Lesson 102

Describing a rule in words

MODULE 8 · ALGEBRA — PATTERNS, EXPRESSIONS AND EQUATIONS ALGEBRA

To continue a number pattern, look at how each term changes. The **rule** describes the change — usually 'add the same amount each time' or 'multiply by the same factor each time'.

→ **3, 7, 11, 15, …** rule: add 4. Next: 19.

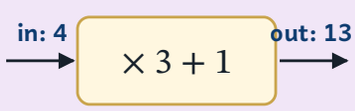
→ **2, 6, 18, 54, …** rule: multiply by 3. Next: 162.

HOW TO ANSWER TODAY

- **Solve in two steps.** Undo the + or − first, then undo the × or ÷.
  $2x + 5 = 13 \rightarrow 2x = 8 \rightarrow x = 4$
- **Find the rule.** Look at how each input changes to its output. Try × first, then + or −.
  $3 \rightarrow 6,\ 5 \rightarrow 10,\ 7 \rightarrow 14$ → rule is × 2

TRY IT ON THE LINE

For each input → output pair, describe the rule in plain words (e.g. 'add 5', 'multiply by 3 then add 2').



1. 1 → 4, 2 → 7, 3 → 10. Rule = _____
2. 1 → 2, 2 → 5, 3 → 10. Rule = _____
3. 10 → 5, 20 → 10, 30 → 15. Rule = _____

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 The 5th class library tracks how many books are borrowed each week. The first four weeks show **5**, **15**, **25** and **35** books borrowed. If the pattern continues, how many books will be borrowed in the next week?

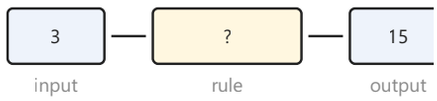
> What comes next in the sequence: 5, 15, 25, 35, ___ ?

CHALLENGE

1 Cian saves his pocket money in a jar. Each week he counts what is left and writes the amount in his copy: **€14**, **€11**, **€8**, **€5**. If the pattern continues, how much will be in the jar next week?

> What comes next in the sequence: 14, 11, 8, 5, ___ ?

2



Granny pays Niamh pocket money for helping with the calves at the farm. She uses a rule based on the number of calves Niamh feeds: **3** calves earns **€15**, **9** calves earns **€33**, and **10** calves earns **€36**. What is the rule?