

Learning with Gina and Ollie · Complete companion

Complete adult setup, family conversation and classroom guidance for every discovery. Use the named materials and supervision in each chapter.

Contents

01. Little owl. Giant shadow.	2
02. Same paper. Different fall.	5
03. Can water climb?	8
04. Can paper be a bridge?	11
05. Can you stop a sound?	14
06. Can you draw a hidden leaf?	17
07. Which bowl melts ice faster?	20
08. Did the pencil bend?	23
09. Will it float without its peel?	26
10. What slows the slide?	29
11. Can paper stay dry underwater?	32
12. What's hiding in black ink?	35
13. Can soap move pepper?	38
14. Can a comb lift paper?	41
15. Can a paper flower bloom?	44
16. Where did the sugar go?	47
17. What grows first?	50
18. Can you spot the wind?	53
19. Same leaf. Different numbers?	56
20. Does shiny mean magnetic?	59
Our discovery record	62

Little owl. Giant shadow.

Ages 4–7 with a grown-up · 5–10 minutes · Compare position

<https://kiddos.ai/explorations/learning-with-gina-and-ollie/little-owl-giant-shadow>

Wonder together

Where should Ollie stand? To make his shadow smaller: near the flashlight, or near the wall?

Materials

A cool LED flashlight, a plain wall and one hand.

Adult setup – read before trying

An adult holds the flashlight still, aimed at a wall. Use a clear indoor space with enough light to move safely. Keep the beam away from eyes; do not use lasers or sunlight. The child can direct the adult's hand.

Try together

1. An adult holds the flashlight still, aimed at a wall, while the child predicts which hand position will make a smaller shadow.
2. Place the same hand shape in the beam, first near the flashlight, then nearer the wall. Keep the light and wall fixed.
3. Compare shadow sizes. Let the child direct another position without changing the hand's shape.

Keep the comparison clear

Keep fixed: Flashlight, wall, hand size and hand shape.

What changes: The hand's position between the flashlight and wall.

Look for: Compare the edges of the shadow when the same hand is near the light and near the wall.

Explain with care

A nearby flashlight sends light out in different directions. A hand nearer the light blocks a wider part of the beam before it reaches the fixed wall.

This nearby-flashlight comparison is not a distance rule for sunlight. A changed hand shape, moving flashlight or shifted wall changes the comparison.

Talk about it

Where should Ollie stand? To make his shadow smaller: near the flashlight, or near the wall?

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

Which shadow covers more of the wall?

Answer cue: The shadow is bigger when the same hand is nearer the nearby flashlight.

Did the hand grow when its shadow grew?

Answer cue: No. The hand stayed the same; its position changed.

A parent move: Let the child choose a position before you move the hand. Keep the first guess welcome.

Start simply: Try just two clearly different positions with the same open hand.

Explore further: Choose a position between the two and predict a medium-sized shadow.

Return to it: At another time, ask your child to direct you to make the shadow smaller.

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. Which shadow covers more of the wall? 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. Compare the edges of the shadow when the same hand is near the light and near the wall.

4 min · Make meaning

Did the hand grow when its shadow grew? Invite a drawing, a description or an adult-written note. Let the child choose a position before you move the hand. Keep the first guess welcome.

Understanding check

Did the hand grow when its shadow grew?

Answer guidance: No. The hand stayed the same; its position changed.

Participation choices: Try just two clearly different positions with the same open hand. Accept pointing, words, a drawing or adult-directed action. Use the story alone if the activity is unsuitable.

Words to explore

shadow — A darker place where something blocks light.

Full adult notes and honest limits

Gina directs the test as the curious learner; Ollie cooperates and helps her notice the result.

Pause on slide 2 and accept a prediction without correcting it. With flashlight and wall fixed, moving the same blocker toward the flashlight enlarges its shadow; moving it toward the wall makes the shadow smaller. On slide 6, let your child choose and test. The hand's position and shadow size change; the hand's shape and size, flashlight and wall stay fixed. A child can point, describe, or direct your hand. If the result surprises you, check those fixed parts and try again. This is a nearby-flashlight experiment, not a distance rule for sunlight.

The nearby flashlight, fixed wall, unchanged pose and unchanged owl size are the controlled comparison. Illustrations are not dimensioned apparatus drawings.

Related reading

Gina and the Light Chase explores shadows and reflection. This fixed-flashlight test is an additional activity.

Scientific sources

pbs-shrinking-shadows — <https://www.pbs.org/parents/crafts-and-experiments/shrinking-shadows>

gbh-first8-move-light — <https://www.first8studios.org/nicoandnor/guide/shadows/lesson6/move-light.html>

Same paper. Different fall.

Ages 4–7 with a grown-up · 5–10 minutes · Compare shape

<https://kiddos.ai/explorations/learning-with-gina-and-ollie/same-paper-different-fall>

Wonder together

Can Gina make it fall faster? Keep it flat—or crumple it?

Materials

One intact sheet of ordinary paper.

Adult setup – read before trying

Use still indoor air away from fans. Keep feet on the floor; release without pushing from a comfortable height. Keep the landing space clear.

Try together

1. With an adult, take one intact sheet and stand on the floor in still indoor air.
2. Release the flat sheet roughly horizontal without pushing.
3. Crumple the same sheet and drop again from the same starting height.
4. Repeat and describe what changed.

Keep the comparison clear

Keep fixed: The same amount of paper, starting height and gentle release.

What changes: The shape of the sheet: flat, then compactly crumpled.

Look for: Describe a fluttering fall and a more direct fall. Repeat because individual drops vary.

Explain with care

Gravity pulls both shapes down. Air resists their motion, and the wide sheet usually experiences more air resistance than the compact ball.

Crumpling does not add weight. This is not evidence that heavier objects always fall faster.

Talk about it

Can Gina make it fall faster? Keep it flat—or crumple it?

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

How did each shape move on the way down?

Answer cue: The flat sheet may flutter or drift; the compact ball generally reaches the floor sooner.

Did we add any paper when we crumpled it?

Answer cue: No. We changed shape while keeping the same sheet.

A parent move: Invite descriptions such as flutter, twist or drop before introducing air resistance.

Start simply: An adult does the drops while the child points to the shape to try.

Explore further: Repeat each shape several times and notice whether every fall looks identical.

Return to it: Ask what you would keep the same to compare the two falls again.

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. How did each shape move on the way down? 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. Describe a fluttering fall and a more direct fall. Repeat because individual drops vary.

4 min · Make meaning

Did we add any paper when we crumpled it? Invite a drawing, a description or an adult-written note. Invite descriptions such as flutter, twist or drop before introducing air resistance.

Understanding check

Did we add any paper when we crumpled it?

Answer guidance: No. We changed shape while keeping the same sheet.

Participation choices: An adult does the drops while the child points to the shape to try. Accept pointing, words, a drawing or adult-directed action. Use the story alone if the activity is unsuitable.

Words to explore

gravity — The pull that brings the paper toward the ground.

air resistance — The push of air against the moving paper.

Full adult notes and honest limits

Use one intact sheet of ordinary paper in still indoor air, away from fans. Hold the flat sheet roughly horizontal and release without a push; then crumple the same sheet into a compact ball and release from the same starting height. Keep feet on the floor. Repeat a few times: a flat sheet can flutter, tilt or drift, so individual drops vary. The crumpled sheet generally reaches the floor sooner because its compact shape experiences less air resistance. You changed shape while keeping the amount of paper, release height and gentle release the same. Crumpling does not add weight. Gravity pulls both forms downward; air resists their motion. Accept the child's prediction before explaining. Ask them to describe the motion or direct the release; no timing, reading or grasping skill is required. This compares one paper sheet in two shapes in air, not a rule that heavier objects always fall faster. The story's dropping scene is the literary bridge; its balloon/weight metaphor is not used as the explanation here.

Related reading

Gina and the Great Gravity Hug includes playful dropping. Use gravity and air resistance for the explanation, rather than its balloon metaphor.

Scientific sources

yale-falling-bodies-air-resistance — <https://ypppsweb2.its.yale.edu/physics/demos/viewdemo.asp?ID=2C50.10&Record=Back>

sciencebuddies-parachutes-forces — <https://www.sciencebuddies.org/teacher-resources/lesson-plans/parachutes-forces>

Can water climb?

Ages 4–7 with a grown-up · 5–10 minutes · Follow a wet edge

<https://kiddos.ai/explorations/learning-with-gina-and-ollie/can-water-climb>

Wonder together

Only the tip will dip. Will the water stay at the bottom— or travel up the towel?

Materials

A stable unbreakable cup, a little room-temperature water and absorbent paper towel.

Adult setup – read before trying

An adult tears a narrow strip and holds it upright over a wipeable surface. Dip only the bottom tip and keep it immersed. Optional food coloring is adult-handled; no drinking experiment water. Wipe spills and empty the cup afterward.

Try together

1. With an adult, put a little room-temperature water in a stable unbreakable cup.
2. Tear a narrow paper-towel strip; hold it upright and dip only the bottom tip.
3. Keep the bottom immersed and wait while the child watches the wet edge.
4. Describe where the paper became wet, then wipe up any spills.

Keep the comparison clear

Keep fixed: The same strip, cup, water level and immersed tip.

What changes: Time passes as water spreads through the paper.

Look for: Find the wet edge above the water surface in the cup.

Explain with care

Water is attracted to the paper fibers and to other water molecules. It can move through tiny spaces in the towel by capillary action.

Gravity still acts and limits the rise. Towel type changes timing and height; blue color is only a visibility aid.

Talk about it

Only the tip will dip. Will the water stay at the bottom— or travel up the towel?

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

Is the wet patch only below the cup's waterline?

Answer cue: An absorbent towel can become wet above that waterline.

Would coloring be needed to make the water move?

Answer cue: No. Plain water can move through the towel too.

A parent move: Wait with your child before pointing out the wet edge; let them spot the change.

Start simply: Use a fresh dry narrow strip with a clear, easy-to-see wet edge.

Explore further: Try a second towel type with the same tip depth and compare what you actually see.

Return to it: Notice a paper towel soaking up a spill and connect the wet spreading to this test.

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. Is the wet patch only below the cup's waterline? 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. Find the wet edge above the water surface in the cup.

4 min · Make meaning

Would coloring be needed to make the water move? Invite a drawing, a description or an adult-written note. Wait with your child before pointing out the wet edge; let them spot the change.

Understanding check

Would coloring be needed to make the water move?

Answer guidance: No. Plain water can move through the towel too.

Participation choices: Use a fresh dry narrow strip with a clear, easy-to-see wet edge. Accept pointing, words, a drawing or adult-directed action. Use the story alone if the activity is unsuitable.

Words to explore

fibers — Tiny strands that make up the paper towel.

capillary action — How water moves through tiny spaces in materials such as paper.

Full adult notes and honest limits

Put a stable unbreakable cup with a little room-temperature water on a wipeable surface. An adult tears a narrow strip of absorbent paper towel, holds it vertically and lowers only its bottom tip into the water. Keep that end immersed and the rest above the water surface. Watch the wet edge spread; timing and height vary with the towel and setup. Try a fresh dry strip if it folds into the cup or the wet area is hard to see. Optional food coloring helps visibility; an adult handles it, and the experiment water is not for drinking. A child can guess, point, describe or direct the adult without gripping or reading. Accept their first idea before explaining. Paper contains tiny fibers and spaces. Attraction between water and the fibers, together with water's attraction to itself, helps draw water through these spaces. This is capillary action; gravity still acts and limits how far water can rise. The blue tint is a visibility aid, not the cause. The enlarged fiber diagram is simplified, not to scale. The related book explores the water cycle; it is an invitation to another water adventure, not the factual source for this experiment.

