

Make it move further



Lesson at a glance

Hold up the same toy car or soft ball the groups will use and take a hands show on which push will go further — tiny or really big — without rolling it yet. Brief ramp-and-roll interactive practise shows changing one thing and leaving both marks. Model a small push then a big push from a taped start line on a flat floor lane, mark S and B stops, then rotate groups of three to four through one or two shared lanes. Pupils draw the two marks on the Investigation Journal page and circle which went further, then talk playground links.

Learning objectives

- Predict whether a bigger push will make an object move further
- Compare how far a small push and a big push send the same object

Before the bell – prep

Clear one or two shared floor lanes (2–3 m each) and mark a start line with masking tape. One toy car or soft ball per lane, spare tape strips or sticky notes labelled S and B, Investigation Journal pages ready. Open the ramp-and-roll interactive on the IWB beforehand.

Materials

Item	Qty	Per	Source	Low-cost substitute
toy car or soft ball	1	lane	school kit	a tennis ball, marble, or any small rolling toy
masking tape for starting line and stop marks	1	class	classroom	chalk on a hard floor, or sticky notes as stop markers
metre stick or measuring tape	1	class	classroom	count floor tiles between marks, or use a string and compare lengths by eye
clear floor lane space (about 2 to 3 metres)	1 or 2	class	classroom	one shared class lane if the room is small; groups take turns
Investigation Journal page	1	pupil	classroom	plain paper for a quick drawing of two lanes with stop marks

**Safety watch-point**

Roll along the floor away from feet and faces; walk around lanes, never step into a roll; stop the car with a hand at lane end. Peel up tape and clear lanes before the next class walks through.

**Teaching moves**

- **Getting Started:** Hold the same car or ball groups will use where everyone can see it. Do not roll it and do not lay out the full lane. Ask small push or big push for further, take a quick hands show, accept every idea, and say we will find out by trying.
- **What makes something go further?:** Teach with gestures on the real object: small hand push, bigger hand push, point further down the floor. Keep board text short. Stress same car, same start line, change only how hard we push — head off ‘heavier wins’ or ‘second try is better’.
- **Practise changing one thing:** Open ramp-and-roll in explore mode: gentle slope, smooth surface, tiles on. Run once, leave the mark; change only to a steeper slope; run again. Ask only what stayed the same, what changed, which mark is further. Before leaving the board say clearly: real test is flat floor, same object, small then big push — no ramp. Cap at about five minutes; close the interactive if the ramp steals focus.
- **Small push, big push:** Model the full cycle aloud on one lane (~2 min): wonder, predict big goes further, small push mark S, same line big push mark B, observe which mark is further, ask what the bigger push did at the start. Then rotate groups of 3–4: one small and one big push only per group (1–2 min), roles pusher/marker/watchers. Queue waiting groups with predict/keep-same/further questions — no separate desk task. If time runs short, remaining groups watch a final shared pair of pushes and still record those class marks. Hand journals as groups finish.
- **Mark and compare:** On the board sketch two simple lanes with S near the start and B further along, circle the further mark, and leave that model up. Main ask: draw the real floor marks and circle which went further. Optional only if finished: prediction tick and one short phrase. Point stuck pupils at their real tape marks. Watchers of the class lane still draw the shared S and B.
- **Pushes in our games:** Whole-class talk only — no extra writing. Draw out: most big pushes went further; object, line and floor stayed the same; odd results (hit a bag, push not really small) are useful. Link soft pass vs hard kick, gentle vs stronger throw, light vs bigger swing push. Ask when a small push is smarter. Revoice into push, bigger push, further.

**What it should show**

On a smooth classroom floor the big push should clearly outrun the small one when the same car or ball starts from the same taped line. If both look similar, the ‘big’ push was not big enough — model a clearer contrast. If the car hits a bag, foot or chair leg, clear the lane and re-run; that blocked path is a real result pupils will remember, not a force finding.



Misconceptions & interventions

- **‘The heavier car always goes further’ or ‘the second try always wins because it’s better.’** — Hold up the same object and point at the same start tape: ‘We keep the car and the line the same. The only change is how hard we push.’ Re-run one clear small-then-big pair so both marks show force, not weight or turn order.
- **Pupils treat the board ramp as the real test and predict slope distance instead of floor push size.** — Before leaving the interactive say aloud: ‘Board was only practise at changing one thing. Real test next — floor stays flat, same car, small push then big push, no ramp.’ Close the interactive if attention sticks on the slope.
- **A ‘big’ push that barely differs from the small one, so both marks look the same and children decide push size does not matter.** — Stop and model a clearer contrast: tiny fingertip nudge, then a firm shove from the same line. Ask which mark is further now and revoice ‘bigger push means pressing harder.’

Differentiation

- {‘emerging’: [‘Pair at the teacher lane: child marks S/B while you or a partner push; journal task is copy the two floor marks and circle the further one only.’, ‘If they miss a turn at the lane, they draw the shared class S and B marks from the front model so every child still compares further and nearer.’]}
- {‘developing’: [‘After the required S/B pair, if the lane is free, one extra clear contrast push and check the new marks still match the prediction.’, ‘Add the optional journal extras: tick the prediction and one short phrase for what they found out.’]}
- {‘proficient’: [‘Prompt: ‘What must stay the same for this to be a fair compare?’ and have them spot any blocked-lane or push-not-big-enough error in another group’s marks.’, ‘Stretch talk: when is a small push the smarter choice in the yard (control, safety, not hurting a friend) versus when a bigger push is needed.’]}

Cross-curricular hook

Link to PE and yard games — soft pass versus hard kick, gentle throw versus stronger throw — and optional metre-stick talk of ‘more centimetres’ without a full measures lesson.