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Push, Pull, Play - Year 1

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Teaching this unit

Push, Pull, Play – Year 1 Science

Children investigate how pushes and pulls affect movement, direction and strength, with a short connection to changing the shape of soft playdough. They ask questions, predict, compare useful conditions, record real repeated observations and use evidence in a safe new toy situation.

Two teaching routes

Full route: ten complete 60-minute lessons, each with its own editable presentation. Compact route: eight 60-minute sessions, integrating Lessons 1–2 and 9–10 without losing any teaching or evidence. The compact session plans specify slide selection; do not show two whole decks consecutively.

What is supplied

Ten lesson presentations and a 24-slide quiz; two colour displays, eight Motion Card Cards on two sheets; an Evidence Trail game with rules, board and eight challenge cards; ten student worksheets; two fixed-answer companion pages; two assessment pages and a four-dimension rubric.

Evidence belongs to the learner

All investigation tables are blank. Keep every actual observation, including no movement and surprising results. The labelled made-up data in Lesson 7 and the quiz are discussion examples, never class measurements. A hand push is not an exact force measurement.

Curriculum focus

This unit supports Year 1 physics science and guided inquiry. It also shows how people use observations and patterns to predict everyday actions. It is a focused unit rather than a claim to assess the whole Year 1 science curriculum standard.

Materials and safe preparation

Prepare once, check each lesson

Provide a checked toy trolley or wagon with a short safe handle, a clear short level lane, start and target markers, a soft end barrier, large equal-size blocks for informal distance, a large foam ball and shallow tray, arrow cards, suitable soft non-food dough, and a teacher-made empty cardboard toy drawer. A low stable ramp and cylinder are discussion-card cases; they are not added to the gentle/stronger trolley comparison.

Safe routines

Keep everyone beside the path. Use one toy at a time and stop fully before resetting. Start with gentle actions that stay inside the lane. The teacher controls moving-trolley start-up demonstrations and the blocked cardboard drawer. No pushing people, launching objects, elastic projectiles, furniture testing, yanking or fingers in an opening.

Distance and useful conditions

Mark the front of the stopped trolley before moving. Count equal blocks from the same start reference without gaps or overlaps. Keep the trolley, surface, start line, block size and person as consistent as useful. Compare gentle with somewhat stronger safe pushes; explain that hand pushes still vary.

Prepare the printed resources

Use the two displays for comparison and evidence link. The Motion Case and game sheets may be used intact, enlarged or cut into cards by an adult. Keep worksheets and answers together in the teacher copy; give learners only consistent pieces. Have W05 plans approved before W06 trials.

Class needs

Check equipment, handle length, trip hazards, dough suitability and allergies. Offer table-height access, a stable ramp, large markers and adult-assisted actions when needed. Stop or adapt an activity whenever it cannot be made safe.

Participation and assessment

Same learning, useful choices

Learners can speak, point, gesture, arrange picture or arrow choices, use a communication board or device, draw, dictate or write. Offer an adult recorder, repeated modelling, small-group rehearsal and clear one-step directions. Do not lower the judgement because a learner uses support or another response method.

Before and during teaching

Notice initial push/pull language in W01. Listen for an action linked to an object and change in W02–W04. Check W05 for one changed action, useful consistent conditions and safe steps. W06–W09, observe roles and honest recording rather than requiring a particular distance position.

Investigation evidence

Use W05–W09, actual trials, A1–A2 and a short individual comparison. Look for a prediction, a safe guided comparison, repeated real records, an evidence-based explanation, a variation or limit, a further question and a reasoned safe transfer to the toy drawing. Where useful, record counts or marker positions in a school-approved digital table, drawing or photograph of the objects. Existing valid records may be attached or transcribed; do not invent missing trials.

Rubric and conference

Judge action and change, evidence, process, explanation and application, and responsible reflection. Ask: What did you change? What stayed the same? What really happened? How does your evidence support the claim? What could your test not tell you? What would you check in the new toy case?

Using the quiz

The quiz contains ten questions with immediate teacher answer slides, plus instructions and reflection. Use it flexibly as a concept check after the investigation or in short teaching checks. Hide an answer slide until responses have been collected. It does not replace practical investigation evidence.

Lesson 1

Push or pull

Learning and preparation

Name a push or pull and ask a question about it. Toy trolley with a safe short handle, clear lane, W01.

Teacher checks handles and removes trip hazards.

8 minutes – retrieve and question

Think together: Which actions move a toy towards you or away from you? Collect a prediction through words, drawings, gestures or picture choices.

12 minutes – model and discuss

A push presses an object away from the contact. A pull draws an object towards the contact. Both are forces: actions that can change movement. On a clear floor lane, press the trolley from behind. Name the action: push. Use its short handle to draw it towards you. Name the action: pull. Watch the object, not just the hand.

25 minutes – practical task and record

Stand beside the lane. One person acts; one watches. 1. Put the trolley on the start line. 2. Make one gentle push or pull. 3. Name the action and show its direction. 4. Stop before resetting. Use W01. Name the actions in the four scenes. Draw or show one safe push and one safe pull. Ask: What might happen if we change the direction? Point, speak, draw or ask an adult to write.

10 minutes – explain with evidence

A hand behind a trolley presses it away: make a push. A short handle drawn towards the person makes a pull. Tell your partner what you noticed. Which action would you use to bring the trolley to you?

5 minutes – name and test

Name an action and make a prediction about the trolley. Stop all toys before resetting or collecting them. Save the partner's evidence.

Teacher check

A push or pull names the action, not merely where the hand is pictured. Ask the child to explain which way the object is pressed or drawn. Allow the same learning to be shown by pointing, pictures, speech, drawing, devices or adult transcription.

Lesson 2

Starting and stopping

Learning and preparation

Describe how a push or pull can change movement. Trolley, short handle, clear lane with soft end barrier, soft non-food dough and tray; teacher handles moving trolley. W02.

8 minutes – retrieve and question

Think together: Can an action start a trolley? Can it slow or stop it? Collect a prediction through words, drawings, gestures or picture choices.

12 minutes – model and discuss

A push or pull can start, slow, stop or change movement. The effect depends on the direction and strength of the action. A pull does not always stop an object. Teacher pushes or starts trolley gently along a short lane. It starts moving. Teacher uses its handle to pull gently against its movement. It may slow and stop. Everyone stays beside the lane. On a tray, push a small ball of soft playdough. Watch its shape. Pull two parts gently apart. Watch again. A push or pull can change shape too. Use non-food dough suitable for the class.

25 minutes – practical task and record

Teacher controls the moving trolley. Observers note the action and describe the change. Reset the same lane each time. Compare a gentle start or gentle stop and the dough changes. Use W02 to draw before and after one trolley action and one dough action. Write, say or point to: start, slow, stop or change shape. Record what actually happens. A change is a useful observation.

10 minutes – explain with evidence

How could a gentle pull stop a toy wagon close without a bump? Use what you saw to predict an action. Check what the action AND the change it caused.

5 minutes – exit and tidy

Explain one action and the change you observed. Stop all toys before resetting or collecting them. Save the learner's evidence.

Teacher check

A pull does not always stop motion. Its effect depends on the direction of the action relative to the movement. Do not force an expected observation. Allow the same learning to be shown by pointing, pictures, speech, drawing, devices or adult transcription.

Lesson 3

Direction matters

Learning and preparation

Show the direction of an action and describe a motion change. Large foam ball, shallow tray or bounded floor lane, arrow cards, soft barriers, W03. No pupil in the path.

8 minutes – retrieve and question

Think together: What do arrows tell us about movement? Collect a prediction through words, drawings, gestures or picture choices.

12 minutes – model and discuss

An arrow shows a direction. Point the arrow the way an action is applied. A push from one side can change the path of a moving object. Teacher uses a slow foam ball in a tray. Give a gentle push to the right. Reset. Give a gentle push forwards. Show each direction with an arrow card. A curved arrow is not needed for a straight action.

25 minutes – practical task and record

Stand beside the clear tray. Push the still foam ball gently towards one marked edge. Stop it at the soft barrier. Reset and choose another edge. Compare the directions. Use W03. Draw the action arrows in the two scenes. In the large space, draw two scenarios of your own. Mark the direction; describe what changed. You may arrange arrow cards and tell an adult.

10 minutes – explain with evidence

If a hand on the left presses right, an arrow points right. If a hand on the right presses left, it points left. The side of the hand and the direction of the action help us explain the motion.

5 minutes – exit and tidy

Show one arrow and explain its direction. Stop all toys before resetting or collecting them. Save the learner's evidence.

Teacher check

An action arrow shows the direction of the applied action. Keep it separate from a whole curved travel path. Allow the same learning to be shown by pointing, pictures, speech, drawing, devices or adult transcription.

Lesson 4

Gentle and stronger

Learning and preparation

Predict and compare gentle and stronger pushes honestly. Trolley, floor markers or same-size blocks, clear level surface, soft barrier, W04. No ramps in this comparison.

8 minutes – retrieve and question

Think together: Might the same trolley move further after a stronger push? Collect a prediction through words, drawings, gestures or picture choices.