Related reading

Where Did My Water Go? follows the water cycle. It offers another water question; it does not teach this capillary-action activity.

Scientific sources

usgs-capillary-action-water — <https://www.usgs.gov/water-science-school/science/capillary-action-and-water>

nasa-food-for-thought-towel-demo — <https://www.nasa.gov/wp-content/uploads/2011/10/food-for-thought-educator-guide.pdf>

Can paper be a bridge?

Ages 4–7 with a grown-up · 10–15 minutes · Test a design

<https://kiddos.ai/explorations/learning-with-gina-and-ollie/can-paper-be-a-bridge>

Wonder together

Will it bend? Gina makes a flat paper bridge. Will it stay flat—or bend?

Materials

One A4 or Letter sheet, two equally thick closed books and one large lightweight age-appropriate toy without loose parts.

Adult setup – read before trying

Work on a hard level floor. Start with a gap about half the paper's length and generous overlap. Place the toy gently in the center without pressing. An adult helps fold; no coins, scissors or tape are needed.

Try together

1. With an adult, place two equally thick books on a hard floor with a gap about half the sheet's length.
2. Span the gap with the long direction of one sheet. Test one large lightweight toy gently in the middle.
3. Remove the toy. Fold both long edges up. Keep the books still and test the same toy again.

Keep the comparison clear

Keep fixed: Paper, toy, center load position and gap between books.

What changes: Flat paper becomes a channel with two upright sides.

Look for: Compare sagging under the same gently placed toy.

Explain with care

The two upright long sides help the sheet resist bending downward. The paper material stays the same.

A bridge still has a limit. Paper, folds, gap and toy matter. If you shorten the gap or choose a lighter toy, repeat both designs with that new setup.

Talk about it

Will it bend? Gina makes a flat paper bridge. Will it stay flat—or bend?

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

What happened to the middle under the toy?

Answer cue: The flat sheet may sag more. A successful folded design bends less with the same load.

Did we use thicker paper for the second bridge?

Answer cue: No. The shape changed, not the material.

A parent move: Ask what to change in the design and what to keep fixed before testing again.

Start simply: An adult makes folds about one quarter of the sheet's width; the child directs toy placement.

Explore further: Choose another fold design. Compare it using the same span and load.

Return to it: Ask why the upright sides mattered when looking at a folded cardboard package.

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 happened to the middle under the toy? 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. Compare sagging under the same gently placed toy.

4 min · Make meaning

Did we use thicker paper for the second bridge? Invite a drawing, a description or an adult-written note. Ask what to change in the design and what to keep fixed before testing again.

Understanding check

Did we use thicker paper for the second bridge?

Answer guidance: No. The shape changed, not the material.

Participation choices: An adult makes folds about one quarter of the sheet's width; the child directs toy placement. Accept pointing, words, a drawing or adult-directed action. Use the story alone if the activity is unsuitable.

Words to explore

channel — A shape with a flat middle and two upright sides.

Full adult notes and honest limits

Use ordinary A4 or Letter paper, two equally thick closed books and one large, lightweight, age-appropriate toy with no loose small parts. Work with an adult on a hard, level floor. Start with a gap about half the paper's length; lay the long direction across it with generous overlap on both books. Place the toy gently at the center; do not press. Remove it, fold both long edges upward to make two walls, and span the same gap again. Make each wall about one quarter of the sheet's width, leaving the middle half as a flat road. The fold lines run from one book to the other. Test the same toy in the center again. No tape, scissors or coins are needed. If either result is unclear, use a lighter toy or a shorter gap, then repeat BOTH tests under that new setup with fresh matching paper if damaged. Outcomes depend on paper, folds, span and load; the illustrated result is one possible successful trial, not a weight guarantee. A child can guess, point, compare or direct while an adult folds and places the toy. Welcome the guess before explaining. The upright sides increase resistance to downward bending; the paper material has not changed. The bridge still has a limit. In a small group, ask children to explain what changed (shape) and what stayed (paper, toy and book gap), then invite a second design. The related story is about gravity, not bridge engineering. This package is an editorially reviewed activity, not evidence of measured family learning or a performed home trial.

Related reading

Gina and the Great Gravity Hug explores gravity. This bridge-design challenge is an additional engineering activity.

Scientific sources

science-buddies-build-best-bridge — <https://www.sciencebuddies.org/stem-activities/build-best-bridge>

science-buddies-family-paper-bridge — <https://www.sciencebuddies.org/blog/building-paper-bridges-family-science-spotlight>

Can you stop a sound?

Ages 4–7 with a grown-up · 5–10 minutes · Listen and compare

<https://kiddos.ai/explorations/learning-with-gina-and-ollie/can-you-stop-a-sound>

Wonder together

What will a touch do? Ollie is ready to tap the bowl. Will touching it change the ring?

Materials

An empty smooth-edged metal mixing bowl and a wooden spoon.

Adult setup – read before trying

Set the bowl on a stable hard surface away from ears. An adult supervises one gentle tap at a time, never repeated banging. Stop if the sound is uncomfortable. Listening from farther away or watching an adult is welcome.

Try together

1. With an adult, place an empty metal mixing bowl on a stable hard surface away from ears.
2. Gently tap the outside with a wooden spoon and listen until the ring fades.
3. Tap the same spot just as gently, then touch the outside soon after the tap. Compare.

Keep the comparison clear

Keep fixed: Bowl, support, tap spot and gentle tap strength.

What changes: Whether a hand touches the outside soon after the tap.

Look for: Listen to which ring lasts longer, without needing a stopwatch.

Explain with care

The bowl vibrates, moving quickly back and forth. Touching it damps that motion so its ringing fades faster.

Touch does not slow sound travelling through air. If a bowl barely rings, choose another and repeat both trials.

Talk about it

What will a touch do? Ollie is ready to tap the bowl. Will touching it change the ring?

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

Which ring faded sooner?

Answer cue: In the story, the touched bowl quieted sooner.

Did touching change the bowl's vibration or stop sound already far away?

Answer cue: It reduced the bowl's vibration and the sound it continued to make.

A parent move: Leave a quiet pause after each tap so everyone can notice the fading sound.

Start simply: The adult taps and touches while the child chooses when to compare.

Explore further: Repeat both trials on a second suitable metal bowl and describe any difference.

Return to it: Remember the tiny wobble when an everyday object makes a gentle sound.

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. Which ring faded sooner? 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. Listen to which ring lasts longer, without needing a stopwatch.

4 min · Make meaning

Did touching change the bowl's vibration or stop sound already far away? Invite a drawing, a description or an adult-written note. Leave a quiet pause after each tap so everyone can notice the fading sound.

Understanding check

Did touching change the bowl's vibration or stop sound already far away?

Answer guidance: It reduced the bowl's vibration and the sound it continued to make.

Participation choices: The adult taps and touches while the child chooses when to compare. Accept pointing, words, a drawing or adult-directed action. Use the story alone if the activity is unsuitable.

Words to explore

vibrate — Move quickly back and forth.

Full adult notes and honest limits

Use an empty, smooth-edged metal mixing bowl and a wooden spoon on a stable hard surface within comfortable reach. An adult supervises and can do both taps. Keep the bowl away from ears; use one gentle tap, never repeated banging. First tap the outside lightly and listen without touching. Wait for the ring to fade. Repeat the same gentle tap on the same spot, then gently rest a hand against the outside of the bowl soon after the tap. Keep the bowl and surface the same. Ask which ring lasted longer and what changed. If the bowl barely rings, choose another metal bowl and repeat BOTH trials with it; support, material, contact and tap strength affect the result. Stop if anyone finds the sound uncomfortable. A child may point, predict, listen from farther away or direct an adult. This is a qualitative listening comparison, not an exact timed measurement or guaranteed result. Touch damps the bowl's vibration (reduces its motion); it does not slow sound travelling through the air or necessarily lower its pitch. Sound comes from vibration; not every moving object makes an audible sound. Arrows and ring marks in these static illustrations are explanatory conventions, not visible sound waves, and the motion is exaggerated. In a small group, welcome different predictions and let children describe the change in their own words. Related reading: [Gina and the Quiet Sounds](#) explores listening to everyday sounds, not this exact bowl experiment. This is an editorially reviewed activity, not evidence of a performed home trial or measured family learning.

Related reading

Gina and the Quiet Sounds invites listening to everyday sounds. The bowl test is an additional activity.

Scientific sources

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

supercharged-school-seeing-sound-waves — <https://www.superchargedschool.com/seeing-sound-waves/>

asnt-tuning-fork — <https://foundation.asnt.org/resources/education/ndt-classroom-experiments/tuning-fork>

Can you draw a hidden leaf?

Ages 4–7 with a grown-up · 10–15 minutes · Look for a pattern

<https://kiddos.ai/explorations/learning-with-gina-and-ollie/can-you-draw-a-hidden-leaf>

Wonder together

A leaf in hiding. Gina covers the leaf with paper. What will a crayon reveal?

Materials

A safe flexible fallen leaf, thin plain paper and a large non-toxic age-appropriate crayon.

Adult setup – read before trying

An adult chooses a clean leaf with raised veins, avoiding unknown, irritating, thorny or decaying plants, and removes the crayon wrapper. Work on a protected smooth hard surface. Keep leaves/crayon out of mouths; wash hands afterward.

Try together

1. An adult selects a safe flexible fallen leaf and prepares an unwrapped crayon.
2. Put the leaf bumpy-side up on a smooth hard surface. Cover with thin plain paper and hold still.
3. Rub with the crayon's long side. Lift the paper and match the outline and lines to the leaf.

Keep the comparison clear

Keep fixed: Leaf and paper stay still over the same hard surface.

What changes: Crayon wax collects as you rub across the covered leaf.

Look for: Match the rubbing's outline and branching lines with the original leaf.

Explain with care

Raised veins make higher areas under the paper where more crayon marks collect.

The leaf's green pigment does not pass through the paper. A rubbing may miss tiny veins; it is not a plant-identification or tasting guide.

Talk about it

A leaf in hiding. Gina covers the leaf with paper. What will a crayon reveal?

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

Which lines in your rubbing match the leaf?

Answer cue: Look for the outer shape, central vein and branching veins.

Where did the color on the paper come from?

Answer cue: From the crayon wax, not from the leaf's green pigment.

A parent move: Ask the child to find one matching feature before naming veins.

Start simply: One person holds the paper while the other rubs with the crayon's long side.

Explore further: Make two rubbings and match them to two safe leaves using shapes and lines.

Return to it: Look at a different safe leaf and predict which raised lines would show.

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. Which lines in your rubbing match the leaf? 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. Match the rubbing's outline and branching lines with the original leaf.

4 min · Make meaning

Where did the color on the paper come from? Invite a drawing, a description or an adult-written note. Ask the child to find one matching feature before naming veins.

Understanding check

Where did the color on the paper come from?

Answer guidance: From the crayon wax, not from the leaf's green pigment.

Participation choices: One person holds the paper while the other rubs with the crayon's long side. Accept pointing, words, a drawing or adult-directed action. Use the story alone if the activity is unsuitable.

Words to explore

veins — The branching lines in a leaf; some feel raised.

rubbing — A picture made by rubbing a crayon over paper laid on a textured surface.

