

The Mirror Robot

40 minutes

Unplugged Coding - Art

WHAT THIS LESSON DOES

In this lesson, you'll explore symmetry by creating a mirror image. Follow step-by-step instructions to draw a shape on one side of a line, then reverse the steps to reflect it perfectly on the other side.

WHAT STUDENTS SHOULD BE ABLE TO DO

- Understand the concept of symmetry and how it creates mirror images across a central line.
- Apply the principle of reversing steps and directions to replicate a shape as a mirror image.
- Develop precision in following step-by-step instructions to achieve symmetrical drawings.
- Practise debugging skills by identifying and correcting errors in the mirroring process.
- Recognise the importance of accuracy and attention to detail in creating balanced designs.

BEFORE THE LESSON

- Open and test the Mirror Robot interactive and the symmetry slides on your whiteboard beforehand, so the projector and sound are working.
- Print the Mirror Robot worksheet, one per pupil, and have one marker per pupil ready.
- This is a whole-class and paper lesson: pupils do not need their own devices.

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HOW THE LESSON RUNS

Introduction

What is Symmetry?

Creating the Mirror Code

Hands-on Drawing (The Mirror Image)

Wrap Up

TEACHING MOVES

- 2. What is Symmetry? Draw out real examples first (butterfly, leaf, letter H) before showing the slides. On the final maybe-symmetrical images, ask pupils to justify: fold it down the middle, do both halves match?
- 3. Creating the Mirror Code. Model one arrow step on the board, then Run so pupils see cause and effect. Stress the rule aloud: same shape, same distance from the centre line, direction flipped.
- 4. Hands-on Drawing (The Mirror Image). Circulate and coach mini-debugs. When a line does not match, help the pupil find the first step that went wrong and fix only that step, rather than starting over.
- 5. Wrap Up. Gather pupils to hold up their pictures. Ask what they had to reverse to make the right side match, tying the mirror rule back to the reversed directions.

WHAT TO WATCH FOR

- Pupils copy the left side exactly instead of flipping it, so a shape pointing left on one side points left on the other rather than mirroring. Fold a sample down the centre line to show the halves meeting. Point out that a left arrow on one side becomes a right arrow on the mirror side.
- Pupils get the shape right but place it the wrong distance from the centre line, so the halves do not balance. Have them count dots from the line on the drawn side, then count the same number on their side before drawing each segment.

DIFFERENTIATION

- Emerging: Do the first corner together, counting dots from the centre line aloud, then let them continue. Let them succeed on the Easy level of the interactive before moving to the worksheet.
- Developing: Prompt them to check after each corner rather than at the end, so errors are caught early. Ask them to say the mirror rule back to you before they start a new segment.
- Proficient: Set them the Medium or Tricky level of the interactive once the worksheet is done. Ask them to design their own half-image on squared paper and challenge a partner to mirror it.