



Project Exploration creates transformative learning opportunities for youth underrepresented in the sciences –particularly students of color and girls – by equipping them with the skills, practices, and mindset needed for a lifelong pursuit of learning. STEM@Home makes activities around science, technology, engineering, and math accessible and fun to do at home. This STEMbook activity, resources, and more are available at [www.projectexploration.org/stemathome](http://www.projectexploration.org/stemathome).

## In this activity, you will:

build a speed bump to slow down a car without flipping it!



## Supplies Required:

- Graphic organizer
- Hot wheels car/toy car
- Cardboard sheet(24x9)
- Yarn
- sand paper sheet (4x6)
- Foil (4x6)
- Felt fabric sheet (4x4)
- Rubber band

## Video

Learn about some road design challenges that help slow down drivers: <https://tinyurl.com/y2m7huec>

## Overview

Today, the design challenge we will take on is designing a speed bump!

Your family lives on a street with a big hill and is concerned that cars drive very quickly down the hill without braking. Just last week, one car missed the stop sign and got into an accident on the corner. There are also many young kids that play on the street and we want to make sure the street is safe to cross. The government is supposed to come fix it, but the Mayor called you as a budding engineer to help design a speed bump which will slow the cars down without flipping them or causing the drivers harm. Are you up for the challenge?



## Instructions

- 1. Problem** - What do we want to solve?  
How can you slow down or stop the car as it goes down the ramp without it flipping (ramp is a foot tall and 2 feet long) or bringing it to an immediate halt? Think about the materials you have to work with as you think through the problem and some solutions.
- 2. Solutions** - What are some ways to solve the problem?  
Draw your ideas and share with friends and family! What ideas do they have to slow cars down? Is there more than one solution that will be used to slow down the car?
- 3. Model** - Build your design!  
Take time to build a ramp that is one foot tall and two feet long, and then build your speed bump and/or car-slowng mechanisms. Design and rework things as needed to bring your solution to life.
- 4. Test** - Does your model work?  
Place your car at the top of the ramp and let it go! Does the car slow or stop before it reaches the end of the ramp?
- 5. Reflect & Redesign** - Was your model successful? Does it need to be redesigned? Are you able to slow the car down even more or bring it to a complete stop with additional resources or a redesign? If you had the chance to build it in real life with real cars, do you think it would work? What might you have to change or would you need different materials?

## Additional Resources

**Think About It!** What was successful about your design? What was challenging? If we were to try to slow cars down in real life and materials were endless, what creative solutions would you consider to make cars slow down?

1. See how some cities are using optical illusions to slow cars down: <https://tinyurl.com/yyywd7jv>
2. Concerns about ambulances getting through neighborhoods quickly meant redesigning speed bumps in Charlotte, North Carolina: <https://tinyurl.com/y55a6t98>
3. Learn about smart speed bumps, which only slow down speeding cars: <https://tinyurl.com/ycwyan9x>

## Share It Out

**Share on social media:** Take a video of your car ramp and slowing mechanism(s) in action! What other creative ideas do you have for slowing cars in your neighborhood?

#RoadDesignChallenge  
#ProjectExploration  
#STEMatHome

For more activities like this one, go to [www.projectexploration.org/stemhome](http://www.projectexploration.org/stemhome). If you're interested in learning more about Project Exploration and our free events, programs, and activities, please find us on social media and be sure to follow!



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