

Step by step: first algorithms

Lesson at a glance

Open by naming everyday jobs (brushing teeth, packing a bag) and asking what goes wrong if the steps are mixed up. Model a brushing-teeth sequence, swap two steps on purpose, then label it an algorithm. Drive the algorithm-sequencer on the IWB so the class calls forward/turn blocks to reach a flag. Groups order printed picture-step cards and play robot with safe mime. Pupils record their ordered steps and a tick/happy face on the Investigation Journal page, then name other everyday algorithms at home and school.

Learning objectives

- Put clear steps for an everyday routine into the right order
- Follow a short sequence of steps exactly when acting as a robot

Before the bell – prep

Print one mixed-up step-card set per group (Set A brushing teeth, Set B packing a bag, or Set C making toast) the day before. Clear a small floor space for mime play. Have the algorithm-sequencer ready on the IWB in explore mode — pupils need no devices.

Materials

Item	Qty	Per	Source	Low-cost substitute
routine step cards (brushing teeth, packing a school bag, making toast)	1	group	provided printable	write the five steps for one routine on sticky notes or scrap paper
Investigation Journal pages	1	pupil	classroom	plain paper with space to draw ordered steps and a tick or cross
clear floor space for play-robot mime	1	class	classroom	stand beside desks and mime in place

Safety watch-point

Play-robot is safe mime only — no real water, food or toaster. Keep floor space clear and movements gentle so groups do not collide.



Teaching moves

- **Steps in the right order:** Before any new word, say five brushing-teeth steps in order and act them once. Deliberately swap two (brush before toothpaste) and ask what goes wrong. Only then label it: that clear list in the right order is an algorithm. Say AL-guh-rith-um with the class several times.
- **Order the steps on the board:** Drive the algorithm-sequencer yourself. Model forward, forward, forward so the robot hits the flag. Then build a wrong path (forward, turn right, forward), run it, and ask what went wrong. Rebuild the working path together; fold the class in with 'Do you agree? What would you try?'
- **Order the cards and play robot:** Give each group one mixed-up card set. They order cards on the table first, say the steps aloud, then one child mimes robot while callers read one card at a time — no real water, food or toaster. Watch that the robot waits for the next card and does only what it says. Role-swap only if a group finishes early.
- **Record our steps:** Show the Investigation Journal page on the board first. Ask every pupil for only two things: the ordered steps (numbered or left-to-right drawings) and a tick/happy face if the robot finished. Say the optional 'what we changed' line only to groups who tried a wrong order.
- **Routines all around us:** Short partner talk: where else do we follow steps in order? If talk stalls, prompt washing hands before lunch. Revoice ideas as clear steps, right order, and following exactly.

What it should show

Groups should lay cards left to right in a sensible order and the robot should finish the job when steps are followed exactly. Set B allows lunch box and books to swap in the middle. A robot that freezes or invents moves usually heard two cards at once or guessed — re-run one card at a time from a still start.

Misconceptions & interventions

- **Pupils think an algorithm is only something a computer uses.** — Revoice after the teeth or bag routine: everyday jobs at home and school are algorithms too — clear steps in the right order that get a job done.
- **Pupils think the same steps work even if the order is mixed up.** — Replay the deliberate swap (brush before toothpaste, or zip before packing) and ask what went wrong. Point back to the failed robot path on the algorithm-sequencer.
- **The child playing robot guesses the next move or adds extra actions.** — Stop and restate: a robot friend does only what the card says, with no guessing. Have callers read one card at a time and wait until the mime finishes.

Differentiation

- {'emerging': ['Offer the three-card mini set (get bag → put in lunch → zip closed) and stay at the teacher table while they order and mime.', 'Accept numbered drawings or simple left-to-right pictures on the Journal; a tick/cross is enough for 'robot finished'.'], 'developing': ['After one successful run, ask the group why that order worked and what would fail if two middle cards swapped.', 'Invite them to whisper-check another group's card order before recording.'], 'proficient': ['Deliberately place one card wrong, run the robot, spot the bug and fix the order together.', 'On the Journal, sketch one extra step that would make the algorithm clearer.']}

Cross-curricular hook

Links to English oral language — pupils sequence and retell a familiar routine in clear ordered steps for a partner.