

Storing and changing energy

Lesson at a glance

Open by winding a toy and letting it race, asking where the energy was while it waited. Model a rubber-band car with a small stretch then a bigger stretch so the class sees stored energy change into movement. Groups work one station — rubber-band car, wind-up toy, or paper-ball catapult — predict before each release, then record store, prediction, observation and change on the Investigation Journal. Close by ordering the flow-builder chain on the IWB and talking whether energy disappeared or changed.

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

Set three stations before the bell: 2–3 rubber-band/spool cars, 1–3 wind-up toys, and one ruler/spoon catapult with elastic bands and soft paper balls aimed at a wall. Mark a clear start line and floor run for the demo car. Keep station kit out of sight until stations begin. One shared class wind-up toy is enough if kit is short.

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

Aim bands and the catapult away from faces; launch only soft paper balls at a wall, never at people. Clear floor runs; mind fingers in wind-up keys. Adult eyes on Station C.

Teaching moves

- **Where can energy hide?:** Project only the stored-energy key point. Hold back movement energy and energy chain until after the demo and stations. Take a quick curiosity vote on stretch vs 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 cycle aloud: wonder, predict, small stretch, mark the stop, 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. Before any release, insist on a spoken prediction. Rotate in-group roles: storer, releaser, marker, speaker. Keep adult eyes on the catapult. Last 5–6 minutes: one voice per station type shares how energy was stored and what it became.
- **Record what the energy became:** Pupils record only the station they worked. Start them on the prediction box first while the spoken idea is fresh, then observation, then what it changed into. If a child 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, on the IWB. Class drags: energy stored in the stretch → band snaps back → car rolls. Then invite oral chains for wind-up and catapult so every station counts.
- **Make sense together:** Protect the full six minutes before tidying. Lead with where the energy was while still and what it changed into. Re-voice changed into movement, not ran out. Only if time: link bigger stretch or more winds to a bigger move from what they already tried.

What it should show

A bigger stretch or more winds should send the car, toy or paper ball further than a small store from the same start. Groups should name stretch or wind-up as the store and movement as what it became. If two runs look the same, stretches were too similar or the start line drifted — exaggerate the difference and re-run from rest.

Misconceptions & interventions

- **Pupils say the energy ran out or disappeared when the toy stopped.** — Ask them to point at what was moving at the end and re-voice: the energy changed into movement — it did not vanish. Have them write changed into on the Journal page.
- **When building the chain, pupils put car rolls first.** — Ask what had to be true before anything moved. Drag store first on the flow-builder, then snap-back, then roll, so the order matches what they watched.

**Differentiation**

Emerging	Developing	Proficient
• Stay with the teacher at one station; give a partly wound toy or pre-stretched band so the pupil only predicts, releases and names what moved. • Allow draw-and-label on the Journal page: store picture, then arrow to movement picture.	• Prompt a second trial at the same station with a clearly bigger stretch or more winds, and compare the two marks. • Ask why the second run went further before they write the changed-into line.	• After recording, critique fairness: what stayed the same between trials, and what would break the comparison. • Orally build a matching energy chain for a station they did not visit during the share-out.

Cross-curricular hook

Link to Maths measures — mark roll or flight distance from a fixed start line and compare longer vs shorter runs.