

Motor Fan and Press Switch

30 minutes

Electricity and Simple Circuits

WHAT THIS LESSON DOES

As the teacher, guide your students through an engaging exploration of electricity and motors using Snap Circuits. Introduce key concepts, oversee the assembly of components on the base grid, and ensure safety while students build and test their fan circuit.

WHAT STUDENTS SHOULD BE ABLE TO DO

- Understand the concept of electricity and how it powers a motor.
- Learn to assemble a simple circuit using a base grid, battery holder, wire block, motor block, and press switch block.
- Develop skills in following step-by-step instructions to build a functioning circuit.
- Appreciate the importance of safety when working with electrical circuits and moving parts.
- Encourage exploration and application of learned concepts to create different circuits.

BEFORE THE LESSON

- This is an unplugged, kit-based lesson: no pupil devices needed. You need one Snap Circuits set per group with a base grid, battery holder, number 3 wire block, motor block (M1), press switch block (S2) and the red fan.
- Check every set has working batteries fitted in the battery holder before the bell. A flat set stalls the whole group.
- Clear a flat, stable working space per group and agree the safety rule up front: fingers away from the spinning fan, and clear space above for it to launch.

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HOW THE LESSON RUNS

Introduction to Motor Fan and Press Switch

Prepare the Base Grid

Inserting Batteries

Place the battery holder (B1)

Place wire block (3)

Place the motor block (M1)

Place the press switch block (S2)

Attach the Fan

Let's Make the Fan Fly!

Time to Explore!

TEACHING MOVES

- 1. Introduction to Motor Fan and Press Switch. Keep the intro short and concrete: electricity is energy that flows and makes things work, and a motor turns that energy into movement. Then get kit into hands quickly.
- 4. Place the battery holder (B1). Teach the grid as a map before anyone places a block: letters run one way, numbers the other, and a coordinate like C4 is where they cross. This unlocks every later step.
- 5. Place wire block (3). Have pupils confirm both ends snap down at C2 and E2. Name the wire as the path electricity travels along to reach the motor.
- 6. Place the motor block (M1). Stop and check the positive and negative sides match the diagram before moving on. A reversed motor is the most likely reason a group's fan will not work later.
- 7. Place the press switch block (S2). As pupils place the switch, restate the safety warning: once powered, the motor part spins. Fingers clear before anyone presses.
- 8. Attach the Fan. Show them the gaps under the fan seating onto the motor teeth. Secure but free to spin, not jammed tight. Fingers away before testing.
- 9. Let's Make the Fan Fly! Give a countdown so the whole class launches together and space is clear overhead. Ask what happened when they released the button and why the motor slowed.
- 10. Time to Explore! Circulate and ask each group to trace the path of the electricity with a finger and explain what the switch does. Prompt them to try a different layout on the grid.

WHAT TO WATCH FOR

- Students may think: Pupils fit the motor block with the positive and negative sides reversed, then think the whole circuit is broken when nothing spins. What to do: Have them check the plus and minus markings against the diagram before pressing the switch. Flipping the motor is usually the only fix needed.
- Students may think: Pupils think a block just needs to sit near the right coordinate rather than snap firmly onto it, leaving a gap in the circuit. What to do: Ask them to press each block until it clicks and gently tug-test it. A loose connection breaks the path even when the layout looks right.
- Students may think: Pupils expect the fan to keep spinning after they let go of the press switch. What to do: Explain the press switch only lets electricity flow while held. Let go and the path opens, so the motor slows and stops.

DIFFERENTIATION

- Emerging: Pre-place the battery holder for a group that is stuck on the grid, then let them add the remaining blocks from that anchor point. Read the coordinates aloud one at a time and have them point to the spot before placing anything.
- Developing: Let them build the given circuit, then ask them to explain, in order, how the electricity travels from battery to fan before they press the switch.
- Proficient: In the explore step, challenge them to rebuild the same working circuit in a different position on the grid, or to add a second switch, and explain what changes.