Full adult notes and honest limits

An adult selects a clean, safe, flexible fallen leaf with easy-to-feel raised veins, avoiding unknown, irritating, thorny or decaying plants. No picking living plants is needed. Use thin plain paper and a large, age-appropriate non-toxic crayon with its wrapper removed by the adult. Work on a smooth hard surface, protecting it as needed. Let the child feel the leaf gently and make a guess first. Put the bumpy vein side upward, cover the leaf completely with paper, and hold both still. Use the long side of the crayon, not its point, to rub lightly back and forth over the covered leaf. One person can hold while the other rubs. Continue across the whole leaf area, then lift the paper and compare outline and vein branches. Darker wax gathers over raised areas; the leaf's green pigment does not pass through the sheet. Rubbings may be faint or patchy: try thinner paper, a darker crayon, a flexible leaf with more pronounced veins, or steadier holding. Do not promise a perfect copy of every tiny vein. For a second challenge, make rubbings of two safe leaves and ask your child to match each print to its leaf using shape and lines. A child can choose the crayon, feel the ridges, predict, point or direct an adult without needing a particular grip. Keep leaves and crayons out of mouths and wash hands after handling leaves. Teachers can offer leaf/rubbing pairs for a small-group matching task and ask children what evidence helped them choose. The illustrated leaf is a generic broad leaf, not a species-identification guide. The related story explores plant growth; its nibbling scene is not permission to taste collected plants. This is editorially reviewed, not a performed family trial or proof of measured learning.

Related reading

How Does It Grow? explores plants. Its story does not authorize tasting a collected leaf.

Scientific sources

huntington-leaf-etching — <https://www.huntington.org/digital-classroom-resources/activity-leaf-etching>

nebraska-extension-leaf-rubbing — <https://lancaster.unl.edu/leaf-rubbing/>

science-buddies-leaf-rubbing-physics —

https://www.sciencebuddies.org/science-fair-projects/project-ideas/Phys_p126/physics/clean-room-leaf-rubbing

Which bowl melts ice faster?

Ages 4–7 with a grown-up · 15–30 minutes, with short checks · Make a fair comparison

<https://kiddos.ai/explorations/learning-with-gina-and-ollie/which-bowl-melts-ice-faster>

Wonder together

Cooler to touch. Slower to melt? Metal can feel cooler than plastic. Which bowl would you choose to keep an ice cube longer?

Materials

Similar plain metal and plastic unbreakable bowls, two equal-size ice cubes from the same tray and a stable tray.

Adult setup – read before trying

Let both dry bowls reach the same room temperature well in advance. Avoid insulated/coated metal and direct sun, heaters or fans. An adult adds cubes together. No salt, heat or added water; keep ice/meltwater out of mouths, avoid prolonged ice contact and wipe spills. Empty and dispose of the meltwater afterward.

Try together

1. Adult selects similar metal/plastic bowls at room temperature.
2. Adult adds equal ice cubes together; place side by side away from sun/heaters.
3. Watch every few minutes; compare ice remaining, keeping ice out of mouths and cleaning spills.

Keep the comparison clear

Keep fixed: Room, starting time, similar bowls and matched cubes.

What changes: Bowl material; other bowl properties cannot be perfectly matched at home.

Look for: Compare solid ice remaining every few minutes, not just puddle size.

Explain with care

Both room-temperature bowls are warmer than the ice. Metal commonly transfers heat into it faster than plastic.

Feeling cooler does not prove a lower temperature. Bowl thickness, coatings, mass, ice contact and room conditions affect the result; never heat a bowl to force it.

Talk about it

Cooler to touch. Slower to melt? Metal can feel cooler than plastic. Which bowl would you choose to keep an ice cube longer?

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

Which cube has more solid ice left?

Answer cue: In the story the metal bowl's cube shrinks faster; report your actual result.

Does the metal make heat?

Answer cue: No. It passes heat from the warmer bowl and surroundings toward the ice.

A parent move: Treat a surprising or similar result as something to describe, not something the child got wrong.

Start simply: Draw or point to the amount of ice remaining at two checks.

Explore further: Let bowls return to room temperature, swap positions and repeat with fresh matched cubes.

Return to it: Ask why metal can feel cool to a warm hand yet help ice melt faster.

In the classroom

A 20-minute session; melting may need longer, with brief observation breaks.

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. Which cube has more solid ice left? 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. Compare solid ice remaining every few minutes, not just puddle size.

4 min · Make meaning

Does the metal make heat? Invite a drawing, a description or an adult-written note. Treat a surprising or similar result as something to describe, not something the child got wrong.

Understanding check

Does the metal make heat?

Answer guidance: No. It passes heat from the warmer bowl and surroundings toward the ice.

Participation choices: Draw or point to the amount of ice remaining at two checks. Accept pointing, words, a drawing or adult-directed action. Use the story alone if the activity is unsuitable.

Words to explore

melt — Change from solid ice into liquid water.

heat — Energy that moves from something warmer to something cooler.

Full adult notes and honest limits

Use two dry, unbreakable bowls of similar size and shape: one plain metal and one plastic. Avoid insulated, double-wall or coated metal bowls, which can hide the effect. Set both in the same comfortable room well in advance so neither is cold from a fridge or hot from washing. Keep them side by side on a stable tray away from sunlight, heaters and fans. Before adding ice, an adult may invite a brief touch of the outside of each room-temperature bowl; feeling cooler does not prove a lower starting temperature. The adult places one equal-size ice cube from the same tray in each empty bowl at nearly the same time. Do not add water, salt or heat. Observe every few minutes and compare how much solid ice remains; puddle spread alone is unreliable. Metal commonly conducts heat into the ice faster than plastic. Heat comes from the warmer bowls and room; metal does not make heat or contain cold. The same quick transfer carries heat away from a warm hand into room-temperature metal, making it feel cooler. Actual times and differences vary with room conditions, bowl material, thickness, mass, coatings, ice contact and cube size; this is a qualitative home exploration, not a measurement of conductivity or heat capacity. If results are close, discuss that honestly, re-equilibrate the bowls, and repeat with fresh matched cubes; never heat a bowl to force the illustrated result. Ask the child what stayed the same and what changed. Let them point, predict, describe the shrinking ice or direct the adult. For a repeat, swap left and right positions while keeping materials and setup the same. Small groups can compare predictions and draw the amount of ice left; no child needs to touch ice or read independently. Adult supervision throughout; no ice or experiment water in mouths, no prolonged skin contact with ice, and wipe spills promptly. Dispose of meltwater after. The related book is a water-cycle story, not the source of this activity or evidence that melting and evaporation are the same process. This package is editorially reviewed; no live home trial or measured learning outcome is claimed.

Related reading

Where Did My Water Go? explores water's journey. Melting here is a different change from evaporation.

Scientific sources

acs-changing-state-melting — <https://www.acs.org/middleschoolchemistry/lessonplans/chapter2/lesson5.html>

aps-getting-warmer-colder — <https://www.aps.org/learning-resources/getting-warmer-colder>

chicagoacs-melting-snow — <https://chicagoacs.org/articles/419>

Did the pencil bend?

Ages 4–7 with a grown-up · 5–10 minutes · Check an appearance

<https://kiddos.ai/explorations/learning-with-gina-and-ollie/did-the-pencil-bend>

Wonder together

Just add water? Gina leans a pencil in an empty cup. Will adding water change how it looks?

Materials

A clear smooth-sided unbreakable cup, room-temperature water, an unsharpened pencil and a tray.

Adult setup – read before trying

An adult rests the pencil diagonally, then fills the cup about two thirds full. Handle the pencil away from faces; no detachable eraser, lasers or bright lights into eyes. No tasting; wipe spills and empty the cup.

Try together

1. Adult angles an unsharpened pencil in an empty clear plastic cup.
2. Predict; adult adds water to about two thirds full. Look from the side near the waterline.
3. Adult removes pencil; compare its straight shape. Change viewpoint and repeat.

Keep the comparison clear

Keep fixed: Cup and straight pencil; keep its position while adding water.

What changes: Water around the lower part, then your viewpoint.

Look for: Look near the waterline, then remove and dry the pencil to check its shape.

Explain with care

Light from the submerged pencil changes direction across material boundaries on its way to your eye, making part look shifted.

Cup walls also affect the image. The simple diagram omits those boundaries; different viewing angles need not show the same apparent bend.

Talk about it

Just add water? Gina leans a pencil in an empty cup. Will adding water change how it looks?

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

Where does the pencil seem shifted?

Answer cue: Near the boundary between its submerged and above-water parts.

What can we do to check whether it really bent?

Answer cue: Take it out, dry it and look along its straight length.

A parent move: Separate “looks bent” from “is bent” without dismissing what the child sees.

Start simply: An adult adjusts the viewing height while the child points to the apparent change.

Explore further: Compare two viewing positions with the same cup and pencil.

Return to it: Ask how checking an object another way helped you understand its appearance.

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. Where does the pencil seem shifted? 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. Look near the waterline, then remove and dry the pencil to check its shape.

4 min · Make meaning

What can we do to check whether it really bent? Invite a drawing, a description or an adult-written note. Separate “looks bent” from “is bent” without dismissing what the child sees.

Understanding check

What can we do to check whether it really bent?

Answer guidance: Take it out, dry it and look along its straight length.

Participation choices: An adult adjusts the viewing height while the child points to the apparent change. Accept pointing, words, a drawing or adult-directed action. Use the story alone if the activity is unsuitable.

Words to explore

refraction — A change in light’s direction as it passes between materials.

Full adult notes and honest limits

Set a clear, smooth-sided, unbreakable plastic cup on a stable tray or mat. Use ordinary room-temperature water and one straight unsharpened pencil, preferably without a detachable eraser. An adult rests the pencil diagonally in the empty cup with its lower end supported by the base and upper shaft resting on the rim. Invite a prediction before adding water. The adult slowly fills the cup about two thirds full without changing the pencil position; part must remain above the water. View from the side, near the waterline, and gently vary viewing angle until the submerged portion looks shifted. The adult then lifts the pencil out, dries it, and lays it alongside the cup so the child can look from end to end. It is still straight. The observed bend or break is an optical effect, not damage or a change in pencil shape. Light from the submerged part changes direction as it crosses material boundaries on its way to the eye. Curved cup walls also refract and can magnify or shift the image; the simple page-5 diagram isolates one water-to-air boundary rather than tracing the full cup geometry. Its arrows show direction toward the eye, not light emitted by the eye or a visible beam. Refraction depends on angle; light entering square-on need not change direction. Invite the child to point, describe, choose a new viewpoint or direct the adult. Ask "What changed when we added water? What stayed the same?" Repeat at a different viewing angle, keeping the same cup and pencil. If the effect is faint, try a smoother clear cup, a different pencil angle or a different viewing height; do not promise every view looks identical to the illustration. For a small group, collect different guesses and draw the observed pencil before and after; independent reading is unnecessary. The adult pours and handles the pencil away from faces; keep experiment materials out of mouths, wipe spills, and empty the cup afterward. Use ambient room light; no lasers or bright lights aimed into eyes. The activity takes only a few minutes and needs no special equipment. Gina and the Light Chase is related reading about light, shadows and reflection; the shipping story does not contain this pencil experiment. No live family trial or measured learning outcome is claimed.

Related reading

Gina and the Light Chase explores shadows and reflection. Refraction in this pencil activity is another light discovery, absent from the story.