12 minutes – model and discuss

Question: Does this trolley usually go further with a stronger push? Prediction: Think ____ because _____. A prediction is an idea to test. It is not a result. Use the same trolley, surface and start line. Teacher models one gentle and one somewhat stronger push. Both stop slow and inside the safe lane. We do not measure exact force with a hand.

25 minutes – practical task and record

Predict before testing. Take turns making one gentle and one stronger safe push. Mark where each trolley stops. Repeat to see whether the pattern stays similar. Use W04. Draw or mark the stopping places. Label the action gentle or stronger. Compare the observations with your prediction. Keep results that surprise you.

10 minutes – explain with evidence

A stronger push may move the trolley further in this setup. Hand pushes vary; a single trial cannot prove an always rule. What did your trials show? Which trial was different?

5 minutes – exit and tidy

Compare your prediction with what actually happened. Stop all toys before resetting or collecting them. Save the learning evidence.

Teacher check

The trolley may travel further after a stronger safe push in this setup. A single trial is not an always rule, and no exact hand force is measured. Allow the same learning to be shown by pointing, pictures, speech, drawing, devices or adult transcription.

Lesson 5

A fair comparison

Learning and preparation

Plan one changed action and keep useful things alike. Same trolley, same level surface, same start line, same-size blocks for informal distance, W05. Teacher approves the plan before trials.

8 minutes – retrieve and question

Think together: What would make two trolley trials easier to compare? Collect a prediction through words, drawings, gestures or picture choices.

12 minutes – model and discuss

Choose the action to compare: gentle and stronger pushes. Keep the trolley, surface and start line alike. Use the same person if possible. Hand pushes still vary. Trial A: small trolley on carpet. Trial B: different trolley on a smooth floor. Both the object and surface changes. We cannot tell which change mattered. Reset a comparison with fewer changes.

25 minutes – practical task and record

Agree on a question and prediction. Choose what changes and what stays alike. Choose a safe lane and a stopping-place marker. Tell a partner the steps before starting. Use W05 to draw the setup and record the plan. Circle or say the one action you change. Show three things to keep alike. Predict; explain one safety step.

10 minutes – explain with evidence

Which three things stay alike? Why will you reach the stopping place? How will everyone stay out of the lane? A fairer comparison helps us explain the action. It cannot make every hand push identical.

5 minutes – exit and tidy

Name one change and one thing to keep alike. Stop all toys before resetting or collecting them. Save the learner's evidence.

Teacher check

Changing both the object and surface makes a comparison muddled. Useful consistency improves interpretation without making every hand push identical. Allow the same learning to be shown by pointing, pictures, speech, drawing, devices or adult transcription.

Lesson 6

Try and record

Learning and preparation

Follow safe steps and record repeated actual observations. Approved setup from W05, six short controlled trials, same-size large blocks, pencil or adult recorder, W06.

8 minutes – retrieve and question

Think together: Why record more than one trial? Collect a prediction through words, drawings, gestures or picture choices.

12 minutes – model and discuss

A result is what you observe after the action. Mark the stopping place before moving the trolley. Use the same-size blocks from the same start line. Count without gaps or overlaps. Teacher makes a trial, puts a floor marker at the front of the stopped trolley and marks counting blocks from the start. Write the actual count. Do not fill a blank table before testing.

25 minutes – practical task and record

Use W06 for three gentle and three stronger safe pushes. Keep the trolley, start, surface and block size alike. Take turns acting, watching and recording. An adult may count or write with you. Make one mark for each block travelled, or draw the stopping place. Compare rows with a partner. Short, long and unchanged results all belong in the record.

10 minutes – explain with evidence

After which action did the trolley usually travel further in your table? Were all three results identical? Describe an observation before giving a reason. Do not change a result to match a prediction.

5 minutes – exit and tidy

Share a real observation and where you recorded it. Stop all toys before resetting or collecting them. Save the learner's evidence.

Teacher check

A prediction is recorded before a test. A result is recorded after observing. Never fill the table to make the prediction come true. Allow the same learning to be shown by pointing, pictures, speech, drawing, devices or adult transcription.

Lesson 7

Patterns and surprises

Learning and preparation

Find a pattern, notice variation and ask another question. Actual W06 tables, W07, picture cards or communication board/device where useful. No repeat testing needed just to force an expected pattern.

8 minutes – retrieve and question

Think together: What do several results show that one result cannot? Collect a prediction through words, drawings, gestures or picture choices.

12 minutes – model and discuss

Made-up example for discussion, not class results: Gentle: 2, 3, 2 blocks. Stronger: 4, 5, 3 blocks. The trolley usually went further after stronger pushes. Results varied. Let YOUR table describe YOUR pattern. The trolley may stop sooner after a stronger push on one trial. Check the start, surface, direction and action. We may not know the cause. Never erase a highest result because it is surprising.

25 minutes – practical task and record

Place two real tables side by side. Check that the setups were alike before comparing. Which pattern is similar? Which result differs? A different person may use differently. Use W07 with your W06 table. Show a usual pattern and a surprising result if there was one. Compare with your prediction. Pose a further question to investigate.

10 minutes – explain with evidence

Finish: In our trials _____ usually _____. Our prediction _____. One result was _____. Next we could ask _____. Point to the table or mark with _____ to support your explanation.

5 minutes – wrap up and reflect

Give a pattern AND the evidence for it. Stop all toys before resetting or collecting them. Save the learner's evidence.

Teacher check

Surprising results remain evidence. Check setup differences and admit when the cause is unknown; do not retest solely to force the expected pattern. Allow the same learning to be shown by pointing, pictures, speech, drawing, devices or adult transcription.

Lesson 8

Design a delivery action

Learning and preparation

Use direction and strength to reach a safe target. Trolley, close target floor marker, level clear lane, soft barrier, W08. No speed contests.

8 minutes – retrieve and question

Think together: How can we deliver a toy without bumping the barrier? Collect a prediction through words, drawings, gestures or picture choices.

12 minutes – model and discuss

Move the trolley from the start towards a nearby target in the lane. Use a safe push or pull. Choose direction and strength. The target stays inside the soft barrier. Use what you saw in trials showed. Point the action towards the target. Predict a gentle action first. Explain why you chose it. Change one feature after an observation.

25 minutes – practical task and record

Check the lane is clear. Try your planned action once. Mark where the trolley stops. Did it reach the target, stop short or pass it? Reset before another try. Use W08 to draw the target and action arrow. Record the first result and one change. Try again. Explain how direction or strength helped you improve.

10 minutes – explain with evidence

A result is useful even when the target is missed. Use the stopping place to explain your next change. Say: I changed ____ because I observed ____ You may show the action and explain with picture choices.

5 minutes – explain and record

Explain the evidence behind one changed action. Stop all toys before resetting or collecting them. Save the learner's evidence.

Teacher check

Missing a target is useful evidence. Change one action feature because of an observation, then record a second real trial. Allow the same learning to be shown by pointing, pictures, speech, drawing, devices or adult transcription.

Lesson 9

Motion investigation report

Learning and preparation

Explain a prediction, a fairer setup and real results. Completed W04–W08 portfolio, W09, A1–A2, rubric. Record short individual responses during the task block so every learner can be assessed.

8 minutes – retrieve and question

Think together: What evidence will help a listener understand our investigation? Collect a prediction through words, drawings, gestures or picture choices.

12 minutes – model and discuss

Our question was _____. I predicted _____ because _____. We changed _____ and kept _____ constant. We observed _____. This suggests _____. Point to your actual record. Explain the pattern and any variation. Compare the result with the prediction. Say what the method did not tell us: exact hand force was not measured.

25 minutes – practical task and record

Use W09 and assessment pages A1–A2. Choose a reasonable, convincing or practical demonstration. Tell an adult or partner your explanation. Keep all results; do not invent missing trials. Speak, draw and label, point to pictures, use a communication board, device or dictate to an adult. Show the same prediction, method and evidence whichever format you use. You do not have to speak to the whole class.

10 minutes – explain with evidence

Show your prediction and a safe comparison. Describe how direction or strength affected movement. Explain the evidence, variation and a further question. The quiz is a concept check; it does not replace this investigation.

5 minutes – exit and tidy

Share a claim and the real evidence behind it. Stop all toys before resetting or collecting them. Save the learner's evidence.

Teacher check

An explanation needs actual evidence. Offer adult transcription or a quiet individual conference; public speaking is not a requirement. Allow the same learning to be shown by pointing, pictures, speech, drawing, devices or adult transcription.

Lesson 10

New situation

Learning and preparation

Use your motion evidence to explain a new safe problem. Teacher-made empty cardboard drawer, W10, earlier records. No furniture drawers or forceful handling; teacher checks finger safety.

8 minutes – retrieve and question

Think together: A toy drawer does not open. Which action might help? Collect a prediction through words, drawings, gestures or picture choices.

12 minutes – model and discuss

Fictional case: a small classroom toy drawer sticks. A push closes it; a gentle pull may open it. Check for an obstruction first with an adult. Never yank, force it or trap fingers. Present a safe action and its direction. Use a trolley pattern to help explain your choice. A drawer slides differently from a trolley; the earlier evidence cannot guarantee the result. Tell an adult if the toy stays stuck.

