

What slows the slide?

Ages 4–7 with a grown-up · 10–15 minutes · Change one surface

<https://kiddos.ai/explorations/learning-with-gina-and-ollie/what-slows-the-slide>

Wonder together

Bare ramp. Or towel? Will the block slide on the bare ramp? What if we cover it with a towel?

Materials

Stiff smooth cardboard without sharp edges, a low stable book, a large lightweight flat-faced wooden block without detachable parts and a dry hand towel.

Adult setup – read before trying

An adult secures a low ramp on the floor with clear runout away from stairs, faces, feet and pets. No heavy objects, small balls, high stacks or climbing. Privately find a gentle bare-card setup that slides, then fix its height. Secure one flat towel layer so it cannot bunch or become a wall.

Try together

1. Adult builds and steadies a low ramp on the floor.
2. Predict; release one large block from the top without a push.
3. Secure a flat towel; predict and release from the same place with the same block and ramp height. Compare.

Keep the comparison clear

Keep fixed: Block, bottom face, starting place, ramp height and release without a push.

What changes: The surface pair: block on cardboard, then block on towel.

Look for: Notice whether the block slides, moves more slowly or stays put.

Explain with care

Friction opposes sliding or the tendency to slide between touching surfaces. It can keep a block still even while gravity acts.

A bare ramp has friction too. Rougher does not always mean more friction for every material pair. If you change height, repeat both surface tests.

Talk about it

Bare ramp. Or towel? Will the block slide on the bare ramp? What if we cover it with a towel?

Answer cue: Welcome a guess before reading the result. No correct prediction is required.

What changed in the block's journey?

Answer cue: In the story it slides on card and stays on the towel; actual results may vary.

Did gravity switch off when the block stayed still?

Answer cue: No. Other forces can balance its tendency to slide.

A parent move: Ask the child to choose where to release, then keep that place for both trials.

Start simply: Watch from beside the path and direct the adult's release.

Explore further: Repeat each surface a few times before deciding what you noticed.

Return to it: Notice another everyday situation where sliding is slowed by contact.

In the classroom

Flexible 20-minute small-group session; pause or shorten as needed.

3 min · Wonder

Read pages 1–2. Invite a prediction with words, pointing or a sketch; keep the result hidden.

4 min · Notice the story

Read pages 3–5. What changed in the block's journey? Separate the observation from the explanation.

9 min · Try together

Use the materials and adult setup on this guide, then follow the activity steps in this guide. Notice whether the block slides, moves more slowly or stays put.

4 min · Make meaning

Did gravity switch off when the block stayed still? Invite a drawing, a description or an adult-written note. Ask the child to choose where to release, then keep that place for both trials.

Understanding check

Did gravity switch off when the block stayed still?

Answer guidance: No. Other forces can balance its tendency to slide.

Participation choices: Watch from beside the path and direct the adult's release. Accept pointing, words, a drawing or adult-directed action. Use the story alone if the activity is unsuitable.

Words to explore

ramp — A slanted surface with one end higher than the other.

friction — A force between touching surfaces that resists sliding.

Full adult notes and honest limits

Choose a large, lightweight wooden block with flat faces and no detachable pieces, stiff smooth cardboard without sharp edges, a low stable book, a dry hand towel and adult-applied tape if needed. Build a short low ramp on the floor with a clear runout, away from stairs, pets, faces and feet. Do not use glass, heavy objects, small balls, high stacks or a ramp for children to climb. The adult secures and steadies the cardboard and book. Before inviting predictions, choose a gentle setup on which the block can slide down the bare surface when released; use a smooth card surface or a modest height adjustment, then keep this height fixed for the comparison. Mark or remember a starting place near the upper end. Use the same block, same bottom face, same release point and no push in both trials. First test bare cardboard. Then lay one layer of towel flat over the whole ramp and secure it so it cannot slide, bunch up or make a physical wall. Repeat with the same block, same orientation and starting place. Lift a holding finger or hand away rather than pushing; the child may release the block while the adult steadies the setup, or point/direct if preferred. Keep toes clear and watch from beside the path. In the illustrated example the bare ramp lets the block slide and the towel keeps it still. In real life the block may slide more slowly on the towel, stay put, or behave similarly on both. Report the actual observation. If revising the setup, repeat both tests at the new fixed height; do not compare different ramp angles and blame only the surface. Repeat each surface a few times, predict before testing, and ask "What changed? What stayed the same?" For a small group, draw where the block ended and collect several guesses without ranking children. Friction is a contact force opposing relative sliding or the tendency to slide. Here static friction can balance the downhill component of weight and keep the block at rest; if it slides, kinetic friction acts uphill. Gravity still acts on a block that remains still. Surface pairs, pressure and materials matter; do not teach that every rougher surface always has more friction, that the bare ramp has none, or that friction always prevents all movement. Page 5 isolates friction's direction on this ramp, not a complete force diagram or a measured force scale; the supporting force and weight are omitted. Gina and the Great Gravity Hug is related reading about Earth's pull; its shipping story does not contain this ramp experiment. No live family trial or measured learning outcome is claimed.

Related reading

Gina and the Great Gravity Hug explores gravity. Friction on this ramp is an additional investigation.

Scientific sources

science-world-ramp-rollers — <https://www.scienceworld.ca/resource/ramp-rollers/>

iowa-state-ramp-block — <https://learning.physics.iastate.edu/ramp-and-wood-block>

openstax-inclined-planes — <https://openstax.org/books/physics/pages/5-4-inclined-planes>

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