Scientific sources

ingenium-broken-pencil — <https://ingenium.ca/en/learn/science-at-home/broken-pencil-illusion/>

aps-bendy-light — <https://www.aps.org/learning-resources/bendy-light>

openstax-physics-refraction — <https://openstax.org/books/physics/pages/16-2-refraction>

Will it float without its peel?

Ages 4–7 with a grown-up · 10–15 minutes · Compare before and after

<https://kiddos.ai/explorations/learning-with-gina-and-ollie/will-it-float-without-its-peel>

Wonder together

Peel on. Peel off. Will it float with its peel? What about without?

Materials

One ordinary fresh orange, a clear unbreakable bowl, room-temperature water and a tray.

Adult setup – read before trying

An adult pours enough water to cover the peeled fruit while leaving room below the rim, lowers/releases the fruit and peels it by hand without a knife. Keep segments together. Skip for citrus allergy. Do not taste the experiment fruit/water; keep peel from mouths, supervise water and empty it afterward.

Try together

1. Predict; adult lowers whole orange in deep water and releases it.
2. Observe where it settles. Adult removes and peels the same orange by hand.
3. Lower and release the peeled fruit; observe, compare, and describe the actual result.

Keep the comparison clear

Keep fixed: The same fruit, bowl and water.

What changes: Removing peel changes both mass and volume.

Look for: Observe where the released fruit settles relative to the water surface and bottom.

Explain with care

Tiny air spaces in the rind help reduce the whole fruit's average density. Without that layer, the remaining fruit may be denser than water.

Whole oranges usually float and peeled ones often sink, but variety, pith and trapped air matter. Never force the fruit under to match the picture.

Talk about it

Peel on. Peel off. Will it float with its peel? What about without?

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

Where did each version settle after you let go?

Answer cue: Describe the actual positions; the illustrated whole fruit floats and peeled fruit sinks.

Does a lighter object always float more easily?

Answer cue: No. Removing peel changes volume too; weight alone does not decide floating.

A parent move: Welcome a new prediction before testing the peeled version.

Start simply: An adult handles the fruit while the child points to the waterline.

Explore further: Draw both observations, showing the waterline and the same bowl.

Return to it: Use “usually” and “in our test” when telling someone what happened.

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. Where did each version settle after you let go? 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. Observe where the released fruit settles relative to the water surface and bottom.

4 min · Make meaning

Does a lighter object always float more easily? Invite a drawing, a description or an adult-written note. Welcome a new prediction before testing the peeled version.

Understanding check

Does a lighter object always float more easily?

Answer guidance: No. Removing peel changes volume too; weight alone does not decide floating.

Participation choices: An adult handles the fruit while the child points to the waterline. Accept pointing, words, a drawing or adult-directed action. Use the story alone if the activity is unsuitable.

Words to explore

float — Stay at the surface of the water.

sink — Move down into the water.

density — How much mass fits in a given amount of space; adult extension.

Full adult notes and honest limits

Use a smooth, transparent, unbreakable plastic bowl on a stable tray, one ordinary fresh orange, and room-temperature tap water. Add enough water for the peeled fruit to fit fully below the surface while resting on the bottom, leaving plenty of room below the bowl rim to avoid overflow. The adult pours and gently lowers the whole orange, then lets go. Ask the child to predict before either test and point to where fruit meets water. The adult lifts the same fruit out, peels it by hand without a knife, keeps the segments together, and gently lowers and releases it again. Observe after it settles. Keep the bowl, water and fruit the same; peel removal changes both mass and volume, so this is not a test of mass alone. The waterline may move slightly because the displaced volume changes. Whole oranges usually float; peeled oranges often sink. Variety, ripeness, peel thickness, remaining pith and trapped air can change the outcome. If yours differs, describe or draw the actual result; do not hold it under, change the water, or promise a guaranteed result. The tiny air spaces in the rind help lower the average density of the whole fruit. Removing this relatively low-density layer may leave fruit denser than water. Gravity still acts on floating objects; water pushes upward. Weight alone does not decide flotation. Page 5 is a simplified enlarged peel diagram, not a microscopic image; it does not show a hollow orange or literal air bubbles leaving the fruit. Let the child point, describe, draw, or direct the adult. Ask “What changed? What stayed the same?” Compare your two observations and welcome a changed prediction. For a small group, collect guesses, then draw the waterline on pictures of the two fruit states. Adults handle fruit and water; choose another activity for citrus allergy. Keep peel and fruit away from mouths and younger siblings, do not taste experiment water or fruit, wipe spills, and empty the bowl when finished. This brief activity needs no salt, hot water, knife or special equipment. Gina and the Great Gravity Hug is related reading about Earth’s pull; its shipping story does not contain the orange experiment. No live family trial or measured learning outcome is claimed.

Related reading

Gina and the Great Gravity Hug explores Earth’s pull. The orange activity adds a separate question about floating.

Scientific sources

iop-fruity-floater — <https://spark.iop.org/fruity-floater>

science-world-floaters — <https://www.scienceworld.ca/resource/floaters-and-sinkers/>

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>

Can paper stay dry underwater?

Ages 4–7 with a grown-up · 10–15 minutes · Use evidence for hidden air

<https://kiddos.ai/explorations/learning-with-gina-and-ollie/can-paper-stay-dry-underwater>

Wonder together

Wet? Or dry? Paper is tucked inside. The opening goes down first.

Materials

A small stable clear plastic tub, a short rigid hole-free clear plastic cup, paper towel, water and a towel under the tub.

Adult setup – read before trying

Adult stays within arm's reach throughout. Use only water deep enough to cover the small inverted cup; no glass or large bucket. Keep faces, younger children and pets away. Wedge dry paper firmly at the dry cup's closed bottom, leaving air space. Wipe spills and empty the tub immediately afterward.

Try together

1. Tuck dry paper firmly at closed bottom of dry plastic cup.
2. Turn mouth down; lower and lift straight without tilting. Dry the rim, then check the paper.
3. Repeat and tilt underwater to observe escaping air and entering water. Adult stays beside the activity and empties tub afterward.

Keep the comparison clear

Keep fixed: Cup, paper placement, water tub and careful handling.

What changes: Cup orientation: straight down, then deliberately tilted underwater.

Look for: Dry the rim before checking the paper. On the tilted test, look for bubbles leaving and water entering.

Explain with care

Air already inside the inverted cup takes up space. Tilting lets some air escape so more water can enter.

Air is compressible, not a solid lid or vacuum. Leaks, splashes, loose paper or drips may wet it; a tiny tilt may not immediately wet the whole towel.

Talk about it

Wet? Or dry? Paper is tucked inside. The opening goes down first.

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

What left the cup when it tilted?

Answer cue: Air escaped as bubbles while water entered.

Was an apparently empty cup really empty?

Answer cue: It held air, even though we could not see the air directly.

A parent move: Pause before tilting for a second prediction; reset if a splash confuses the observation.

Start simply: The adult performs both immersions while the child chooses straight or tilted.

Explore further: Repeat carefully with dry equipment and explain what the bubbles show.

Return to it: Recall this cup when talking about another place air takes up space.

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 left the cup when it tilted? 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. Dry the rim before checking the paper. On the tilted test, look for bubbles leaving and water entering.

4 min · Make meaning

Was an apparently empty cup really empty? Invite a drawing, a description or an adult-written note. Pause before tilting for a second prediction; reset if a splash confuses the observation.

Understanding check

Was an apparently empty cup really empty?

Answer guidance: It held air, even though we could not see the air directly.

Participation choices: The adult performs both immersions while the child chooses straight or tilted. Accept pointing, words, a drawing or adult-directed action. Use the story alone if the activity is unsuitable.

Words to explore

air — The mixture of gases around us; it takes up space.

bubble — A pocket of gas surrounded by liquid.

Full adult notes and honest limits

Use a small, stable clear plastic food tub and a short, rigid clear plastic cup with an intact closed base and no holes. Do not use glass or a large bucket. An adult prepares room-temperature water only deep enough to cover the small inverted cup, places the tub on a stable waterproof surface at comfortable reach, and stays within arm's reach throughout. Keep younger children and pets away; never leave standing water unattended. Use a towel beneath the tub, keep faces above and away from the water, wipe spills promptly and empty the tub immediately after the activity. Children can point, predict or direct instead of handling water. Begin with a dry cup and dry paper towel. Crumple enough paper to wedge firmly at the closed bottom so it stays put when turned over; leave most of the cup's space open. Turn the opening straight down. Lower it slowly until submerged without tilting, then lift it vertically out again. Dry the outside and rim before touching the paper so drips do not spoil the check. The paper should remain dry if air is retained and the paper is well above the rim. If it gets wet, notice that result without blame: check for a tilt, a leaky cup, loose or low-hanging paper, splashes or drips. Reset with a dry cup and dry paper. For the second test use the same cup, paper placement and tub; lower it again, then tip it sideways under water until bubbles escape. Water enters as the air leaves and may wet the paper as the cup fills. Do not promise that a tiny tilt immediately wets the whole towel. Pause before the tilt to welcome another prediction. Compare the orientation and resulting air/water movement; do not call an accidental splash evidence about trapped air. The small amount of water that can rise inside a straight cup compresses the trapped air slightly; air is not an impenetrable solid lid and is not the same as a vacuum. The simplified diagram shows air and water regions, not literal air color or scale-perfect compression. No live family trial or measured learning gain is claimed. In a small group, an adult holds the tub while children take turns directing straight/tilted tests and drawing what the bubbles reveal, with no ranking of guesses. The invitation to Where Did My Water Go? is related reading about another water question; its shipping story teaches the water cycle and does not include this trapped-air experiment.

Related reading

Where Did My Water Go? is a separate water-cycle adventure. This activity investigates trapped air.

Scientific sources

acs-air-really-there — <https://www.acs.org/content/dam/acsorg/education/resources/k-8/science-activities/solidsliquids/gases/air/air-science-for-kids.pdf>

nasa-dunked-napkin — <https://www.nasa.gov/stem-content/dunked-napkin/>

science-world-invisible-air — https://www.scienceworld.ca/wp-content/uploads/attachments/8_TWOS_BSLH2_Air%20Up%20There.pdf

nasa-glenn-boyles-law — <https://www1.grc.nasa.gov/beginners-guide-to-aeronautics/boyles-law/>

What's hiding in black ink?

Ages 5–7 with a grown-up · 10–15 minutes · Separate a mixture

<https://kiddos.ai/explorations/learning-with-gina-and-ollie/whats-hiding-in-black-ink>

Wonder together

Just black? Gina made one black dot. What might water reveal?

Materials

A white paper coffee filter, suitable water-soluble washable black marker, plastic plate, blunt teaspoon and a little room-temperature water.

Adult setup – read before trying

Follow the marker age/use label. Adult controls caps and helps drops; keep materials from mouths/eyes. Water only: no permanent markers, alcohol or solvents. Protect the surface; no tasting or using the filter for food. Wash hands/equipment and dispose of water afterward.

Try together

1. Make a black dot on a dry white coffee filter. Rest it on a plastic plate.
2. Drop water onto the dot. Just a few drops. Wait a few minutes.
3. What colors can you see? Try another washable marker on a fresh filter.

Keep the comparison clear

Keep fixed: The same dot and filter as water moves outward.

What changes: Adding a few drops of water, then waiting.

Look for: Look for differently placed bands, lighter areas or colors in the spreading ink.

