Cracking the Binary Code: How Computers Think

Success criteria (tick when done)

[ ] I have explained that binary uses only 0s and 1s.
[ ] I have used at least three words from the word bank.
[ ] I have written in a way that a Year 4 student can understand.
[ ] I have used full sentences with correct punctuation.
[ ] I have linked my ideas using cohesive devices like 'furthermore' or 'consequently'.

What to expect at this age

Year 6 pupils should be able to simplify complex technical concepts for a younger audience while maintaining scientific accuracy.

Good, better, best: model responses

Good: Binary is a base-2 system. Computers use 0 and 1 to represent data. 0 means off and 1 means on. This is how computers process information.

It shows a basic grasp of the core concept but lacks detail and cohesive flow.

Better: Binary is a base-2 system that uses only 0s and 1s. Specifically, these numbers represent electrical currents. A 0 is off and a 1 is on. Consequently, computers can store data.

It introduces technical vocabulary from the word bank and explains the 'why' behind the 0s and 1s.

Best: Binary is a base-2 system using only 0s and 1s. Just as we use ten digits, computers use two states: on and off. Furthermore, these sequences of data create everything we see on screen, specifically letters and colours.

It uses sophisticated sentence structures, includes relative clauses, and successfully simplifies the concept for a younger reader.

What a secure answer looks like

Focus on the child's ability to translate abstract binary logic into clear, accessible language for a younger peer. Ensure they use the word bank to demonstrate understanding of technical terminology.

If your child is stuck

Ask your child to imagine a light switch. If 'off' is 0 and 'on' is 1, how could they use a row of switches to send a secret message to a friend?

Common mistakes to watch for

Children often confuse binary with decimal place value. Remind them that binary is 'base-2' (doubling each column) rather than 'base-10' (multiplying by ten).