25 minutes – practical task and record

Use an empty cardboard toy drawer prepared by the teacher. Compare an unobstructed model with a teacher-controlled blocked model. Observe from beside the opening. Only the adult removes a blockage. Use W10. Draw or show your proposed action. Explain direction and gentle strength. Name a limit of the trolley comparison. Ask a further question; no second full investigation is required.

10 minutes – explain with evidence

How did an earlier observation help your prediction? What will you check before acting? What would you do if the model stays stuck? People use patterns to predict safe actions in daily life.

5 minutes – exit and tidy

Explain a new situation using evidence and a safety choice. Stop all toys before resetting or collecting them. Save and learn from evidence.

Teacher check

Trolley evidence cannot form a prediction but cannot guarantee a sliding drawer result. Stop and ask an adult when the toy stays stuck. Allow the same learning to be shown by pointing, pictures, speech, drawing, devices or adult transcription.

Eight-session route

Sessions 1-4

60-minute session pattern

5 minutes retrieve/question; 10 minutes selected modelling; 30 minutes practical task and recording; 10 minutes evidence talk; 5 minutes exit and tidy. Display one opening/focus and one closing in combined sessions. Use the teaching content in the order below; resource responses may be oral, shown or adult-scribed.

Session 1 – Lessons 1 and 2

Open with L1 slides 1–2. Model L1 slides 3–4, then L2 slides 3–5. Integrate the *push* actions from L1 slide 5 and L2 slide 6, with teacher-controlled stopping and the dough shape comparisons. Use L1 slide 6 with W01 as a short identification check, then L2 slide 7 with W02 as a question before/after record. Compare using L1 slide 7 and L2 slide 8; close with L2 slide 9. Do not add a second cover/focus or repeat the whole two practical blocks.

Session 2 – Lesson 3

Use L3 slides 1–8. Show the applied action direction with arrows, conduct two safe foam-ball directions and complete W03. Check the right/left fixed scenes and the learner's actual trial explanation.

Session 3 – Lesson 4

Use L4 slides 1–9. Predict, model *push* and somewhat stronger safe pushes, compare actual stopping places and record W04. Prepare the *pull* variation and safety teaching.

Session 4 – Lesson 5

Use L5 slides 1–8. Identify the added comparison, plan one changed action and useful consistent conditions in W05, and have the teacher approve safe steps before the next session's trials.

Eight-session route

Sessions 5-8

Session 5 – Lesson 6

Use L6 slides 1–9. Follow the approved W05 plan and record three gentle and three stronger safe pushes in W06. Mark the stopping reference and count equal blocks without gaps or overlaps. Keep every actual result.

Session 6 – Lesson 7

Use L7 slides 1–9. Clearly label the deck's example data as made-up. Use the learner's own W06 records for W07 pattern, prediction, variation and further-question work. Complete sets before comparing groups.

Session 7 – Lesson 8

Use L8 slides 1–8. Plan a nearby target in W08, test gently, record the stopping place, change one feature and try again. Explain the change with earlier or current evidence.

Session 8 – Lessons 9 and 10

Open with L9 slides 1–2. Model L9 slides 3–4, then L10 slides 5–6 to introduce the safe transfer case and its limit. Use L9 slides 5–8 for W09, A1–A2 and brief individual conferences. Select L10 slide 5 for one teacher-controlled cardboard model observation and slide 6 for a short W10 transfer response. Use L10 slide 7 to check evidence and safety, then close with slide 8. Attach prior real records to A1; do not run a second full investigation, but allow a second opening.

Resources and assessment in the compact route

All ten lesson contributions remain preserved. Use D1/D2 and the case cards as teaching aids. The game and quiz may support brief retrieval or flexible review outside the main investigation. The core evidence, explanation, limitation, further question and safe transfer remain required in both routes.

Motion cases and Evidence Trail

Use the cards

C01–C08 are fictional model situations, not measured results. Discuss them with the two displays or safe teacher demonstrations. Do not infer an always rule from a drawing. The low-ramp cylinder case is an orientation discussion; do not change the assessed trolley setup to a ramp.

Play together

For 2–4 players, use a large counter or point. Begin at Notice. Choose E01–E08 and a matching C01–C08 case. Respond, ask one respectful partner question, check the criteria by comparing with a model and improve if needed. Move one stop only after the check: Notice, Ask, Compare, Explain, Reflect. After Reflect, share a useful prediction; everyone finishes together to speed up the game. Discuss or use the teacher's safe model; never push people or launch objects.

Challenge criteria – E01-E04

E01/C01: a push presses the trolley away and starts motion. E02/C02: the ball acts towards the person on the right. E03/C03: a side push can turn the slow object's path; distinguish action arrow from travel path. E04/C04: give a prediction and a safe repeated test; do not claim a drawn result.

Challenge criteria – E05-E08

E05/C05: keep the trolley, surface and start alike and change the safe action; hand pushes vary. E06/C06: keep a surprise and ask a useful question about setup or action. E07/C07: cylinder orientation changed; observe rolling/sliding or distance instead of assuming a result. E08/C08: the block meets a soft barrier and stops; link the claim to the illustrated before/after motion.

Check meaning

Accept a correct guess, action picture choice, drawing or explanation. Prompt the child to name the action and evidence. Listed response criteria are given here; the game has no invented pupil trial table.

Worksheet checks

W01-W05

W01 – Push or Pull

The fixed scenes are 1 push, 2 pull, 3 push, 4 pull. Its red answer companion follows the student page. For the two open examples, accept a safe action drawn, demonstrated or explained; check that pressing away is identified as a push and drawing towards is a pull. Accept a question relevant to changing an action.

W02 – Starting, Stopping and Shape

Use actual before/after observations for a trolley action and a soft-dough action. Accept start, slow, stop, change shape or no change when it matches the observation. Ask what action was applied. There is no single fixed actual-result answer.

W03 – Direction Matters

The fixed action arrows are right in scene 1 and left in scene 2. Its red answer companion follows the page. Leave the two practical trial areas unfilled in the teacher key, check each learner's arrow against the actual applied action, not an imagined curved path.

W04 – Gentle and Stronger

Check prediction before trials, labels for the two changes, actual stopping observations and comparison with the prediction. A different or unchanged result is valid. Ask why hand pushes may vary; do not require a longer strong push or distance.

W05 – A Fair Comparison

The chosen change is gentle versus somewhat stronger safe pushes. Useful things to keep alike include trolley, surface and starting position. Size and the person can also be kept consistent. Approve clear-lane steps, a stopping marker, repeated actions and a real recording method. Support drawing or dictation without checking expectations.

Worksheet checks

W06-W10

W06 – Try and Record

Check six actual trial entries: gentle pushes 1–3 and stronger pushes 1–3. Equal blocks measure from the same start reference. An observation can be a count, stopping-place drawing or adult-recorded words. Keep a short, long, unchanged or surprising observation. Missing data require an honest note or a safe observation, never fabrication.

W07 – Patterns and Surprises

Check that a pattern and any surprise are supported by W06. Keep prediction separate from real results. Compare another group only after discussing setup differences. Accept no surprise when none occurred. Ask a useful further question rather than a claim that all pushes were identical.

W08 – Design a Delivery Action

Look for a nearby safe target, applied-action arrow, prediction, two actual trials and one changed feature. The explanation should link the change to a stopping place or earlier evidence; reaching the target is not the only acceptable result.

W09 – My Motion Investigation Report

Require question, prediction, changed action, used consistent conditions, actual observations, a claim with matching evidence, variation or no surprise, one method limit and a further question. Accept pointing to earlier real record. Exact hand force was not measured.

W10 – A New Toy Drawer Problem

A gentle pull towards the handle and a reasonable opening prediction after an adult checks obstruction and finger safety. Stop closing an adult if stuck. Use the teacher-approved cardboard model only. The response should explain safe action, actual toy observation, earlier evidence and the limit that a drawer slides differently from a trolley.

Quiz reference and answer guidance

Use the separate editable quiz

There are 24 slides: a cover, instructions, ten question/answer pairs, reflection and closing. Each question is immediately followed by its answer. Collect responses before revealing the next slide. Read aloud and allow the participation choices on the instruction slide.

Questions 1-5

1: yes, a side push can change a slow object's direction. 2: the same trolley, surface and start make the changed action easier to compare; hand pushes still vary. 3: drawing the wheel away from the person is a pull. 4: an action against movement can slow or stop an object; pulling with a motor may speed it up. 5: no, stronger hand pushes do not always produce identical distances; use repeated observations and useful consistent conditions.

Questions 6-10

6: record the observed four blocks, keeping the six-block prediction separate. 7: in the explicitly made-up example, the trolley usually travelled further after stronger pushes; results varied and one stronger result matched one gentle result. 8: playdough shape changed. 9: stop and ask an adult to check obstruction; never yank. 10: change the direction towards the nearby target and test gently with useful conditions alike; accept a reasoned strength change when it fits the stated observation.

