



Inquiring Minds Want to Know

Science Activities for Young Minds

Ramp-N-Roll

WHAT YOU'LL NEED

- A ramp (try stiff cardboard, a game board or a picture book)
- Blocks or a box (to prop up your ramp)
- Objects that may or may not roll:
 - balls
 - plastic cups
 - plastic bottles
 - crayons
 - spools
 - rolls of tape
 - toy car
 - socks (a single and a rolled pair)
 - a book
 - crumpled paper
 - small blocks
 - a spoon
 - other stuff around that the kids want to try

WHAT TO DO

Remember: The purpose is NOT to teach a specific topic but to help children experience the excitement of **science exploration!**

GETTING READY

Gather materials that you will use for your ramp and objects for rolling.

LET'S GO

1. Make a ramp by propping up one end of a game board, picture book or piece of stiff cardboard onto a box or a stack of blocks.
2. Gather objects that may or may not roll, such as those suggested.
3. Explain the "Slide or Roll?" **experiment** by asking the children to **predict** what might happen when you try to send one of these objects down the ramp. *What do you **predict** will happen when you put this at the top of the ramp? Will it slide? Will it roll? Will it stay put?*
4. Have the children try each object. As they play, have them sort the objects into things that roll and things that don't.
5. Help the children discuss what they **observed**. *Why do you think some objects rolled and others did not?*
6. Have the children place one of the rolling objects at the top of the ramp but face it in a different direction. For example, place a car sideways instead of forward, or stand a bottle up instead of placing it on its side. As they play, have them sort the objects into things that roll from more than one side and things that only roll one way. *What do you **predict** will happen when you turn an object that rolled sideways? What did you **observe**? Did it still roll? Why or why not?*

Can you find a way to park a toy car on the ramp without it rolling down?

Can you make a rolling object stop halfway down the ramp?



TALK IT OVER

What are some things at home that might roll or not?

What things do we know that slide?

Why do we use sleds to go down a hill in the winter instead of something with wheels?

Why do cars not roll when they are parked on a hill?

How do you slide down a slide? Why don't you roll?

*What do you **predict** will happen if you pull the wheels off a toy car? Will it still go down the ramp?*

Are heavier things or lighter things more likely to slide?

Why do some things roll faster than others?

Why do some buildings have ramps up to the door? Why do sidewalks have ramps at the corner? Find some examples, and ask the children to think about why those ramps are there.

When might someone need to use a ramp instead of the steps?

This discussion should bring up another one of those super simple machines – the wheel. People in wheelchairs, kids pulling wagons and delivery people with dollies are all happy that those ramps are there!

GOOD TO KNOW

Help children design **experiments** to answer these questions. Make **predictions** and talk about what you **observe**. Then make up more new **experiments** together.

- ▶ *How far do objects go when they roll down your ramp? Can you make them go farther? How?*
- ▶ *What happens when you raise or lower the ramp?*
- ▶ *How can you make an object roll faster? How can you slow it down?*
- ▶ *Put a phone book at the bottom of your ramp. Race two objects down the ramp and watch to see which will hit the phone book first.*
- ▶ *What if the texture of the ramp is different? What if it is wet? What if it has cloth on it? What if it has oil on it?*

THE SCIENCE BEHIND IT

Playing with ramps and things that roll helps children learn simple principles of physical science and engineering. A ramp is an example of a simple machine called an inclined plane.

“**Work**” has a specific meaning in physics involving the transfer of energy to an object and making it move. We don’t expect young children to know this. When we say that “simple machines make work easier,” we are using an accurate but young-child-friendly description of what simple machines do and how they help people.

RESOURCES

- ▶ The 2015 National Youth Science Day Experiment “Motion Commotion” – <http://www.4-h.org/4-h-national-youth-science-day/science-experiments-projects/motion-commotion/>.
- ▶ For more information about simple machines – <http://www.cosi.org/downloads/activities/simplemachines/sm1.html>.
- ▶ Your local university Extension office – <http://msue.anr.msu.edu/county>.
- ▶ Science Blast website – http://4h.msue.msu.edu/programs/science_technology/science_blast.
- ▶ PBS – <http://www.pbs.org/parents/education/science/activities/preschooler-kindergarten/>.

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