



Everyday Engineering

Balls and Ramps

What you need:

The following materials are suggestions and can provide inspiration to think creatively about supplies you have around your home.

- Cardboard
- Tubes – paper towel, wrapping paper, PVC pipe
- Pool noodles, pipe insulation – cut in half, lengthwise, into long strips
- Bubble wrap, egg crate, large pieces of foam, fabric
- Large containers – yogurt, oatmeal, coffee, Tupperware
- Variety of balls – bouncy balls, ping pong balls, tennis balls, marbles
- Additional toys for rolling – cars, pom-poms, round blocks
- Masking tape or painter's tape



What you do:

Experimenting with balls and ramps can be as simple as placing a piece of cardboard on an incline and sending some balls rolling down. Below are a few tips to get you started and extend your exploration.

- Balls and ramps often lead to very active play. Look for a place around your home or in your backyard that will give you plenty of room to move and chase the balls around.
- Give your ramps some height! The most important part in creating a ramp is being able to start high and end at a lower point. Cardboard boxes, walls, or a sturdy piece of furniture like a chair or dining room table could be useful building platforms. Always be sure your child can use the space safely and provide adult supervision. It might be helpful to use masking tape or painter's tape to hold your ramps or tracks in place.
- Experiment with materials of different textures to see how friction effects the way your ball rolls down a ramp. Bubble wrap, large pieces of foam, and fabric can be fun additions to ramps and tracks.
- Place plastic containers, plastic bowls, or small cardboard boxes at the end of tracks to catch balls. These materials also make great hills when placed under tracks. Cardboard tubes can become tunnels.
- Pool noodles and pipe insulation can be used to design and build more complex track systems. These materials can be more flexible than cardboard, allowing older children to engineer curves, twists, and loop-the-loops. Masking tape or painter's tape help tracks stay in place but is also easy to remove when redesigning your track.

Things to think about:

- Practice making predictions and share observations. Which object do you think will roll fastest? Is there something that you can do to make it roll slower? What might happen if we tilt the ramp steeper? How will this one move?
- Designing and creating tracks involves a certain amount of failure. Older children can get experience working through the engineering design process by planning, building, testing, redesigning, testing again, and on and on.