

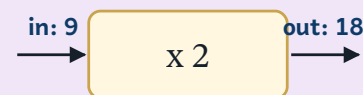
Algebra problem-solving and end-of-year review

MODULE 10 · ALGEBRA — PATTERNS, EXPRESSIONS AND EQUATIONS

ALGEBRA

Pull the year together: **patterns, expressions and equations** as tools for solving problems and explaining your reasoning.

→ Name the unknown, write the rule or equation, solve, then check.



HOW TO ANSWER TODAY

- **Property names.** Order swaps ($a + b = b + a$) → commutative. Brackets move ($((a+b)+c = a+(b+c))$) → associative. One spreads over two ($a(b+c) = ab+ac$) → distributive.
 $5 + 3 = 3 + 5$ → commutative · $2 \times (4 + 5) = 2 \times 4 + 2 \times 5$ → distributive
- **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 –.
 $3 \rightarrow 6, 5 \rightarrow 10, 7 \rightarrow 14 \rightarrow$ rule is $\times 2$

 WARM-UP

- 1** On Sunday at granny's house in Cork, **16** cousins arrive before dinner and **26** cousins arrive after Mass. Granny says it doesn't matter what order they came in: **$16 + 26 = 26 + 16$** . Which property of operations does this equation show: commutative, associative, or distributive?

Which property of operations does this equation show: $16 + 26 = 26 + 16$? (Choose: commutative, associative, or distributive.)

2 Oisín saves the same amount of pocket money each week in his jar. After week **1** he has **€3**, after week **2** he has **€7**, after week **3** he has **€11** and after week **4** he has **€15**. How much will be in the jar after week **5**?

What comes next in the sequence: 3, 7, 11, 15, ____?

 PRACTICE

- 1** Mr Ó Briain pins up the weekly star chart on the 5th class noticeboard. The total stars after each week so far are **5**, **17**, **29** and **41**. If the pattern continues, how many stars will be on the chart after the next week?
- What comes next in the sequence: 5, 17, 29, 41, ____ ?

- 2



Find x so the scale balances.

Saoirse packs the same number of grapes into each of **4** small pots in her lunchbox, then adds **9** extra grapes loose on top. Altogether her lunchbox holds **45** grapes. If x is the number of grapes in each pot, solve $4x + \mathbf{9} = \mathbf{45}$ to find how many grapes are in each pot.