Explain with care

Water carries mobile colorants through paper. Different interactions with water and paper can separate some components of the ink.

Water does not create colors. Marker formulas differ: the story's blue, pink and gold are one example, not a promised result.

Talk about it

Just black? Gina made one black dot. What might water reveal?

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

What appeared as the water spread?

Answer cue: Describe any bands or light/dark areas, even when few colors separate.

Were the revealed colors made by the water?

Answer cue: No. They were components already in the ink.

A parent move: Accept descriptions of shapes and light/dark without requiring exact color names.

Start simply: Make a solid dot about 1 cm across, then use just a few small drops.

Explore further: Compare another suitable marker on a fresh filter, keeping dot size and water similar.

Return to it: Look at a dried filter and tell the before-and-after story.

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 appeared as the water spread? 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. Look for differently placed bands, lighter areas or colors in the spreading ink.

4 min · Make meaning

Were the revealed colors made by the water? Invite a drawing, a description or an adult-written note. Accept descriptions of shapes and light/dark without requiring exact color names.

Understanding check

Were the revealed colors made by the water?

Answer guidance: No. They were components already in the ink.

Participation choices: Make a solid dot about 1 cm across, then use just a few small drops. Accept pointing, words, a drawing or adult-directed action. Use the story alone if the activity is unsuitable.

Words to explore

mixture — Different things together.

chromatography — A way to separate parts of a mixture as a liquid or gas carries them through another material.

Full adult notes and honest limits

Prepare together. Use a white paper coffee filter, a child-appropriate black water-soluble washable marker, a plastic plate, a blunt teaspoon and a small amount of room-temperature water in a plastic cup. Read the marker label and follow its age and use instructions. This version uses water only: do not substitute permanent markers, rubbing alcohol or other solvents. No cutting, glass or heated water is needed. Protect the surface; ink can stain. An adult stays beside the activity, controls marker caps and helps with drops. Keep ink, wet paper and caps away from mouths and eyes. Do not taste the water or use the wet filter for food. Wash hands and the plate/spoon afterward and dispose of leftover water promptly.

Try the reveal. Flatten the dry filter on the plate. Make one solid black dot about 1 cm across at its center, then cap the marker. Ask for a prediction before adding water. Put a little water in the teaspoon and let a few small drops fall onto the dot with adult help. Add water slowly rather than pouring a spoonful. Pause as it soaks through the paper; observe for a few minutes. Add another drop or two if the damp patch stops spreading before any separation appears. Stop before the filter is flooded or a puddle forms. Keep the plate still. The first and later pictures represent the same filter as time passes.

Understand the result. Many black marker inks contain several colorants. Water dissolves mobile components and carries them through the paper. Their differing interactions with the water and paper can separate them into visible bands: paper chromatography. Water does not create the colors. The illustrated blue, pink and gold are one example, not a guaranteed set, order or timing. Some washable markers separate only a little; paper type and ink formulation also matter. A permanent marker that does not move in water is not evidence that it contains only one color. Describe the result without blame. If needed, start again with a fresh filter and another suitable washable marker; never add another solvent.

Give the child a role. Welcome guesses without ranking them. Children can add drops with adult help, point to a band, compare its position, describe light and dark regions or draw what changed. No exact color name is required. Ask “What changed after we added water?” and “Were those colors already in the ink?” For a small group, prepare one supervised plate per turn and let children record a before/after sketch. To compare markers, keep the filter type, dot size and water amounts as similar as practical; change only the marker. Dry filters can become a record of the observation, kept away from younger children.

Read on. The Fizzy Volcano follows Gina and Ollie through a separate baking-soda-and-vinegar story. It does not contain this marker experiment. The current carousel separates an existing mixture; it does not claim that chromatography is the fizzy chemical reaction in that story. Illustrations and diagrams are editorial examples; no live family trial or measured learning improvement is claimed.

Related reading

The Fizzy Volcano shows a separate baking-soda-and-vinegar reaction. Separating ink is a different process.

Scientific sources

exploratorium-black-magic — https://dev-annex.exploratorium.edu/science-explorer/black_magic.html

acs-investigating-ink — <https://www.acs.org/education/activities/investigating-ink.html>

acs-mystery-markers — <https://www.acs.org/education/activities/mystery-markers.html>

Can soap move pepper?

Ages 5–7 with a grown-up · 5–10 minutes · Compare two touches

<https://kiddos.ai/explorations/learning-with-gina-and-ollie/can-soap-move-pepper>

Wonder together

Stay or scatter? The pepper rests on water. What will a touch of soap do?

Materials

A clean shallow plastic bowl, water about 1 cm deep, a small pinch of ground pepper, ordinary dish soap and two cotton swabs.

Adult setup – read before trying

An adult handles pepper and soap and follows the soap label. Sprinkle close to water away from faces; do not blow/sniff. Skip if pepper irritates anyone. Keep materials out of eyes/mouths, no tasting. Protect surface; wash hands, clean equipment and empty water afterward.

Try together

1. Adult adds room-temperature water about 1 cm deep to the clean shallow bowl. Let it settle, then lightly scatter a small pinch of pepper close to the surface and away from faces.
2. Touch the middle gently with a clean, water-wet swab. Do not stir. What happens?
3. Use a fresh swab with a tiny dab of dish soap. Touch the middle gently.
4. Rinse well. Start again with fresh water, pepper and fresh swabs.

Keep the comparison clear

Keep fixed: Bowl, settled water and a similar gentle touch without stirring.

What changes: A water-wet swab is followed by a fresh swab with a tiny soap dab.

Look for: Watch pepper move outward and a clearer central patch appear.

Explain with care

Soap locally lowers surface tension. The surrounding surface pulls more strongly, causing flow that the pepper helps make visible.

Pepper is not fleeing, becoming germs or disappearing. Some plain-water movement is possible. Soap residue weakens a repeat: rinse and use a fresh setup.

Talk about it

Stay or scatter? The pepper rests on water. What will a touch of soap do?

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

Where did pepper move after the soap touch?

Answer cue: Much of it can move away from the soapy area; some specks may remain.

Is this a demonstration of germs running away from soap?

Answer cue: No. It shows a physical effect at the water surface, not a model of handwashing.

A parent move: Ask what moved before offering an explanation for why.

Start simply: Adult performs both touches while the child watches or describes the clearing.

Explore further: Rinse thoroughly and repeat with fresh water, pepper and swabs.

Return to it: Ask whether the pepper vanished or simply changed position.

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. Where did pepper move after the soap touch? 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. Watch pepper move outward and a clearer central patch appear.

4 min · Make meaning

Is this a demonstration of germs running away from soap? Invite a drawing, a description or an adult-written note. Ask what moved before offering an explanation for why.

Understanding check

Is this a demonstration of germs running away from soap?

Answer guidance: No. It shows a physical effect at the water surface, not a model of handwashing.

Participation choices: Adult performs both touches while the child watches or describes the clearing. Accept pointing, words, a drawing or adult-directed action. Use the story alone if the activity is unsuitable.

Words to explore

surface — The top of the water.

surface tension — A pull along a liquid's surface caused by attraction between its molecules.

Full adult notes and honest limits

Prepare together. Use a clean shallow plastic bowl, room-temperature water about 1 cm deep, a small pinch of ground black pepper, ordinary liquid dish soap and two cotton swabs. An adult handles pepper and soap, follows the soap label, and stays beside the activity. Sprinkle gently close to the water, away from faces; do not blow or sniff the pepper. Skip pepper if it irritates anyone or is unsuitable for them. Keep swabs, soap and pepper away from eyes and mouths. Do not taste. Protect the surface, wipe spills, wash hands and clean the bowl afterward. No glass, sharp sticks or heat is needed.

Test one change. Let the water settle, then add a light scattering of pepper. Ask for a guess before soap is added. First, wet a clean swab with plain water and gently touch the center without stirring. A few specks may shift or stick to the swab. Keep the bowl, water and gentle touch the same. An adult puts a tiny dab of dish soap on a fresh swab; touch the center again and watch right away. A clearer central patch can appear as pepper moves outward. Exact speed, shape and remaining specks vary. Do not

describe the plain-water test as perfectly motionless or promise a flawless empty circle.

Understand the change. Water molecules attract one another, producing surface tension. Soap reduces that tension locally. The surrounding surface has a stronger pull, driving surface flow away from the soapy area; floating pepper makes that flow visible. Pepper does not run away by itself, dissolve instantly or disappear. The water remains in the bowl. This is a physical surface effect, not a model showing germs escaping soap or proof of how handwashing removes germs.

Try again thoughtfully. Soap residue can weaken the next result. Rinse the bowl thoroughly, use fresh water and pepper, and use fresh swabs. Start again if the water was already soapy, the pepper layer was too thick or the swab stirred the water. Keep the first and second touches gentle and similar; change only the soap. Do not keep adding more soap to a used bowl expecting the same sudden movement. A child can predict, point, draw before and after, describe the cleared area, or direct the adult; touching the materials is optional.

Share or read on. For a small group, use one supervised fresh setup per turn. Invite each child to describe what changed before naming surface tension. No exact pepper count, color naming, timed performance or winning guess is needed. *Where Did My Water Go?* follows Gina and Ollie through a separate water-cycle story; it does not contain this soap experiment. These illustrations and diagrams are editorial examples. No live family trial or measured learning improvement is claimed.

Related reading

Where Did My Water Go? explores the water cycle; this surface-tension activity is separate.

Scientific sources

fleet-pepper-and-soap — <https://www.fleetscience.org/activities-resources/pepper-and-soap>

acs-ed400316a — <https://pubs.acs.org/doi/10.1021/ed400316a>

csu-magic-pepper —

<https://garfield.extension.colostate.edu/wp-content/uploads/sites/43/2025/12/Surface-Tension-Magic-Pepper-Experiment.pdf>

Can a comb lift paper?

Ages 5–7 with a grown-up · 5–10 minutes · Compare before and after rubbing

<https://kiddos.ai/explorations/learning-with-gina-and-ollie/can-a-comb-lift-paper>

Wonder together

What might happen after rubbing the comb?

Materials

A dry blunt-toothed plastic comb, dry wool cloth and a few adult-torn pieces of thin single-layer tissue roughly 5 mm across.

Adult setup – read before trying

Use a calm dry indoor surface away from fans. Adult handles small pieces; keep them from mouths, noses, eyes, younger children and pets. Do not blow. Collect pieces afterward. No balloons, heat, batteries, sockets or appliances.

Try together

1. Hold the comb just above the paper without touching. What do you notice?
2. Rub the comb on dry wool several times, away from the paper.
3. Bring it back just as close. Keep it still. Watch, compare, then rub again to retry.

Keep the comparison clear

Keep fixed: Comb, tissue, still air and a similar close non-touching gap.

What changes: Rubbing the comb with dry wool before the second approach.

Look for: Look for tissue beginning to move before the comb touches it.

Explain with care

Rubbing can transfer electric charge. The charged comb can attract nearby neutral paper strongly enough to lift some pieces.

This is static electricity, not magnetism. Humidity, plastic, wool, weight and distance matter; the first comb may already have charge and not every piece must lift.

Talk about it

What might happen after rubbing the comb?

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

Did any piece move before the comb touched it?

Answer cue: A rise or jump before contact is useful evidence; sweeping or blowing is not.

Did rubbing turn the comb into a magnet?

Answer cue: No. This electric attraction is a different effect from a magnet's pull.