Judgement

Seek a reason or safe observed example where useful. The concept check helps identify follow-up teaching. Do not use a concept check as a sole judgement of guided investigation, honest recording, practical safety or application.

Assessment task and judgement

Guided task

Use A1–A2 after the planning and investigation sequence. Children ask and predict, plan one changed safe action and useful consistent conditions, record repeated real trolley observations, explain a pattern and variation or limit, pose a further question and apply the evidence to the cardboard toy drawer.

Use real prior evidence

A1 may be completed with the learner's valid W05–W06 plan and records and/or transcribed, avoiding a second full investigation. Preserve action/trial identity and real observation. Evidence is genuinely missing, record that fact and gather a safe relevant observation; never supply an expected pattern.

Individual conference

Use the four evidence areas on A2. Ask the child to show and apply action, motion change, plan, actual record and explanation. Include a limit or variation, another question and a safe transfer choice. An adult may write exact words or note a demonstrated response. Permit pictures, devices, gestures and drawings.

Apply the rubric

Use R1 to judge the demonstrated learning across its four dimensions. Developing, Secure and Extending describe evidence quality; they do not rank independence, speech, handwriting or support needs. A surprising distance result can still show secure scientific inquiry. Record one useful next teaching step.

Completion of task

Keep all action results, verify the explanation fits them, and check the safety decision in the new toy case. The essential assessment and transfer are present in both teaching routes. The quiz remains an additional concept check.

Push, Pull, Play

Push

Press an object away.



Pull

Draw an object towards you.



Direction

The way an action points.



Strength

How gentle or strong an action is.

Gentle push

Stronger push



Motion

An object moving.



Compare

Look for what is alike and different.



Smaller trolley



Larger trolley

Shape can change too

A push or pull can change shape.

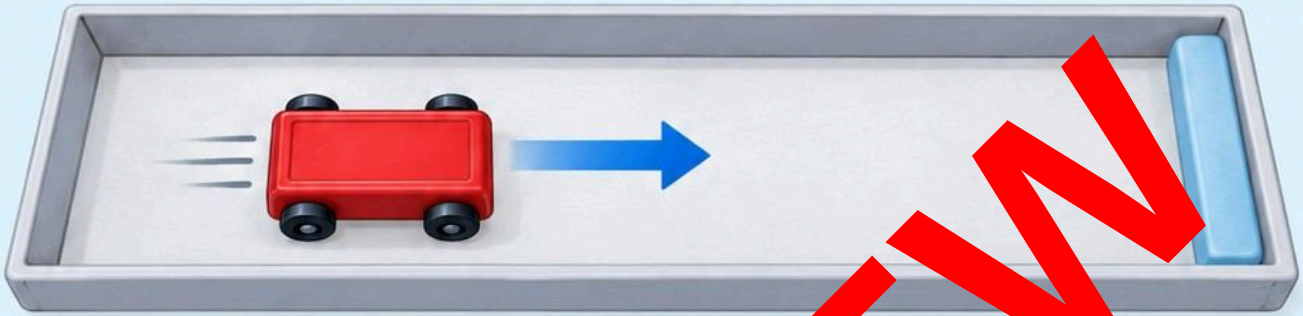


How We Explain Our Evidence

Illustrative example – test it yourself

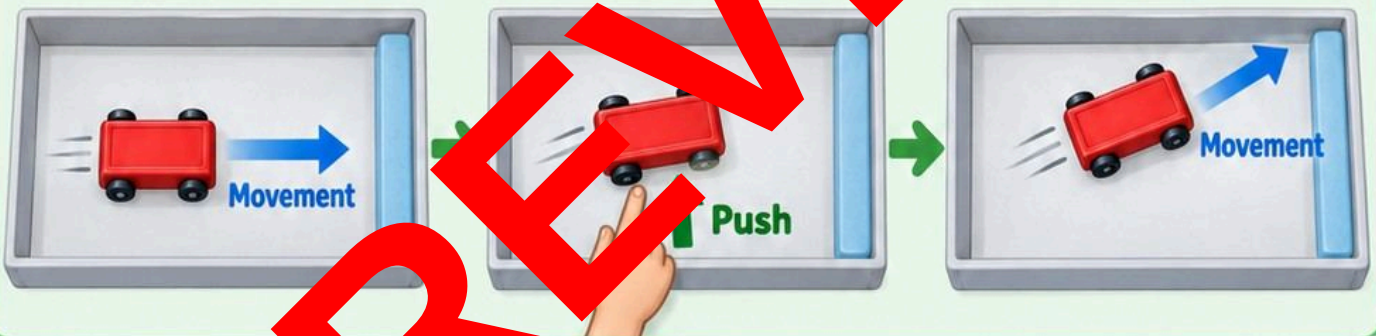
1 Question

Can a push change direction?



2 Observe

A gentle push from the side changes the trolley's path.



3 Explain

A push can change how an object moves.
I know because the path changed after the push.

What happened in YOUR test?

Motion Case Cards 1–4

Fictional and illustrative cases — test safely

C01 A push starts motion

A hand presses a still trolley away.
What action starts it?



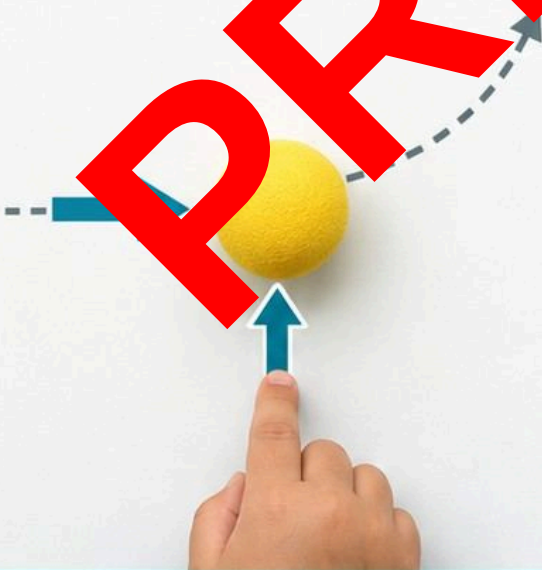
C02 A pull towards you

A person draws a short handle towards them. What action is this?



C03 A change of direction

A gentle push from the side changes
a slow object's path.
Which way is the push?



C04 Gentle and stronger

Predict, then compare two safe pushes.
What actually happens?

A gentle push



A stronger push

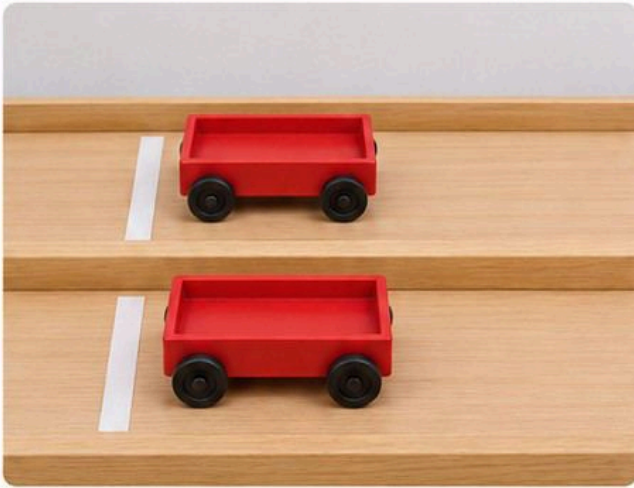


Motion Case Cards 5–8

Fictional and model cases — observe real outcomes

C05 Keep things alike

Use the same trolley, surface and start line. What changes?



C06 Try again

Hand pushes can vary. Keep and compare every real result.

Trial 1

Trial 2

Trial 3

C07 The cylinder's position

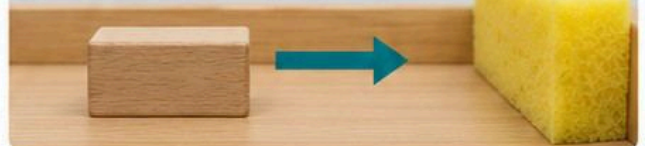
Compare a cylinder on its curved side and flat end on a low ramp. What do you observe?



C08 A soft barrier

A block slides towards a soft barrier and stops. What changed?

Before



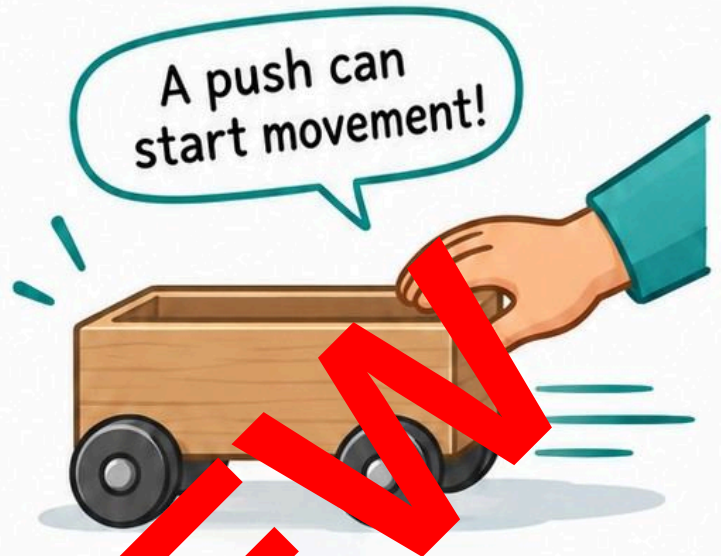
After



Evidence Trail – How to Play

Players: 2–4. Use a large counter or point. No speed contest.

