

Storing and changing energy

Lesson at a glance

Open by winding a toy, letting it race, and asking where the energy was hiding while it waited. Name stored energy, then model a rubber-band car with a small stretch versus a bigger stretch so pupils see stored energy change into movement. Groups work one station (band car, wind-up, or soft-ball catapult), predict before release, and record store–predict–observe–change on the Investigation Journal page. Close by ordering the flow-builder chain on the IWB and a talk that energy changed form, not vanished.

Learning objectives

- Identify simple ways energy can be stored (stretch and wind-up)
- Observe stored energy changing into movement
- Trace a short energy chain from store to movement

Before the bell – prep

Night before: build or check 2–3 rubber-band/spool cars, gather 1–3 wind-up toys, and make one ruler-or-spoon catapult with elastic bands plus soft paper balls. Mark three station spots; put the catapult where you can supervise. Open the flow-builder interactive on the IWB before the bell.

Materials

Item	Qty	Per	Source	Low-cost substitute
elastic bands (assorted, classroom-safe)	6	class	classroom	hair ties or loom bands doubled up
rubber-band car or empty thread spool with stick/ matchstick axle	3	class	school kit	a toy car with an elastic band looped around the rear axle
wind-up toy	3	class	school kit	one class wind-up toy shared at Station B
ruler or plastic spoon for a simple catapult	1	class	classroom	a sturdy cardboard strip taped as a launcher arm
soft paper balls (scrunched scrap paper)	10	class	classroom	cotton wool balls
string and a small weight (e.g. a metal nut or large button)	1	class	classroom	a filled film canister or small sock of rice on a string
Investigation Journal page	1	pupil	provided printable	plain paper with headed boxes for predict, observe, what it became

Safety watch-point

Bands and catapult aimed away from faces; launch only soft paper balls at a wall target, never at people. Adult eyes on Station C; mind fingers in wind-up keys; keep floor runs clear.

Teaching moves

- **Getting Started:** Hold up one wind-up toy, wind it slowly in full view, set it free, then freeze the class on the key question: Where was the energy while the toy was still? Do not name stored energy yet — let the surprise land, then preview today's store-and-release work.
- **Where can energy hide?:** Project only the short stored-energy key point. Hold movement energy and energy chain back until after the demo and stations. Take a quick curiosity vote on stretch versus wind-up, then move on — do not ask which store holds the most energy.
- **Watch one energy change:** Model one rubber-band car only. Say the beats aloud: wonder, predict, small stretch with a stop mark, bigger stretch from the same line, observe, then name movement energy only after the car has rolled. If both runs look the same, exaggerate the stretch difference and re-run.
- **Energy store stations:** Assign each group to one station for about 10–11 minutes. Install four rotating jobs — storer, releaser, marker, speaker — and insist on a spoken prediction before every first release. Prompt: How did you store it? What happened when you let go? Did more stretch or winds make a bigger move? Last 5–6 minutes: one voice per station type shares store and change.
- **Record what the energy became:** Pupils record only the station they worked at on the Investigation Journal page. Steer them to the prediction box first while the before-we-let-go idea is fresh, then observation, then what it changed into. If someone writes that energy disappeared, ask them to point at what was moving at the end.
- **Trace the energy chain:** Open the flow-builder interactive in explore mode, layout chain. Class calls the order: energy stored in the stretch → band snaps back → car rolls. Then ask orally for a wind-up chain and a catapult chain so every station's work counts — no need to rebuild the interactive.
- **Make sense together:** Lead with: Where was the energy while things were still? What did it change into? Revoice changed into movement, not ran out. Only if time: would a bigger stretch or more winds hold more energy ready — tied to something they already tried.

What it should show

Bigger stretch or more winds should give a clearly bigger move when the start line stays the same and the floor is clear. Pupils should name stretch or wind-up as the store and say it changed into movement. Same-looking runs usually mean stretches were too similar — exaggerate the difference. Odd short runs often mean a sticky floor, a loose band, or a push instead of a clean release.



Misconceptions & interventions

- **Pupils say the energy ran out or disappeared when the toy stopped.** — Point at the rolling car or flying paper ball and revoice: the stored energy changed into movement energy — it did not vanish. Have them rewrite or retell using changed into.
- **In the chain, pupils put car rolls first because that is the part they noticed.** — Ask what had to be true before anything moved. Drag store first on the flow-builder, then snap-back, then roll, and have the class retell the story from still to moving.
- **Pupils think a tiny extra stretch or one more wind should always make a big difference.** — Remind them of the demo: only a clearly bigger stretch showed a longer roll. Invite one fair re-run with a really small versus really big store from the same start line.



Differentiation

Emerging	Developing	Proficient
• Pair at the teacher table with a partly wound or pre-stretched setup; pupil releases, marks the stop, and says stored then movement with a sentence stem. • On the Journal, allow a labelled drawing of store and movement plus one dictated prediction sentence.	• After the first release, try one clearly bigger stretch or extra winds from the same start line and compare the marker's stop points. • Add a why prompt: Why did the bigger store make a bigger move?	• Orally build full chains for the other two stations the group did not visit, using store → release action → movement. • Critique fairness: what must stay the same if we want to compare small versus big stretch fairly?



Cross-curricular hook

Link to Maths measures — groups compare how far runs went with finger or paper markers from the same start line.