A parent move: Hold the comb still near the tissue so movement is easier to interpret.

Start simply: Adult runs the comparison while the child predicts, points or directs.

Explore further: If quiet, try a closer gap without contact or thinner tissue; keep powered equipment out.

Return to it: Compare this pull with the magnet story without calling them the same force.

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. Did any piece move before the comb touched it? 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. Look for tissue beginning to move before the comb touches it.

4 min · Make meaning

Did rubbing turn the comb into a magnet? Invite a drawing, a description or an adult-written note. Hold the comb still near the tissue so movement is easier to interpret.

Understanding check

Did rubbing turn the comb into a magnet?

Answer guidance: No. This electric attraction is a different effect from a magnet's pull.

Participation choices: Adult runs the comparison while the child predicts, points or directs. Accept pointing, words, a drawing or adult-directed action. Use the story alone if the activity is unsuitable.

Words to explore

static electric charge — An imbalance of electric charge on an object.

attract — Pull closer.

Full adult notes and honest limits

Prepare a calm test. An adult stays beside the activity and tears a few roughly 5 mm pieces of thin, single-layer tissue. Use a clean, dry plastic comb with blunt teeth and a dry wool cloth or wool sweater. Spread the paper on a smooth, dry, flat surface, indoors away from fans or breezes. The illustrated sheltered meadow is story staging; still indoor air is easier for a real test. Keep small pieces away from eyes, noses and mouths, do not blow or taste, and collect them afterward. Keep younger siblings and pets away from the small pieces. No balloons, glass, batteries, sockets or appliances are involved.

Compare one change. First bring the unrubbed comb slowly to within about 5 mm of the paper, without touching it, and hold still. Notice the starting behavior; a comb can already carry some charge, so an absolutely motionless control is not guaranteed. Move the comb away, rub it several times on dry wool, then return to a similar close gap and hold still. Compare what happens. A few pieces may rise, jump or stick; others may stay down. Watch for the first movement before contact. Do not sweep the comb through the paper, blow on it or treat all movement as proof of static attraction.

Explain the invisible pull. Contact and separation during rubbing can transfer charge between the materials, leaving the plastic comb electrically charged. Its electric field shifts charge slightly within nearby neutral paper, causing attraction. The paper does not need an initial net positive charge. If the upward electric force is strong enough relative to the paper's weight, the paper lifts. The simplified arrow on slide 5 indicates pull direction, not a physical beam, wind or magic. This is static electricity, not magnetism; rubbing has not turned the comb into a magnet.

If the first try is quiet, stay curious. Dryness, plastic type, the wool, paper weight and distance all matter. Try thinner, smaller single-layer tissue, a closer non-touching gap or another ordinary plastic comb and wool cloth. Rub again if the effect fades, then wait for your hand and the air to settle. Humid conditions can weaken the demonstration. A few pieces may stick or fall away after touching the comb; this is not a reliable permanent hold. Do not heat materials or add powered equipment. The child can predict, point, draw the before/after, or direct the adult instead of handling tiny pieces.

Reuse the question. For a small group, let one adult run the demonstration while children predict or describe the difference. Compare the same comb, paper and gap before and after rubbing; a winning guess or exact count is unnecessary. Gina and the Magnet Mystery is a separate story about magnetic pulls and pushes, not the source of this static experiment. Do not generalize its metal wording to all metals. These are editorial illustrations and reviewed instructions; no live family trial or measured learning improvement is claimed.

Related reading

Gina and the Magnet Mystery explores magnetic pulls and pushes. The comb activity is static electricity, a distinct effect.

Scientific sources

yale-99-07-04 — <https://teachersinstitute.yale.edu/curriculum/units/1999/7/99.07.04/6>

openstax-college-physics-18-2 —

<https://openstax.org/books/college-physics-ap-courses/pages/18-2-conductors-and-insulators>

uh-electrostatic-forces-activity — <https://manoa.hawaii.edu/exploringourfluidearth/chemical/chemistry-and-seawater/atoms-molecules-and-compounds/activity-electrostatic-forces>

Can a paper flower bloom?

Ages 5–7 with a grown-up · 10–15 minutes including adult cutting · Watch paper change shape

<https://kiddos.ai/explorations/learning-with-gina-and-ollie/can-a-paper-flower-bloom>

Wonder together

Stay shut... or open? Gina has folded the petals in. What will water change?

Materials

Plain uncoated printer paper, adult-handled scissors and a wide unbreakable dish with shallow cool water.

Adult setup – read before trying

Adult cuts a palm-sized flower with broad separate petals, without cutting through the center. Fold gently inward; no glue or tape. Adult stays beside water. Keep scraps/craft from mouths; collect scraps, wipe spills and empty water afterward.

Try together

1. Ask an adult to cut a flower with broad, separate petals. Plain printer paper works.
2. Fold each petal inward over the center. Keep the folds gentle; no glue.
3. Add shallow water to the dish. Float the flower, folds up. Wait without pushing petals.

Keep the comparison clear

Keep fixed: The same paper flower placed folds-up and left untouched.

What changes: Paper absorbs water over time.

Look for: Notice which petals unfold and compare the folded and open shapes.

Explain with care

Water enters the paper's tiny spaces. Fibers absorb water and swell, helping creases relax and petals unfold.

This is not living growth. Paper, coatings, tight folds and overlapping petals affect opening; some flowers sink or soften first.

Talk about it

Stay shut... or open? Gina has folded the petals in. What will water change?

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

Which part moved first?

Answer cue: Describe the actual petals; there is no required order or opening time.

Did we grow a living flower?

Answer cue: No. The same cut paper unfolded as it became wet.

A parent move: Leave space for waiting, without pushing petals open to match the picture.

Start simply: Use broad petals and gentle folds in plain paper with no heavy wax coating.

Explore further: Compare two similarly folded flowers: one on a dry plate and one on water.

Return to it: Ask what is different between this paper flower and a living seedling.

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. How did the flower's shape change between the pictures? These still pictures do not tell us which petal moved first. 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 which petals unfold and compare the folded and open shapes.

4 min · Make meaning

Did we grow a living flower? Invite a drawing, a description or an adult-written note. Leave space for waiting, without pushing petals open to match the picture.

Understanding check

Did we grow a living flower?

Answer guidance: No. The same cut paper unfolded as it became wet.

Participation choices: Use broad petals and gentle folds in plain paper with no heavy wax coating. Accept pointing, words, a drawing or adult-directed action. Use the story alone if the activity is unsuitable.

Words to explore

absorb — Take in water.

swell — Become bigger as water is taken in.

Full adult notes and honest limits

Set up together. An adult cuts a simple palm-sized flower from ordinary uncoated printer paper, with several broad, distinct petals joined to a center. Six petals are shown, but an exact count is not required. Avoid deep cuts through the center and narrow petals that interlock. A child can choose the shape, predict or direct the adult. Fold each petal gently inward over the center. Use no tape or glue. Coloring is optional: a little colored pencil is enough; plain white paper works well. Heavy crayon, glossy coatings and thick card can slow or prevent wetting.

Float, then wait. Put a shallow layer of cool or room-temperature water in a wide unbreakable dish on a level, protected surface. An adult stays beside the child. Place the folded flower flat on the surface with the folded petals facing up. Let go and watch for up to a few minutes without pushing petals, submerging the flower or moving the dish. Ask what changed and which petal moved first. There is no promised opening time or required order. Wipe spills and empty the water after use; keep paper scraps away from mouths and collect them.

Explain what changed. Paper contains plant fibers. Water enters the paper, including through tiny spaces by capillary action. As the fibers absorb water and swell, the creased paper can relax and the petals unfold. The diagram is simplified and not to scale; no visible force, plant growth or life is being created. The same cut paper has changed shape. Real plants grow through living processes, so this craft is not a model of how a seed becomes a plant.

If it stays folded, investigate calmly. Paper type, thickness, coatings, petal overlap and tight creases affect the result. Try a fresh flower with broad petals, gentle folds and ordinary thin uncoated paper. Give it time. Do not add heat, soap or other liquids. Some petals may open unevenly; some flowers sink or soften before fully opening. Stop before the paper breaks up, then clear it away. For a second test, keep shape and folds similar and change only the paper type; compare observations without declaring one result a failure.

Reuse the observation. A small group can predict with words, pointing or a drawing while the adult places the flower. Children can draw the folded and open shapes or describe one difference. For a stronger comparison, make two similar flowers from the same paper, fold them alike and leave one on a dry plate while placing the other on water. Keep both away from breezes, observe for the same period, and note whether either dry fold loosens on its own. How Does It Grow? is optional related reading about living plants, not the source of this paper experiment. Do not taste the craft or imitate eating an unidentified plant. No live family trial or measured learning improvement is claimed.

Related reading

How Does It Grow? follows living plants. It helps contrast real growth with this paper craft.

Scientific sources

anu-capillary-action-flowers —

<https://science.anu.edu.au/engagement/science-lab-experiments-home-school/fun-magic-flowers>

cite-sciences-fleurs-de-papier — <https://www.cite-sciences.fr/fr/au-programme/lieux-ressources/bibliotheque/thematiques/enfants-familles/activites/1-jour-1-activite/fleurs-de-papier>

Where did the sugar go?

Ages 5–7 with a grown-up · 5–10 minutes · Explain dissolving

<https://kiddos.ai/explorations/learning-with-gina-and-ollie/where-did-the-sugar-go>

Wonder together

Will we still see the grains? Gina has a little sugar. What will happen in water?

Materials

A clear unbreakable cup, half a cup of cool water, one level teaspoon of plain white granulated sugar, a spoon and a tray.

Adult setup – read before trying

An adult measures named ingredients and supervises gentle stirring on a level tray. No tasting or unknown powders, heat or extra liquids. Keep materials away from mouths; wipe spills, empty the cup and wash equipment/hands afterward.

Try together

1. Pour half a cup of cool water into a clear unbreakable cup. Keep it on a level tray.
2. Add one level teaspoon of ordinary white sugar. Look for the grains.
3. Stir gently. Pause and look. Keep stirring until the grains are no longer visible.

Keep the comparison clear

Keep fixed: Same cup, amount of water and water temperature.

What changes: Sugar is added and mixed; visible grains become harder to see.

Look for: Look for grains before and after gentle mixing, including at the bottom.

Explain with care

Sugar molecules separate from one another and mix through the water. They remain sugar molecules, too small to see individually.

Sugar did not turn into water, melt or evaporate. The diagram is a model; a clear cup alone cannot prove what is present. Stirring helps but is not required for dissolving.

Talk about it

Will we still see the grains? Gina has a little sugar. What will happen in water?

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

What can you see at the bottom after mixing?

Answer cue: The visible grains can disappear from view; coarse grains may need more time.

Have the sugar molecules shrunk or changed into water?

Answer cue: No. They remain sugar, spread through the water.

A parent move: Ask for observations first, then label the invisible-particle explanation as a model.

Start simply: Use only the small measured amount; pause, look and stir gently again if grains remain.

Explore further: In a fresh matching setup, watch the same small amount before stirring; it can dissolve without stirring too.

Return to it: Explain to someone why “I cannot see it” is different from “it is gone.”

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 can you see at the bottom after mixing? 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. Look for grains before and after gentle mixing, including at the bottom.

4 min · Make meaning

Have the sugar molecules shrunk or changed into water? Invite a drawing, a description or an adult-written note. Ask for observations first, then label the invisible-particle explanation as a model.