- 1 Start at Notice.
- 2 Choose a challenge card E01–E08. Look at its matching case card.
- 3 Respond by speaking, pointing, drawing or showing the action safely.
- 4 A partner asks one respectful question.
- 5 Check the teacher guide. Improve your response with help if needed, then move one stop.
- 6 After Reflect, make one useful prediction. Everyone finishes together.



Worked turn

E01 and C02: What starts the trolley?

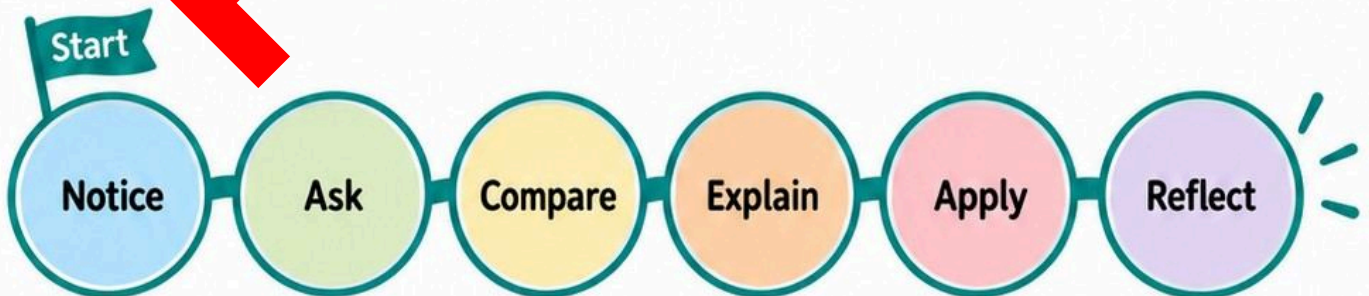
Response: A push presses it away and starts movement.

Partner question: What did you notice?

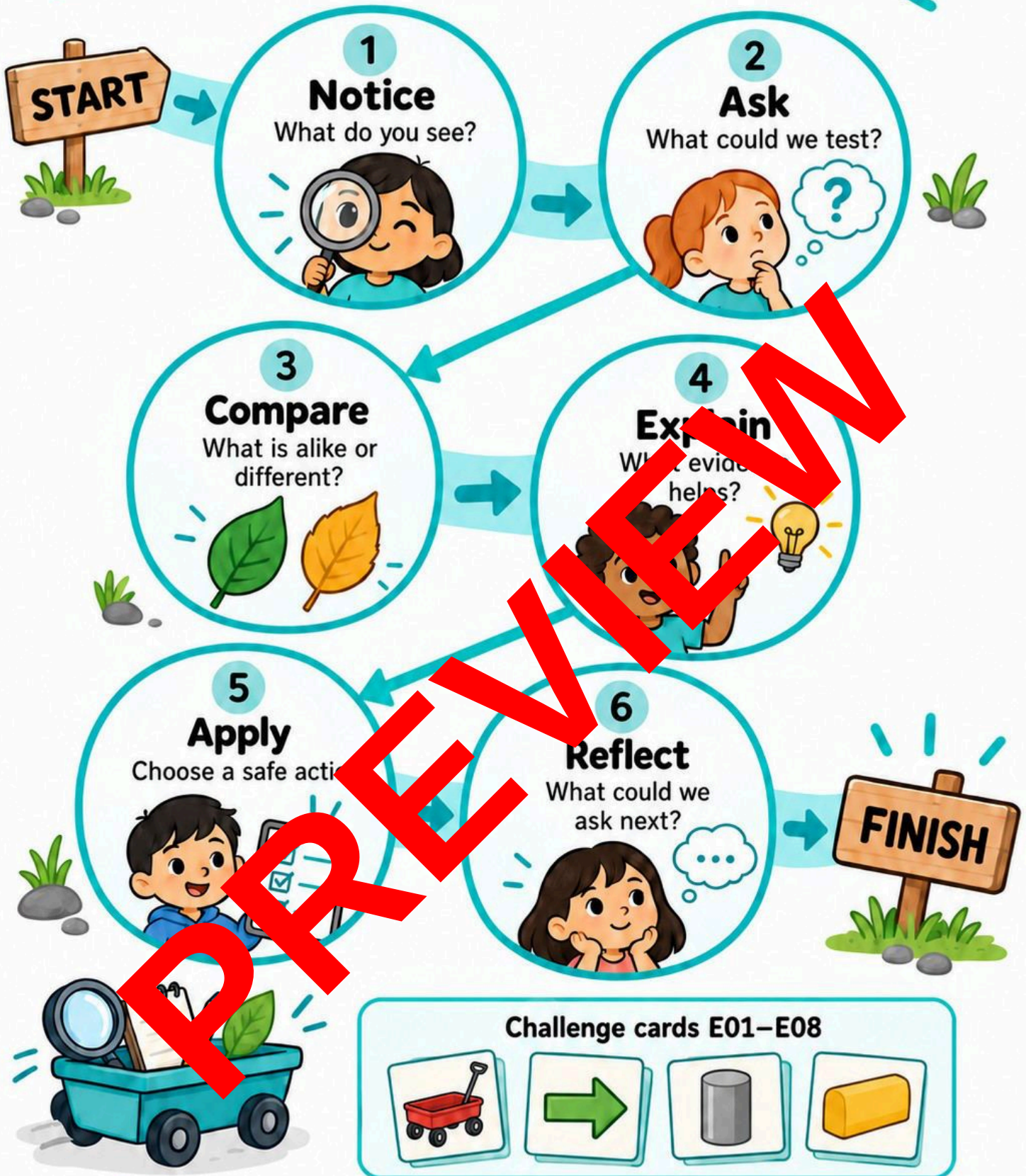
Check: Name the push and the movement change.



Discuss or use the teacher's safe model.
Never push people or launch objects.



Evidence Trail – Board



A game for 2–4
Work together
and talk about
your ideas.

Use a large counter or point.
Check the teacher guide,
then move one stop.

Evidence Trail – Challenge Cards

E01 • Use C01.

Name the action that starts the trolley.
What changes?



E02 • Use C02.

Which way does the pull act?
Show or explain.



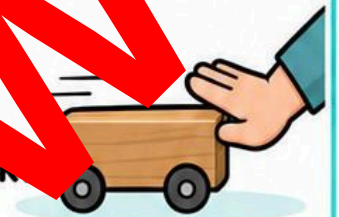
E03 • Use C03.

Can a push change direction?
Explain the arrows.



E04 • Use C04.

Predict gently or stronger.
How will you check?



E05 • Use C05.

Name three things to keep alike.
What will change?



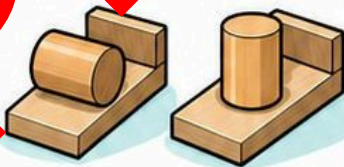
E06 • Use C06.

Why keep a surprising result?
What question could you ask?



E07 • Use C07.

What changed in the set-up?
What must you observe?



E08 • Use C08.

What happened at the soft barrier?
Explain the evidence.



Speak, point, draw or show safely. Check the teacher guide.

Name: _____

W01 • C01 and C02

Push or Pull

Circle push or pull.

1.



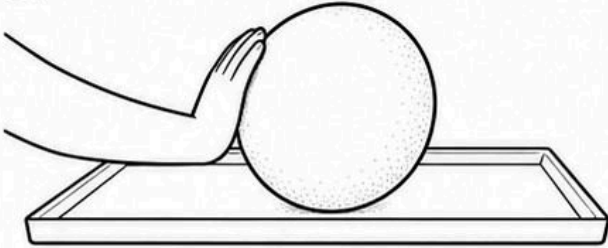
push pull

2.



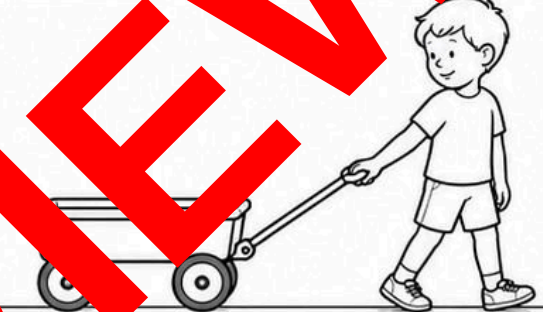
push pull

3.



push pull

4.



push pull

Show a safe action.

A push

A pull

My question: What might happen if ...?

Point, speak, draw or ask an adult to write.

Push or Pull

Circle push or pull.

