

A bigger push, a longer roll

Lesson at a glance

Open by miming a footballer's little kick versus big kick and asking which sends the ball further. Pupils predict whether a small or bigger push will send a toy car or soft ball further, then pairs take short turns on taped floor lanes: small push and mark the stop, bigger push and mark again. A whole-class front-lane demo locks the comparison, then children draw both stops on the Investigation Journal page so the bigger-push stop is clearly further.

Learning objectives

- Give a small push and a bigger push to a car or ball along a lane
- Guess which push will send it further before trying
- Notice and draw that a bigger push made it go further

Before the bell – prep

Before the bell, clear 4–6 short floor lanes (2–3 m each) with a masking-tape start line on each. One toy car or soft ball and two stop markers (cones, beanbags or sticky notes) per lane. Soft ball ready if cars stick. Plan pairs so every child pushes at least once.

Materials

Item	Qty	Per	Source	Low-cost substitute
toy car or soft ball	1	group	school kit	a tennis ball or a small cardboard tube roll
masking tape for floor start lines	1	class	classroom	chalk lines or ropes laid straight on the floor
stop markers (cones, beanbags or sticky notes)	2	group	classroom	two pieces of scrap paper or two building blocks
Investigation Journal page or blank A4 sheet	1	pupil	classroom	any blank A4 sheet for a lane drawing
crayons or pencils	1	pupil	classroom	any classroom drawing tools

Safety watch-point

Roll only along the lane, away from feet and faces. Gentle pushes only. Children kneel or sit at the side — nobody stands in the path.



Teaching moves

- **Getting Started:** Stand where all can see. Mime a soft kick, then a strong kick. Ask which sends the ball further and let children show with their hands. Accept every guess — no cars or tape out yet.
- **Look and wonder:** Hold one car at a start line without rolling it. Say small push, bigger push, further, and slide your hand a short way then a long way along the imaginary lane. Thumbs up for 'bigger goes further', thumbs sideways for not sure. Model only: I wonder if a bigger push will send it further — do not demo the full roll yet.
- **Let's roll:** Model once at the front lane: small push, mark; bigger push, mark; think aloud that the bigger one went further. One pair per lane — pusher then marker, then swap so both push. Keep each child's two pushes to about a minute. Fold watchers in: Was that small or bigger? Where will it stop? If both stops match, model a clearer contrast. Same car, same start, only the push changes.
- **Mark how far:** Stay at the lanes. Ask children to point to the small-push stop and the bigger-push stop, then tell a neighbour which is further from the start. Watchers point from the side at the nearest lane.
- **Compare at the front:** Whole class sits to see the front lane only. Loud guess before a clearly gentle small push; leave a marker. Guess again before a clearly stronger bigger push; leave the second marker. Both stay visible. Re-voice: same car, same start, only the push changed. No ramp or slope talk.
- **Show and draw:** Keep the two front markers in view as the shared picture. Hand out the Investigation Journal page or blank A4. Sketch only a start line and arrow on the board — not how far each went. Children draw both stops so the bigger push is clearly further. Scribe a label if asked. Quietly gather spare kit while they draw.
- **What we noticed:** Carpet talk only — hold up two clear drawings. Draw out: a bigger push made it travel further. Link once to a swing, door or football kick. Celebrate any surprised guesses. Cue last markers and cars into the tray.

What it should show

Almost every pair should see the bigger push stop further from the start than the small push. If stops look the same, the first push was not gentle enough or the second not clearly stronger — model a bigger contrast and re-run from the same start. Affirm drawings that show a start line and two stops with the bigger-push mark further along.

Misconceptions & interventions

- **It went further because the car is faster or heavier.** — Point at the same car on the same start line: only the push changed. Have them name small push and bigger push again before the next roll.
- **Both stops look the same, so push size does not matter.** — The bigger push was still too gentle. Model a clear soft shove then a clearly stronger one and re-mark both stops so the contrast is obvious.

Differentiation

Emerging	Developing	Proficient
• Offer the soft ball if the car sticks; scribe small/big on request; accept a simple sketch from mainly-watching children as long as one stop is clearly further.	• Prompt watchers before each roll: small or bigger, and where will it stop? Ask pairs to tell a neighbour which marker is further.	• Early finishers may try one more bigger push and add a third marker if time allows; keep talk oral — no centimetre measuring.

Cross-curricular hook

Link to PE kicking and playground swings — choosing a little or bigger push to send something just far enough.