Understanding check

Have the sugar molecules shrunk or changed into water?

Answer guidance: No. They remain sugar, spread through the water.

Participation choices: Use only the small measured amount; pause, look and stir gently again if grains remain. Accept pointing, words, a drawing or adult-directed action. Use the story alone if the activity is unsuitable.

Words to explore

dissolve — Mix into water as particles too small to see.

particle — A tiny part of a material; here, a sugar molecule.

Full adult notes and honest limits

Prepare a small observation. Put a clear unbreakable cup on a level tray. An adult measures about half a cup (120 mL) of cool or room-temperature water and one level teaspoon of ordinary white granulated table sugar. Use a small spoon that reaches the bottom. The illustration uses a wooden spoon; any suitable household teaspoon works. Use only the named ingredients. The adult stays beside the child and can do all pouring or stirring when needed. This is an observation activity, with no tasting. Wipe spills, empty the cup and wash the equipment and hands afterward.

Invite a prediction before adding sugar: will the grains stay visible? Add the sugar, look at the bottom, then stir gently. Pause to look and stir again if grains remain. Do not promise a fixed number of seconds. Compare the same cup before and after, keeping the water amount and temperature the same. Ask the child to describe what they can actually see before offering the explanation. The illustrated first instant shows grains; small grains may dissolve before the child can study them closely.

Explain the invisible part. Sugar grains contain many tiny sugar molecules. Water allows those molecules to separate from one another and mix through the water. They remain sugar molecules; the molecule itself does not shrink or break into smaller atoms. The page-five symbols are a teaching model, not something eyes or an ordinary magnifying glass can see. Their count illustrates that sugar remains, not a measured count of the cup. Water molecules are omitted for clarity. A clear-looking cup alone does not prove that sugar is absent or present; we know what we added and use the scientific model to explain the change.

If grains remain, keep the test small and patient. Check that only one level teaspoon went into about half a cup of water, stir gently near the bottom and allow more time. Coarse crystals can take longer. Avoid adding more sugar, heat, other liquids or unknown powders. If the water becomes cloudy because the material was not plain granulated sugar, start fresh with the named ingredients. We are observing dissolving, not comparing brands or testing how much sugar water can hold.

Make the learning usable. A child may stir with support, point to the cup, draw before and after, or direct the adult. Accept every initial guess calmly. Ask “What changed?” (the visible grains) and “What stayed?” (the same cup and the sugar in the water). For a small group, use one adult-led demonstration and invite observations in turn. For another observation, use fresh water and the same small amount of sugar; let a spoonful sit without stirring first. Sugar can dissolve without stirring too, though mixing helps it happen faster. Do not present stirring as a magical switch.

Continue the story only after the lesson. Where Did My Water Go? is related reading about a different change: water moving through the water cycle. This sugar activity is editorial and is not in that book. Dissolving sugar is not melting it or turning it into water vapor. The shared question is “What happened to something we can no longer see?” This package is designed for ages 5–7 with an adult; it is not a tested learning intervention, and no live family experiment was performed.

Related reading

Where Did My Water Go? asks about water’s journey. Dissolving sugar is different from water evaporating.

Scientific sources

acs-sugar-dissolving — <https://www.acs.org/middleschoolchemistry/lessonplans/chapter5/lesson4.html>

rsc-mass-and-dissolving —

<https://edu.rsc.org/solutions/mass-and-dissolving-chemical-misconceptions-ii-11-14-years/1084.article>

acs-using-dissolving — <https://www.acs.org/education/resources/k-8/inquiryinaction/fifth-grade/substances-have-characteristic-properties/lesson-2-1--using-dissolving-to-identify-substances.html>

What grows first?

Ages 5–7 with a grown-up · 10-minute setup; 2–5 minutes daily for days or weeks · Observe over days

<https://kiddos.ai/explorations/learning-with-gina-and-ollie/what-grows-first>

Wonder together

Root or shoot? Before we begin, make a guess. Which will appear first?

Materials

One whole dried grocery bean, clear unbreakable cup, paper towel and water.

Adult setup – read before trying

Adult handles the small bean; no split/cooked beans or treated gardening seeds. Tuck it between damp paper and cup wall, top open, no standing pool. Store out of reach between checks in a bright room away from hot sun. No tasting; wash hands. Adult discards moldy contents without child touching or smelling.

Try together

1. Adult tucks the bean between damp paper and the open cup wall.
2. Keep warm, bright and damp. Avoid hot direct sun.
3. Look daily. Draw the first root. Keep watching for a shoot.

Keep the comparison clear

Keep fixed: The same bean viewer, kept damp, observed at a similar time each day.

What changes: What is visible as days pass.

Look for: Record an unchanged bean too. Compare the first root and later shoot if it germinates.

Explain with care

In this bean example the root emerges before the shoot. Stored food supports early growth, and the root takes in water.

No sprouting deadline is promised. Soil and sunlight are not required to begin germination, but a growing plant later needs suitable conditions beyond this temporary viewer.

Talk about it

Root or shoot? Before we begin, make a guess. Which will appear first?

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

What is new since yesterday?

Answer cue: Describe the bean, first pale root or later shoot you actually see.

Is a paper flower opening the same as this bean growing?

Answer cue: No. The bean is living and grows new parts; wet paper unfolds.

A parent move: Wait before naming a part; invite the child to point or direct your drawing.

Start simply: Adult maintains one viewer; the child chooses what to record each day.

Explore further: If nothing changes after a week or two, try a fresh whole bean and check moisture and room warmth. Transplanting a healthy seedling is adult-led and may fail.

Return to it: Look back at the drawings and ask which part came first in your bean.

In the classroom

A 20-minute launch with brief daily checks afterward.

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 is new since yesterday? 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. Record an unchanged bean too. Compare the first root and later shoot if it germinates.

4 min · Make meaning

Is a paper flower opening the same as this bean growing? Invite a drawing, a description or an adult-written note. Wait before naming a part; invite the child to point or direct your drawing.

Understanding check

Is a paper flower opening the same as this bean growing?

Answer guidance: No. The bean is living and grows new parts; wet paper unfolds.

Participation choices: Adult maintains one viewer; the child chooses what to record each day. Accept pointing, words, a drawing or adult-directed action. Use the story alone if the activity is unsuitable.

Words to explore

root — A plant part that takes in water; here it emerges before the shoot.

Full adult notes and honest limits

Prepare a seed viewer with an adult. Use one whole dried grocery bean, an unbreakable clear cup, paper towel and water. Avoid split or cooked beans and treated gardening seeds. Fold the damp towel against the inside wall and tuck the bean between it and the transparent wall. Keep the top open and the paper damp without a pool of standing water. The adult handles the small bean, stays beside the child and stores the viewer out of reach between observations. No tasting; wash hands afterward. If mold appears, an adult disposes of the contents without asking the child to touch or smell it.

Keep the viewer indoors in a bright room, away from hot direct sun. Peek at about the same time each day. A root may appear after several days; there is no promised day or deadline. Draw what is actually visible, including an unchanged bean. If nothing happens after a week or two, try a fresh whole bean and check moisture and room warmth. A seed that does not sprout is an observation, not a child's failure.

The pale first root emerges before the shoot in this bean example. Early growth uses food stored in the seed. Soil is not required for this short germination observation; a growing plant later needs suitable growing conditions beyond a damp towel. The viewer is temporary. An adult may transplant a healthy seedling gently into a suitable pot with drainage, recognizing that transplanting can fail. Do not eat experimental seeds or sprouts.

Parent move: wait before naming the part. Ask “What is new since yesterday?” Then invite the child to point, describe, sketch or direct the adult’s drawing. For a small group, the adult maintains one viewer and the children take turns contributing observations. A later check is “Which came first in our bean?” Accept a pointing answer. This is observation over time, not a controlled test of every plant need.

Discovery connection: compare this living bean with carousel 15, Can a paper flower bloom? The paper flower unfolds as it absorbs water; it does not grow as a living plant. Next, use carousel 19’s same-size-unit idea to describe a larger plant part without touching fragile roots. The related story How Does It Grow? uses a planted seed in a pot, not this exact viewer; gently clarify that germination can begin without soil and sunlight. No family outcome testing has been performed.

Related reading

How Does It Grow? uses a planted seed in a pot. Clarify that this short germination observation can begin without soil or sunlight.

Scientific sources

rhs-root — <https://www.rhs.org.uk/advice/understanding-plants/how-plants-reproduce>

illinois-seed — <https://web.extension.illinois.edu/gpe/case3/c3a.html>

kg-seed — <https://kidsgardening.org/resources/garden-activities-seed-viewer/>

Can you spot the wind?

Ages 5–7 with a grown-up · 5–10 minutes outdoors; return another day if calm · Observe an invisible cause

<https://kiddos.ai/explorations/learning-with-gina-and-ollie/can-you-spot-the-wind>

Wonder together

Hang or flutter? Hold one end of a paper strip. What might a breeze do?

Materials

One short lightweight paper strip, roughly 3 × 15 cm, torn by an adult.

Adult setup – read before trying

Stay together in a safe level spot away from roads, water edges and machinery. Skip strong/stormy weather. Hold paper below the face; no strings, sticks, staples or ties. Keep hold of it and take it indoors afterward.

Try together

1. Adult tears a short paper strip. Hold one end away from your face.
2. Keep your hand still outside. Watch calm air, then a breeze.
3. Point, say or draw the change. No breeze? Try another day.

Keep the comparison clear

Keep fixed: Same strip, spot and still hand/body.

What changes: Air movement during a calm moment or breeze.

Look for: Look for the loose end hanging or fluttering while the hand stays still.

Explain with care

Wind is moving air. Its effect on paper, leaves or grass can give us a clue even though we cannot see the air itself.

A moving hand, walking or touching can also move paper. A calm observation is useful; this is not a speed meter or weather forecast.

Talk about it

Hang or flutter? Hold one end of a paper strip. What might a breeze do?

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

What did you see move while your hand stayed still?

Answer cue: A loose end may lift or flutter during a breeze.

Could moving the hand make the strip flutter too?

Answer cue: Yes. Hold still to make the wind observation easier to interpret.

A parent move: Ask for the visible clue before naming its possible cause.

Start simply: Observe an adult's strip from a seated or standing position.

Explore further: Return to the same safe place another day and compare what you notice.

Return to it: Ask what wind is and invite “moving air” in words, gesture or an adult’s interpretation.

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 did you see move while your hand stayed still? 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. Look for the loose end hanging or fluttering while the hand stays still.

4 min · Make meaning

Could moving the hand make the strip flutter too? Invite a drawing, a description or an adult-written note. Ask for the visible clue before naming its possible cause.

Understanding check

Could moving the hand make the strip flutter too?

Answer guidance: Yes. Hold still to make the wind observation easier to interpret.

Participation choices: Observe an adult’s strip from a seated or standing position. Accept pointing, words, a drawing or adult-directed action. Use the story alone if the activity is unsuitable.

Words to explore

wind — Moving air.

Full adult notes and honest limits

An adult tears a short strip of lightweight paper, roughly 3 × 15 cm. No string, stick, stapler or ties are needed. Choose a safe, level place away from roads, water edges and machinery. Keep the paper below the face and hold on to it. Stay together, skip strong or stormy weather, and bring the strip back inside so it does not become litter.

First notice the loose end during a quiet moment. Then keep the hand and body still and watch during a breeze in the same spot. If the hand waves or the child walks, the strip can move for another reason; reset and observe. The two story pictures show one calm moment followed by a breeze, not a promised weather sequence. A calm result is useful too. Try another day if there is no breeze.

