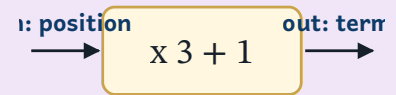


Rules for patterns using words and tables

MODULE 10 · ALGEBRA — PATTERNS, EXPRESSIONS AND EQUATIONS ALGEBRA

A **rule** links a term's **position** to its value. A table of position and value helps you find it.

→ Position $\times 4 - 1$ gives 3, 7, 11, 15... (term $n = 4n - 1$).



FIND THE RULE FOR 4, 7, 10, 13, ...

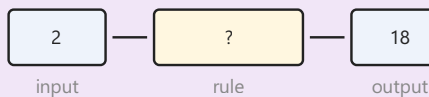
- 1 It goes up **3** each time, so the rule uses $3 \times$ position.
- 2 Position 1 gives 4, so the rule is **$3 \times$ position + 1**.
- 3 Check position 4: $3 \times 4 + 1 = 13$. ✓

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

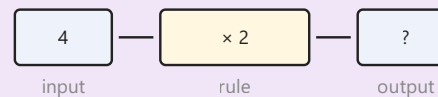
WARM-UP

1



Mr Ó Briain is in the photocopier room sorting worksheets for tomorrow's lessons. He notices a pattern: for **2** pupils he prints **18** sheets, for **10** pupils he prints **90** sheets, and for **7** pupils he prints **63** sheets. What rule is he using to work out the number of sheets from the number of pupils?

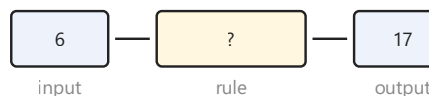
2



Mr Ó Sé is using the photocopier in the staffroom to run off worksheets for 5th class tomorrow. The photocopier is set to a rule of $\times 2$, so it doubles whatever number of sheets he feeds in. If he feeds in **4** sheets, how many copies come out?

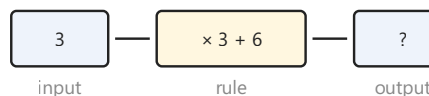
PRACTICE

1



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?

2



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?