1.



push

pull

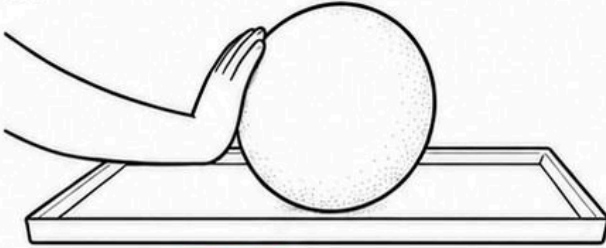
2.



push

pull

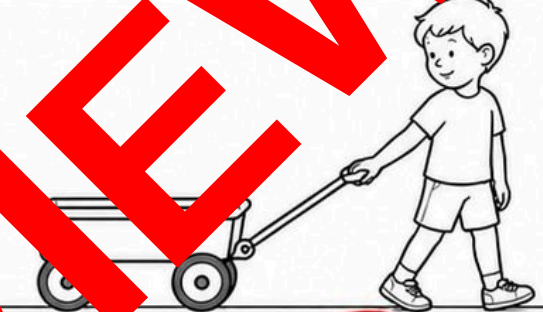
3.



push

pull

4.



push

pull

Show a safe action.

A push

A pull

My question: What might happen if ...?

Point, speak, draw or ask an adult to write.

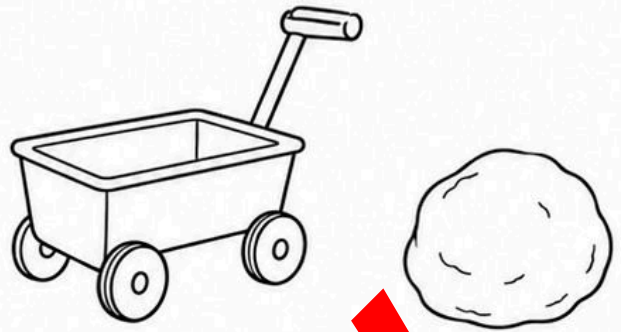
Name: _____

W02 • C01 and C08

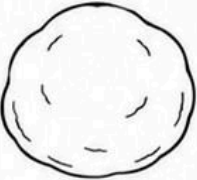
Starting, Stopping and Shape

① Notice and predict

I think the action will ...



② Record what happens

	Before	After
Trolley 		
Soft playdough 		

My action: ...

My observation: ... start, slow, stop, change shape or no change

③ Explain

The action changed ... _____

I noticed ... _____

Draw, show or tell an adult. Record what actually happens.

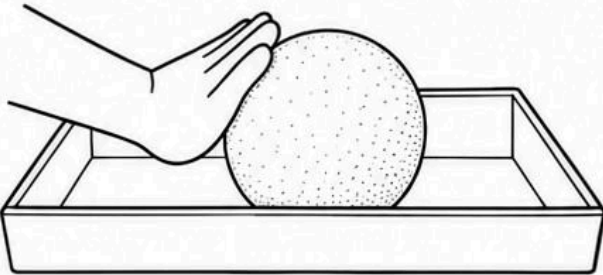
Name: _____

W03 • C03

Direction Matters

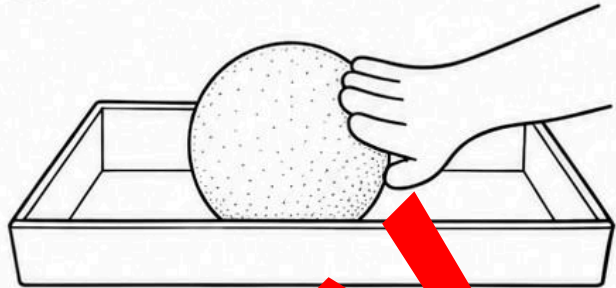
1. Show the action direction

1.



Draw the action arrow

2.



Draw the action arrow

2. Try two directions

Trial 1

Trial 2

3. Explain

The direction changed ...

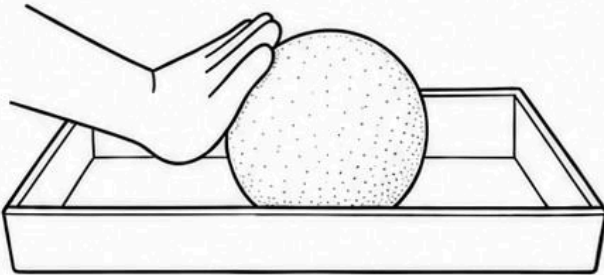
My next question: ...

Use arrow cards, draw or tell an adult.

Direction Matters

1. Show the action direction

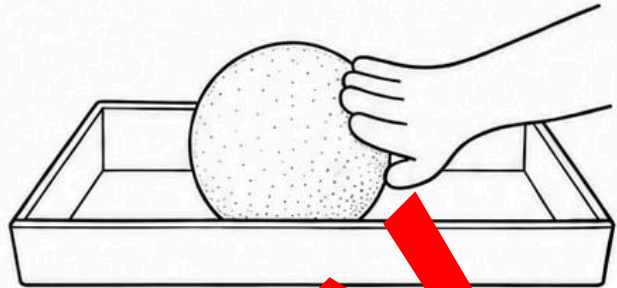
1.



Draw the action arrow



2.



Draw the action arrow



2. Try two directions

Trial 1

Trial 2

3. Explain

The direction changed ...

My next question: ...

Use arrow cards, draw or tell an adult.

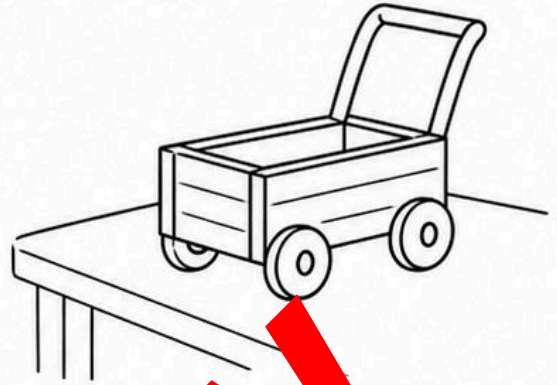
Name: _____

W04 • C04

Gentle and Stronger

① Predict:

I think the trolley will ...



② Try and record:

Same trolley, surface and start. Change only the push.

Gentle push — what happened?

Stronger push — what happened?

③ Compare:

I noticed

Was it like my prediction? _____

My next question:

Hand pushes can vary. Record the real result. Point, speak, draw or ask an adult to write.
Safe short table trials, no children in path.

Name: _____

W05 • C05

A Fair Comparison

My question:

I predict ...

Change one thing

Keep three things alike

1. _____

2. _____

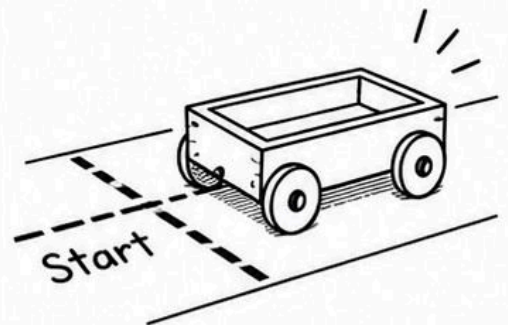
3. _____

My safe steps

1. _____

2. _____

3. _____



Same trolley, surface and start. Keep the path clear. Use gentle short trials. Repeat each action.

How will I record what happens?

Name: _____

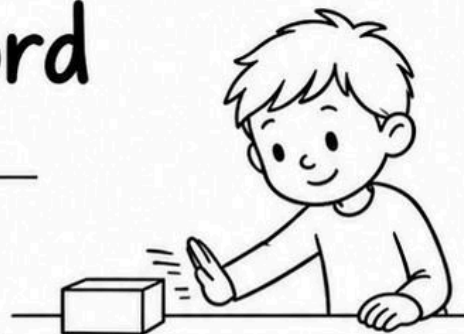
W06 • C06

Try and Record

Our question: _____

We changed: _____

We kept alike: _____



Action	Trial	Distance in blocks	Where did it stop?
Gentle push	1		
Gentle push	2		
Gentle push	3		
Stronger push	1		
Stronger push	2		
Stronger push	3		

Draw one real observation.

Something I noticed: _____

A question I have: _____

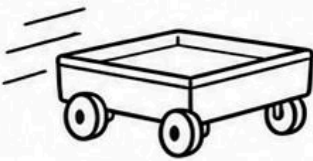
Count equal blocks along the path. Keep every real result, even a surprise. Hand pushes can vary. An adult may help record.

Name: _____

W07 • C06

Patterns and Surprises

1. Our question



2. A pattern I noticed

3. A result I did not expect, if any

4. My prediction, and the real result

Prediction:

Real result:

5. Compare with another group

What was alike or different in the setup?

6. A useful next question



Use your real W06 records. Keep surprising results. Hand pushes and setups can vary.

Name: _____

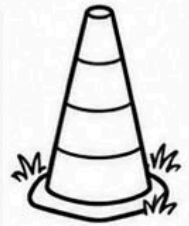
W08 • C01-C06

Design a Delivery Action

Goal: move a toy trolley to a nearby safe target.



