

Playground Physics: On a Roll!



Many preschoolers like to play with things that roll. Rolling activities can be opportunities to explore principles of science and engineering. Children can investigate rolling objects on inclines such as sliding boards, ramps, chutes, and hillsides at a playground or park.

Let children play outdoors with rolling objects.

- Offer a selection of objects that roll. Try a variety of balls, tubes, hoops, discs, marbles, and small wheel toys. Include some natural objects—pinecones, acorns, and small pebbles.
- Suggest rolling the objects down hills, sliding boards, chutes (enclosed slides), and ramps at the playground or park. Ask provocative questions such as, “Do you think the ball will stop at the bottom of the hill or will it keep rolling?” “What do you suppose will land first: an acorn that drops from the top of the slide or an acorn that rolls down the slide?”

Help children set up an outdoor physics lab.

- Provide items for building ramps, chutes, and slides. Include blocks, planks, lengths of plastic gutter, long tubes, flexible toy track, and large pieces of cardboard.
- Suggest some experiments: “What could Tae do to find out if marbles roll faster down the slide or down his ramp?” “Who would like to help Lola see how far these things will keep rolling after they come out the chute?”
- Ask children to make predictions. For example, “Winona is holding a tube at the top of the ramp. Omar is holding a soccer ball. If they let go of their objects at the same time, which one do you think will roll to the bottom first?” Ask children to explain their predictions: “What makes you think so?”

Talk with children about their rolling activities.

- Explain that slides, ramps, chutes, and hillsides are “inclines” (or “inclined planes”). An incline is a surface that has one end higher than the other.
- Use objects and book illustrations to help explain words such as *tilt*, *level*, *wedge*, *steep*, *angle*, *slope*, *slanted*, and *path*.
- Ask children what they have noticed about inclines. “Which is easier—rolling things on level ground or on an incline?” “If you want things to roll very fast, what sort of incline would you make?”

Suggest some rolling games.

- Let a child try rolling an object down an incline to another child at the bottom. Or let children set up plastic bowling pins to knock over.
- Encourage children to race various objects down inclines. “Let’s see which one crosses the finish line first—Marina’s ball or Kevon’s tube.”
- Invite children to make wheel toys for rolling races and other games.

Any opinions, findings, conclusions, or recommendations expressed in this tip sheet are those of the author(s) and do not necessarily reflect the views of the Illinois State Board of Education.



Children’s Research Center
University of Illinois at Urbana-Champaign
51 Gerty Dr. • Champaign, IL 61820-7469
Telephone: 217-333-1386
Toll-free: 877-275-3227
E-mail: iel@illinois.edu
<https://illinoisearlylearning.org>



Illinois
State Board of
Education