting up two coasters and race the balls! Can you time them to reach the end at the same time? What adjustments need to be made to each coaster to achieve this?
- Younger children may enjoy exploring the cause and effect of a ball rolling down the coaster. Narrate their actions as they move through these experiments to build vocabulary and understanding.

Science process skills

This activity focuses on building the skills to participate in science over the science content itself. This activity highlights problem-solving skills as the participants explore cause and effect.

Problem-solving is a skill that everyone relies on in their day-to-day life. When building and experimenting, things rarely go perfectly and scientists and engineers need to figure out the problem and how to work around it. Encouraging children to think about what went wrong and where we can try to fix things is a great way to grow problem-solving skills. When guiding your child through this activity, encourage them to think about if the ball falls off the track. Where did it fall off? How can we make it stay on the track? Test these new solutions and run through the questions again!

This activity exists in many versions. This adaptation was inspired by Problem Solving: Roller Coasters from the Collaborative for Early Science Learning copyright 2021, Sciencenter, Ithaca NY.

Retrieved from: http://www.sciencenter.org/perch/resources/problem-solving.pdf