Draw the start, target and action arrow.



I predict ...

Trial 1 — what happened?

Trial 2 — what happened?

One change I made: _____

Evidence for my choice:

My next question: _____

Keep the path clear. Use gentle short trials. Change one thing at a time. Point, speak, draw or ask an adult to write.

Name: _____

W09

My Motion Investigation Report

1. My question: _____

2. I predicted: _____

3. I changed: _____

4. I kept alike: _____

5. My real observations:

PREVIEW

6. My evidence shows ... because ...

7. A surprise or difference, if any: _____

8. One limit of my test: _____

9. My next question: _____

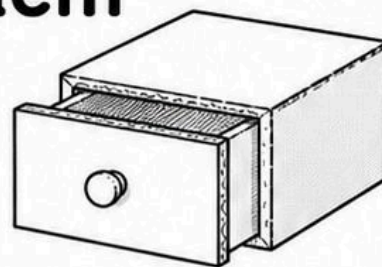
Use W05–W08 records. An adult may write your words. Explain the action and what changed.

Name: _____

W10

A New Toy Drawer Problem

A cardboard toy drawer is stuck.
An adult checks for anything in the way.
We never force a real drawer.



Toy model only

1. My safe gentle action

2. I predict ... because ...

3. What happened in the toy test?

4. How does your evidence help?

One limit: the toy and trolley are different.

My next question:

Use a teacher-approved toy model. Stop if it does not move. Ask an adult.
Point, speak, draw or ask an adult to write.

Name: _____

A1

Motion Investigation — Plan and Try

Our question: _____

My prediction: _____

Change one action

Keep alike

1. _____

2. _____

3. _____

Safe method

1. _____

2. _____

3. _____

Action	Trial	Real observation
Gentle push	1	
Gentle push	2	
Gentle push	3	
Stronger push	1	
Stronger push	2	
Stronger push	3	

Use the same trolley, surface and start. Keep the path clear. Keep every real result. Hand pushes can vary. Continue on A2.

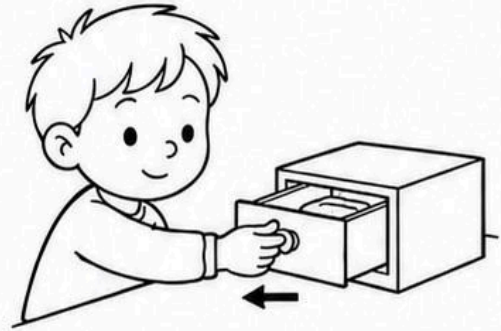
Name: _____

A2

Motion Investigation – Explain and Apply

My claim about pushes or pulls:

My evidence is ...



It was like or different from my prediction because ...

A surprise or difference, if any:

One limit of our comparison:

A useful next question:

A new safe situation

Choose a safe action for the cardboard box by drawing. Predict a change. Explain how your evidence helps.

Teacher conference – note evidence, not writing skill

Action and change: _____

Plan and real records: _____

Explanation and safe transfer: _____

Reflection and responsibility: _____

Point, speak, draw, use pictures or ask an adult to write. Adult transcription does not lower the judgement.

Student: _____

Date: _____

Motion Investigation Rubric

Judge the learning, not the response method.

Dimension	Developing	Secure	Extending
Action and change	Identifies an action or change; connection is unclear.	Names push or pull and explains an observed change.	Uses direction or strength to predict a new change.
Evidence process	Plan or real records are incomplete.	Changes one action, keeps useful conditions alike and records real trials.	Explains a comparison limit and suggests a useful improvement.
Explain and apply	Gives a claim without matching evidence.	Links a claim to real evidence and chooses a safe action.	Explains transfer to a new toy case and its limits.
Reflect responsibly	Reflection on safe participation is incomplete.	Keeps surprising results, asks a question and follows safe routines.	Uses variation to refine a question and helps others work safely.

Evidence needed:

Next teaching step:

Speaking, pointing, pictures, devices, drawing and adult transcription are equally valid.
Support needs do not determine the level. Use A1–A2, observations and a short conference.

R1

PREVIEW

Lesson 1
Push or pull



Our learning

Name a push or pull and ask a question about it.

Think together: Which actions move a toy towards you or away from you?

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Pushes and pulls

A push presses an object away from the contact.

A pull draws an object towards the contact.

Both are forces: actions that can change movement.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Watch the trolley

On a clear floor lane, press the trolley from behind. Notice the action: push.

Use its short handle to draw it towards you. Notice the action: pull.

Watch the object not touch the hand.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Try together

Stand beside the lane. One person acts; one watches.

1. Put the trolley on the start line.
2. Make one gentle push or pull.
3. Name the action and show its direction.
4. Stop before resetting.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Your learning record

Use W01. Name the actions in the four scenes.

Draw or show one safe push and one safe pull.

Ask: What might happen if we change the direction?

Point, speak, draw or ask an adult to write.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Check and explain

A hand behind a trolley pressing it away makes a push.

A short handle drawn towards the person makes a pull.

Tell your partner what you noticed. Which action would you use to bring the trolley to you?

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Well Done!

Now it's your turn to make a prediction
about the trolley.



PREVIEW

Lesson 2

Starting and Stopping



Our learning

Describe how a push or pull can change movement.

Think together: Can an action start a trolley? Can it slow or stop it?

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

A change in movement

A push or pull can start, slow, stop or change movement.

The effect depends on the direction and strength of the action.

A pull does not always stop an object.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Watch a safe change

Teacher pushes a still trolley gently along a short lane. It starts moving.

Teacher uses its handle to pull gently against its movement. It may slow and stop.

Everyone stays beside the lane.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Shapes can change

On a tray, push a small ball of soft playdough. Watch its shape.

Pull two parts gently apart. Watch again.

A push or pull can change shape too.

Use non-food dough suitable for the class.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Try together

Teacher controls the moving trolley. Observers name the direction and describe the change.

Reset the same lane each time.

Compare a gentle stop, a gentle stop and the dough changes.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Your learning record

Use W02 to draw before and after one trolley action and one dough action.

Write, say or point to: start, slow, stop or change shape.

Record what actually happens. No change is a useful observation.

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Use a prediction

How could a gentle pull help bring a toy wagon close without a bump?

Use what you saw to predict an action.

Check: Name the action. And the change it caused.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Well Done!

Explain the reaction and the change you observed.



PREVIEW

Lesson 3 Direction Matters



Our learning

Show the direction of an action and describe a motion change.
Think together: What do arrows tell us about movement?

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Direction arrows

An arrow shows a direction.

Point the arrow the way an action is applied.

A push from the side can change the path of a moving object.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Watch two directions

Teacher uses a slow foam ball on a tray. Give a gentle push to the right.

Reset. Give a gentle push forwards.

Show each direction with an arrow on a road.

A curved arrow is not needed for a straight action.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Try together

Stand beside the clear tray.

Push the still foam ball gently towards one marked edge. Stop it at the soft barrier.

Reset and choose another edge.

Compare the directions.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Your learning record

Use W03. Draw the action arrows in the two scenes.

In the large space, draw two safe trials of your own.

Mark the direction; describe what changed.

You may arrange arrow words and tell an adult.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Check and explain

If a hand on the left presses a ball right, the action arrow points right.

If a hand on the right presses left, it points left.

The side of the hand and the direction of the action help us explain the motion.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Well Done!

Show the arrow and explain
its direction.

PREVIEW



PREVIEW

Lesson 4 Gentle and Stronger



Our learning

Predict and compare gentle and stronger pushes horizontally

Think together: Might the same trolley move further after a stronger push?

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Our question and prediction

Question: Does this trolley usually go further with a stronger push?

Prediction: I think ____ because ____.

A prediction is an idea to test. It is not a result.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Compare with care

Use the same trolley, surface and start line.

Teacher models one gentle and one somewhat stronger push.

Both stay slow and inside the same lane.

We do not measure exact force with a hand.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Keep the lane safe

One trolley at a time. Stand beside its path.

Push gently enough to stay inside the lane.

Use a soft end barrier; never launch objects.

Reset only when the trolley is still.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Try and observe

Predict before testing.

Take turns making one gentle and one stronger push.

Mark where each trolley stops.

Repeat to see whether the pattern stays similar.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Your learning record

Use W04. Draw or mark the stopping places.

Label the action gentle or stronger.

Compare the observations with your predictions.

Keep results that surprise you.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Check and explain

A stronger push may move the trolley further in this set up.
Hand pushes vary; a single trial cannot prove an always rule.
What did YOUR trials show? Which trial was different?

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Well Done!

**Compare your prediction with
what actually happened.**

PREVIEW



PREVIEW

Lesson 5
A fair comparison



Our learning

Plan one changed action and keep useful things alike

Think together: What would make two things different?
compare?

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

One change at a time

Choose the action to compare: gentle and stronger pushes

Keep the trolley, surface and start line the same

Use the same person if possible.

Hand pushes still vary

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Spot the muddled comparison

Trial A: small trolley on carpet.

Trial B: different trolley on a smooth floor.

