

engineering

Wide feet stand up

Lesson at a glance

Open by rocking one cup on your palm and taking quick guesses about what helps things stay up. Show wide feet versus thin feet with a body demo, then pairs build two freestanding towers the same height from cups or blocks — three-piece spread base versus one-piece base — on a shared tray. One gentle finger nudge to the tray reveals which stands steady. Close on the carpet naming wide feet on a real classroom stand.

Learning objectives

- Build two towers the same height with wide feet and thin feet
- Notice which tower stays up better when the tray is nudged
- Say that wide feet help a tower stand

Before the bell – prep

Night before, bag about 12 cups or blocks plus one flat tray per pair. Build one worked model (wide triangle base and matching-height thin tower) to leave standing at the front all lesson. Clear floor space so trays can be nudged safely.

Materials

Item	Qty	Per	Source	Low-cost substitute
plastic cups or wooden blocks (about 12 per pair: enough for a 3-piece wide base plus two short matching towers)	12	group	classroom	clean stackable yoghurt pots or paper cups from the supermarket
flat tray or shallow box (build surface for the gentle nudge test)	1	group	classroom	a sturdy cardboard lid or a large hardback book used as a base

Safety watch-point

Build below shoulder height. Nudge the tray, not the tower. Stand back and clear feet as towers fall; mind fingers between cups.

**Teaching moves**

- **Getting Started:** Rock one cup or block gently on your palm. Ask what might help it stay up and take a few kind guesses only — do not show the tray or hand out kits yet. Name builders and engineers as people who stop towers falling.
- **Wide feet and thin feet:** Plant both feet wide and rock, then tiptoe on one foot and wobble. Say wide feet mean a big spread-out bottom and thin feet a small one. Flash the empty tray once so children picture the later wobble surface. Keep both towers the same height as the big idea — feet, not height.
- **Build two towers:** Model the full build at the front: three cups in a triangle then stack; one cup then the same number on top; check tops with a level hand or book. Leave your model up. Give pairs about 7 minutes; circulate asking ‘Show me the wide feet. Same height?’ No glue or tape.
- **Gentle nudge:** Demo one soft one-finger tray push on your model without saying which fell. Pairs do one gentle nudge each. Partner-notice first, then whole-class share; revoice into ‘wide feet help a tower stand steady.’ If both fall, the nudge was too hard — model softer.
- **Wide feet all around us:** Point to one freestanding object in the room (easel, coat stand). Model stems: ‘Wide feet help because they spread out / do not tip.’ Pairs finish the stem. Stay oral — no drawing sheet.

What it should show

Almost every thin-feet tower falls first; the wide-feet tower stays up or lasts longer. If both fall, the nudge was too hard — remodel a softer finger push. If neither falls, the thin base is not thin enough; help them use a single cup or block at the bottom.

Misconceptions & interventions

- **Taller things always fall first — so the taller tower will tip no matter the feet.** — Point to both tops and check they match height with a level hand. Say today’s only difference is the feet; height stays the same on purpose.
- **We need tape or glue to make a proper tower.** — Hold up the freestanding model: ‘No sticky stuff — builders want the feet to do the work so the nudge test is fair.’

Differentiation

Emerging	Developing	Proficient
• Let pairs stop at about three cups high and keep checking against your front model for wide bottom versus one-cup bottom.	• After the first nudge, ask ‘Why did that one stay up?’ and have them point to the spread-out feet before the carpet share.	• If they finish early, add one layer only to the wide-feet tower and try one more gentle nudge — still matching the idea that wide feet help it stand.

Cross-curricular hook

Link to PE balance — wide feet make a steady stance, same idea as the tower's wide base.

