

Investigation: the staircase pattern

MODULE 8 · ALGEBRA — PATTERNS, EXPRESSIONS AND EQUATIONS

ALGEBRA

HOW TO ANSWER TODAY

- **Find the rule.** Look at how each input changes to its output. Try $\times$ first, then $+$ or $-$.

$3 \rightarrow 6, 5 \rightarrow 10, 7 \rightarrow 14 \rightarrow$ rule is $\times 2$

- **Function machine.** Do EACH step of the rule in order to the input.

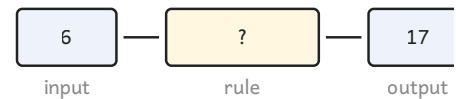
Rule $\times 4 + 2$, input 5 $\rightarrow 5 \times 4 = 20, + 2 = 22$

 STRETCH PROBLEMS

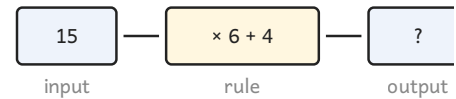
- 1** At Cara's sleepover the friends check how many biscuits are left in the tin after each round of games. The counts are 42, 37, 32, 27. What comes next in the sequence?

- 2** Aoife helps plant seeds in the school polytunnel in spring. The seed counts recorded so far are 50, 47, 44 and 41. What comes next in the sequence?

- 3** Saoirse and her brother do extra jobs at home each week. For every euro Saoirse earns from chores, her parents top it up with the same bonus so she ends up with more. When Saoirse earned €6 she got €17, when she earned €8 she got €19, and when she earned €1 she got €12. What is the rule for working out her total from her chore money?



- 4 Saoirse has a function machine drawn in her maths copy with the rule $\times 6 + 4$. She puts the number 15 into the machine. What number comes out?



- 5 Cian and his friends play a lunchtime soccer match in the schoolyard. They score 3 goals using a rule for points: multiply the goals by 3, then add 6 bonus points for fair play. How many points do they get in total?