Both the object and surface changed. We cannot tell which change mattered.

Reset a comparison with fewer changes.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Plan together

Agree on a question and prediction.

Choose what changes and what stays the same.

Choose a safe lane and a stopping-place marker.

Tell a partner the steps before starting.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Your learning record

Use W05 to draw the setup and record the plan.

Circle or say the one action you change.

Show three things to keep the same.

Predict; explain the setup step.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Check and improve

Which three things stay alike?

How will you record the stopping place?

How will everyone stay out of the lane?

A fairer comparison helps us explain the action. It cannot make every hand push identical.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Well Done!

**Make one change and
one thing to keep alike.**

PREVIEW



PREVIEW

Lesson 6
Try and record



Our learning

Follow safe steps and record repeated actual observations.

Think together: Why record more than one trial?

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Record what happens

A result is what you observe after the action.

Mark the stopping place before moving the roller.

Use the same-size blocks from the same starting line.

Count without gaps or overlaps.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Watch the recording method

Teacher makes a trial, puts a floor marker at the front of the stopped trolley and models counting blocks from the start.

Write the actual count.

Do not fill a blank space before testing.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Our safe method

1. Reset the trolley at the start.
2. Check the lane is clear.
3. Make the planned action.
4. Mark and count the distance.
5. Record the result.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Repeat the comparison

Use W06 for three gentle and three stronger safe pushes.

Keep the trolley, start, surface and block size alike.

Take turns acting, watching and recording.

An adult may come on over with you.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Make a picture record

Make one mark for each block travelled, or draw the stop in place.

Compare rows with a partner.

Short, long and unchanged result all belong to the record.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Check and explain

After which action did the trolley usually travel further in your table?

Were all three results identical?

Describe an observation before giving a result.

Do not change a result to match a prediction.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Well Done!

**State a real observation
and where you recorded it.**

PREVIEW



PREVIEW

Lesson 7

Patterns and surprises



Our learning

Find a pattern, notice variation and ask another question.

Think together: What do several results show that one result cannot?

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Read an example carefully

Made-up example for discussion, not class results:

Gentle: 2, 3, 2 blocks.

Stronger: 4, 5, 3 blocks.

The trolley usually went further after stronger pushes. Results varied.

Use YOUR table to describe YOUR pattern.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

A surprise is evidence

The trolley may stop sooner after a stronger push on a control.

Check the start, surface, direction and a tick

We may not know the cause

Never erase an investigation because it is surprising.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Compare together

Place two real tables side by side.

Check that the setups were alike before comparing.

Which pattern is similar? Which result differs?

A different person may put a difference.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Your learning record

Use W07 with your W06 table.

Show a usual pattern and a surprising result if there was one.

Compare with your prediction.

Pose a further question to investigate.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

A useful everyday prediction

Use your evidence to choose a safe push for delivering a box to a nearby target.

Explain why it might work

A prediction based on a pattern can help people make decisions; it is still checked

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Check and explain

Finish: In our trials ____ usually ____ .

Our prediction ____ .

One result was ____ .

Next we could ask ____

Point to the evidence or marks that support your explanation.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Well Done!

Give a pattern AND the evidence for it.

PREVIEW



PREVIEW

Lesson 8

Design & delivery action



Our learning

Use direction and strength to reach a safe target.

Think together: How can we deliver a toy without bumping the barrier?

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

The delivery challenge

Move the trolley from the start towards a nearby target in the lane.

Use a safe push or pull.

Choose direction and strength.

The target stays inside the soft barrier.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Plan with evidence

Use what your earlier trials showed.

Point the action towards the target.

Predict a gentle action first.

Explain why you chose it.

Change one feature after an observation.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Test together

Check the lane is clear.

Try your planned action once.

Mark where the trolley stops.

Did it reach the target, stop short or pass it?

Reset before another try

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Your learning record

Use W08 to draw the target and action arrow.

Record the first result and one change.

Try again safely.

Explain how direction or strength helped you improve.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Check and explain

A result is useful even when the target is missed.

Use the stopping place to explain your exchange.

Say: I changed ____ because I observed ____.

You may show the action and explain with picture choices.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Well Done!

**Explain the evidence
to bring about changed action.**



PREVIEW

Lesson 1
Motion investigation report



Our learning

Explain a prediction, a fairer setup and real results

Think together: What evidence will help us better understand our investigation?

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Build your explanation

Our question was ____ .

I predicted ____ because ____ .

We changed ____ and kept ____ alike.

We observed ____ .

This suggests ____ .

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Use evidence, not a guess

Point to your actual record.

Explain the pattern and any variation.

Compare the result with the prediction.

Say what the method could not tell us: e.g. hand force was not measured.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Prepare your report

Use W09 and assessment pages A1–A2.

Choose a real table, drawing or practical demonstration.

Tell an adult or partner your explanation.

Keep all results; do not invent missing trials.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Share in a useful way

Speak, draw and label, point to pictures, use a communication board/device or dictate to an adult.

Show the same prediction, method and evidence whichever format you use.

You do not have to speak to the whole class.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

A partner question

Ask: What stayed alike? What did you observe?

Listen respectfully.

Compare with your own observation

Pose one further question that the evidence made you wonder about.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Teacher conference

Show your prediction and safe comparison.

Describe how direction or strength affected movement.

Explain the evidence, variation and a further question.

The quiz is a concept check, it does not replace this investigation.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Well Done!

**Secure a claim and
the real evidence behind it.**

PREVIEW



PREVIEW

Lesson 10
New simulation



Our learning

Use your motion evidence to explain a new safe problem.

Think together: A toy drawer does not open. Which person might help?

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

A toy drawer problem

Fictional case: a small classroom toy drawer stick

A push closes it; a gentle pull may open it.

Check for an obstruction first with an adult.

Never yank, force it or use fingers.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Choose and explain

Predict a safe action and its direction.

Use a trolley pattern to help explain your choice.

A drawer slides differently from a trolley, the earlier evidence cannot guarantee the result.

Tell an adult if it stays stuck.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Try a safe model together

Use an empty cardboard toy drawer prepared by the teacher.
Compare an unobstructed model with a teacher-controlled
blocked model.

Observe from beside the opening.
Only the adult removes a blockage.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Your learning record

Use W10. Draw or show your proposed action.

Explain direction and gentle strength

Name a limit of the trolley comparison.

Ask a further question and a second full investigation is required.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Check and use science

How did an earlier observation help your prediction?

What will you check before acting?

What would you do if the model stayed stuck?

People use patterns to predict safe actions in daily life.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Well Done!

**Explore a new action using
evidence and a safety choice.**

PREVIEW



PREVIEW

Push, Pull, Play
Unit Quiz



Show what you know

Listen to each question.

Speak, point, draw, gesture or use picture choices.

Explain your reason when you can.

The investigation shows your practical learning.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Question 1

Can a push change direction as well as start motion?

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Answer 1

Yes. A safe push from the side can change the path of a slow object. Describe or show a safe observation example.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Question 2

Why use the same trolley and surface?

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Answer 2

It makes the changed action easier to compare. Keep the start alike too. Hand pushes still vary.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Question 3

You draw a toy wagon towards you by its handle. Is that a push or a pull?

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Answer 3

A pull. The handle is drawn towards the person. A safe demonstration or picture selection is acceptable.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Question 4

Can a push or pull stop a moving object?

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Answer 4

Yes, an action against its movement can slow or stop it. A pull in its moving direction may speed it up instead.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Question 5

Does the trolley always travel the same distance after a stronger hand pushes? Why?

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Answer 5

No. Hand pushes vary. The starting place, surface or direction may differ too. Use repeated observations; do not claim an exact force.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Question 6

Your prediction was six blocks. The trolley travelled four blocks.
What do you record?

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Answer 6

Four blocks, because that is the observation. Keep the prediction separately and compare them.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Question 7

Made-up example: gentle trials are 2, 3, 2 blocks; stronger trials are 4, 5, 3 blocks. What pattern and variation can you describe?

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Answer 7

In this made-up example, the trolley usually travelled further after stronger pushes. Results varied and one stronger-push result matched one gentle-push result. These were not class measurements.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Question 8

You push soft playdough flat, then pull it gently longer. What changed?

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Answer 8

Its shape changed. Pushes and pulls can change the shape of a soft object as well as its movement.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Question 9

New case: an empty toy drawer stays stuck after a gentle pull.
What safe action would you choose next?

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Answer 9

Stop and ask an adult to check an obstruction. Do not suck it. A gentle pull may open an unobstructed nostril but this evidence does not guarantee this

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Question 10

New case: the trolley misses a nearby target to the left. Which feature could you change and how would you check?

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Answer 10

Change the safe action direction towards the target, leaving the trolley, start and surface alike. Try gently and record the final stopping place. Accept a reasoned strength change if it matches the stated observation.

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Reflect

Which observation helped your thinking?

Which question would you test next?

How will you keep the test fair?

PREVIEW

Based on: ACARA — Year 1 Science (australiancurriculum.edu.au)

Well Done!

Use a prediction, save steps and real evidence to explain a push or pull.