Wind is moving air. A paper strip, leaves or grass can reveal its effects. The arrows on the explanation page are a model of air movement, not visible colored air. This strip is an observation aid, not a calibrated wind-speed instrument; it cannot tell us a precise speed or forecast. Avoid claiming that every moving leaf proves wind, since touching, animals and other causes can also move leaves.

Parent move: ask for the clue before the explanation: “What did you see move?” A child may hold the strip, point from a seated position, describe it or direct an adult. For a group, one adult demonstrates while others describe the calm and breezy moments. Next day ask what wind is and invite an answer in words or movement. The useful answer is air moving, with an observed effect.

Discovery connection: revisit carousel 11, Can paper stay dry underwater?, to recall that air is present even when we cannot see it. Then try carousel 02, Same paper. Different fall., for a different effect of air. Where Did My Water Go? is a related water-cycle story, not a wind experiment. No live weather trial or family learning study was performed.

Related reading

Where Did My Water Go? is a separate water-cycle/weather story, not a wind experiment.

Scientific sources

met-wind — https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/weather/learn-about/met-office-for-schools/diy-activities/met-office_diy-activity-pack_windy-days.pdf

Same leaf. Different numbers?

Ages 5–7 with a grown-up · 10–15 minutes · Measure with equal units

<https://kiddos.ai/explorations/learning-with-gina-and-ollie/same-leaf-different-numbers>

Wonder together

More or fewer? If we use bigger measuring pieces, will we need more or fewer?

Materials

A closed book and two sets of large safe matching blocks, one set longer in the measuring direction.

Adult setup – read before trying

Use age-appropriate blocks without loose parts. Adult helps align along one straight book edge. Each set has identical pieces in the same orientation. If needed, an adult prepares large paper rectangles instead.

Try together

1. Lay a closed book flat. Guess the count along one edge.
2. Use equal pieces, end to end. Same side. No gaps or overlaps.
3. Try longer units on that edge. Say “about” if the fit is not exact.

Keep the comparison clear

Keep fixed: The same book edge, starting point and end-to-end placement without gaps or overlaps.

What changes: The length of each measuring unit.

Look for: Say the count together with the unit, and compare shared endpoints.

Explain with care

The same length takes fewer larger units. The number changes because the unit changes; the object does not shrink.

The story’s six-small/three-double-length example is exact. Household objects may need “about five” or “five and a little more.” Use the same unit when comparing two objects.

Talk about it

More or fewer? If we use bigger measuring pieces, will we need more or fewer?

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

Which units did you need fewer of?

Answer cue: Larger units cover the same length with fewer repetitions.

Did the book get shorter when the count was smaller?

Answer cue: No. The endpoints stayed the same; the measuring units became larger.

A parent move: Treat a gap as something to investigate: “Are we measuring the book or the spaces?”

Start simply: Choose a short edge that takes three or four units; pointing or directing is enough.

Explore further: Predict the count for a third, larger unit, then check without a speed race.

Return to it: Ask for both a number and its unit when describing an informal measurement.

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. Which units did you need fewer of? 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. Say the count together with the unit, and compare shared endpoints.

4 min · Make meaning

Did the book get shorter when the count was smaller? Invite a drawing, a description or an adult-written note. Treat a gap as something to investigate: “Are we measuring the book or the spaces?”

Understanding check

Did the book get shorter when the count was smaller?

Answer guidance: No. The endpoints stayed the same; the measuring units became larger.

Participation choices: Choose a short edge that takes three or four units; pointing or directing is enough. Accept pointing, words, a drawing or adult-directed action. Use the story alone if the activity is unsuitable.

Words to explore

unit — An equal-sized piece used repeatedly to measure something.

Full adult notes and honest limits

Use a closed book and two sets of large toy blocks, with the second set longer in the measuring direction. Each set must have identical blocks that are safe for the child’s age and have no loose parts. An adult helps line them along one straight edge, all in the same orientation. Repeat along the same book edge with the second set. Start at the edge, keep units touching and do not overlap them. A book that does not fit whole blocks can be described as “about five blocks” or “five blocks and a little more.” This is informal length measurement, not a ruler calibration. If suitable blocks are unavailable, an adult can prepare two sets of large paper rectangles: identical within each set, with the second set longer. Use the same orientation for every piece.

The illustrated leaf is a deliberately exact model: six small units and three units twice as long cover identical endpoints. Real leaves and household blocks need not match those counts. Say the number and the unit together. For the same object and measured direction, larger units require fewer repetitions; the object has not changed length. When comparing two objects, use the same unit on both.

Parent move: let the child notice an accidental gap and ask “Are we measuring the leaf or the spaces?” Help close the gap without calling the first attempt wrong. The child may place blocks, point to a boundary, count aloud or direct the adult. A group can compare two block rows laid beside one demonstration book. If counting six is difficult, begin with a shorter edge and three or four blocks.

A gentle later check: point to the three-big-unit row and ask whether the leaf shrank. Invite the child to show the shared endpoints. An older child can predict what happens with a third, larger unit. Avoid speed races, scores or claims that a child must master conversion formulas.

Discovery connection: carousel 04, Can paper be a bridge?, changes a structure; this activity adds a way to compare its span fairly. Carousel 17 adds observing a real plant over time. Ollie Teaches Time is related reading about measuring time, a different quantity from length. The leaf-measurement example is editorial and is not in that story. No family learning trial was performed.

Related reading

Ollie Teaches Time explores measuring time, a different quantity from length.

Scientific sources

nrich-units — <https://nrich.maths.org/eyfs-activities/how-long-are-you>

Does shiny mean magnetic?

Ages 5–7 with a grown-up · 5–10 minutes; adult demonstration · Test a material claim

<https://kiddos.ai/explorations/learning-with-gina-and-ollie/does-shiny-mean-magnetic>

Wonder together

Both, one or neither? Which tray will our magnet stick to?

Materials

One large intact enclosed age-appropriate toy magnet, a prechecked steel baking tray and a plain aluminum tray.

Adult setup – read before trying

Adult operates and stores the magnet, following its instructions. No loose/small magnets, magnetic balls, powerful rare-earth magnets, damaged toys or detachable parts. Use clean cool smooth-edged trays; no hot cookware, sharp foil, nails, coins or clips. Keep away from mouths, younger children, pets and sensitive devices. Stop if a magnet is missing/damaged; suspected swallowing requires immediate medical attention. If suitable equipment is unavailable, use the illustrated story. Keep each tray supported during the gentle pull; notice resistance rather than trying to lift a heavy tray.

Try together

1. Check: large, intact, enclosed toy magnet.
2. Touch steel. Pull gently.
3. Try aluminum. Then put it away.

Keep the comparison clear

Keep fixed: Same magnet, supported trays and contact followed by a gentle pull.

What changes: Tray material.

Look for: Notice resistance to the gentle pull; a heavy tray does not need to lift.

Explain with care

An ordinary magnet sticks to some metals. The tested steel tray attracts it; aluminum does not make it stick in this activity.

Shininess cannot tell us. Steel composition varies, especially stainless steel; precheck the selected tray. Do not generalize to every metal or every response to magnetic fields.

Talk about it

Both, one or neither? Which tray will our magnet stick to?

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

Which tray resisted pulling the magnet away?

Answer cue: The prechecked steel tray does; the aluminum tray does not in this test.

Can shininess alone tell us what will stick?

Answer cue: No. We need to test the material.

A parent move: Model revising a guess cheerfully: "The test gave me a new idea."

Start simply: Child predicts and points; adult keeps control of all equipment.

Explore further: Compare this result with the comb story in words: magnetic and static attraction are distinct effects.

Return to it: Ask whether both shiny trays had to behave the same, and what the test showed.

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. Which tray resisted pulling the magnet away? 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 resistance to the gentle pull; a heavy tray does not need to lift.

4 min · Make meaning

Can shininess alone tell us what will stick? Invite a drawing, a description or an adult-written note. Model revising a guess cheerfully: "The test gave me a new idea."

Understanding check

Can shininess alone tell us what will stick?

Answer guidance: No. We need to test the material.

Participation choices: Child predicts and points; adult keeps control of all equipment. Accept pointing, words, a drawing or adult-directed action. Use the story alone if the activity is unsuitable.

Words to explore

magnetic — Here, attracted strongly enough to stick to an ordinary magnet.

Full adult notes and honest limits

This is an adult-operated demonstration for ages 5–7. Use one age-appropriate, large, intact enclosed toy magnet with no accessible or detachable magnet pieces. Do not use small fridge decorations, loose magnets, magnetic balls, powerful rare-earth magnets or a damaged toy. The adult controls and stores the magnet; the child predicts and observes. Keep it away from mouths, younger children, pets and sensitive devices, and follow its manufacturer's instructions. If any magnet is missing or damaged, stop. Suspected swallowing requires immediate medical attention.

Choose two clean, cool, smooth-edged trays: a steel baking tray that the adult has privately checked attracts this magnet, and a plain aluminum tray. Metal composition varies, especially stainless steel, so never promise that every steel-looking kitchen object will behave alike. Do not use hot cookware, sharp cut foil, nails, coins or small clips. If suitable equipment is unavailable, use the illustrated sequence as a prediction-and-discussion activity.

The pictures use one large red U-shaped enclosed teaching magnet. Its shape introduces the tool; the same magnet is used for both trays. A large intact enclosed age-appropriate toy magnet of another shape can be used for the family activity under its manufacturer's instructions. The adult brings the same magnet into contact with each tray and gently pulls away while the tray stays supported. A resisting pull is the useful observation; a heavy tray need not lift. The steel picture shows the magnet attached; the aluminum picture shows the same magnet withdrawn after contact. Describe the result, not the child's guess, as the evidence.

The lesson is a narrow everyday rule: not every metal sticks to an ordinary magnet. Aluminum is a useful counterexample to "shiny means magnetic." Avoid claiming all shiny things are metal, all steel is magnetic, or only metals ever respond to magnetic fields. We are not comparing magnet strength or teaching magnetic poles here. The related source story includes a broad metal simplification; clarify "some metals" during shared reading.

Parent move: model changing your mind cheerfully: "I guessed both. The test gave me a new idea." Invite a point, spoken prediction, drawing or adult-directed choice. For a group, keep the magnet in the demonstrator's control. Later ask whether shininess alone tells us what will stick; the useful answer is that we need to test the material. Connect with carousel 14, Can a comb lift paper?: a rubbed comb's static attraction is a different effect, not proof that paper is magnetic. This editorial tray test is not the exact activity in Gina and the Magnet Mystery. No live family trial was performed.

Related reading

Gina and the Magnet Mystery explores magnetic pulls and pushes. Clarify "some metals" alongside its broad metal wording; this tray test is an additional activity.

Scientific sources

acs-magnet — <https://www.acs.org/education/whatischemistry/adventures-in-chemistry/experiments/metals-magnetism.html>

cpssc-magnet — <https://www.cpsc.gov/Safety-Education/Safety-Education-Centers/Magnets>

cpssc-child — <https://www.cpsc.gov/safety-education/neighborhood-safety-network/toolkits/child-safety>

Our discovery record

Point, draw, speak or ask a grown-up to write. Keep this record with you; nothing needs to be uploaded.

Discovery / date: _____

My question or prediction

What we kept the same / what changed

What I noticed

What I think now / what to try next