

energy-forces

A bigger push, a longer roll

Lesson at a glance

Open by miming a footballer's little kick and big kick and ask which sends the ball further. Children guess whether a small or bigger push will send a toy car or soft ball further along a taped floor lane. In short pair turns they push, mark each stop, then watch a shared front-lane demo. They draw both stops on the Investigation Journal page and close with a carpet talk: a bigger push made it go 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 straight floor lanes (2–3 m), each with a masking-tape start line, one toy car or soft ball, and two stop markers (cones, beanbags or sticky notes). Space lanes so groups will not bump. 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 invite a hand show. Accept every guess — no cars or tape yet.
- **Look and wonder:** Hold one car at a start line without rolling it. Say small push, bigger push, further, and slide your hand along an imaginary lane. Thumbs up for 'bigger goes further', sideways for not sure. Model: I think the bigger push will go further — later we will try both.
- **Let's roll:** Model once at the front lane: small push and mark, bigger push and mark, think aloud that it went further. One pair per lane — pusher then marker, swap, about one minute each. Watchers call small or bigger and guess the stop. Same car, same start; only the push changes. If stops look the same, model a clearer contrast.
- **Mark how far:** Stay at the lanes. Ask children to point to the small-push stop and the bigger-push stop, then say which is further from the start. Watchers point from the side at the nearest lane.
- **Compare at the front:** Whole class sits to watch the front lane only. Loud guess before a clearly gentle push; leave a marker. Guess again before a clearly stronger push; leave the second marker. Link: same car, same start, only the push changed. Leave both markers up for drawing.
- **Show and draw:** Point to the two front markers as the shared picture. Sketch only a start line and arrow on the board. Children draw both stops so the bigger-push stop is clearly further. Scribe a label if asked; a simple sketch is enough.
- **What we noticed:** Carpet talk only — hold up two clear drawings. Draw out: bigger push, further travel. One familiar picture (swing, door or football kick). Celebrate any surprise; guesses start the fun, looking finds out.

What it should show

Almost every pair should see the bigger-push marker further from the start than the small-push marker. If both stops look the same, the first push was not gentle enough or the second not clearly stronger — model a sharper contrast from a still start on the same line. Drawings should show a start and two stops with the bigger push further along.

Misconceptions & interventions

- **Children say the car went further because it is faster or heavier, not because of the push.** — Hold up the same car on the same lane: Same car, same start — only the push changed. Point to the two markers and restate bigger push, further stop.
- **Both pushes look the same so children think push size does not matter.** — Model again with a clearly tiny shove then a clearly stronger one. Ask watchers to call small or bigger before each push so the contrast is heard and seen.

Differentiation

Emerging	Developing	Proficient
• Offer a soft ball if a car sticks. Accept a very simple sketch from mainly-watchers as long as one stop is clearly further; scribe small/big if asked.	• Prompt watchers: Was that small or bigger? Where do you think it will stop? Pair talk after pointing at the two markers.	• Confident pairs who finish early may try one more bigger push and add a third marker. Ask why the footballer chooses little or big kick.

Cross-curricular hook

Link to PE striking and fielding — choosing a little kick or a big kick to send a ball the right distance.