

Simplifying simple expressions

MODULE 10 · ALGEBRA — PATTERNS, EXPRESSIONS AND EQUATIONS

ALGEBRA

HOW TO ANSWER TODAY

- **Letter expressions.** A letter stands for a number. Swap the letter for its value, then work out the answer.

If $n = 3$, then $2n + 5 = 2 \times 3 + 5 = 11$

- **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

★ STRETCH PROBLEMS

- 5th class are planting seedling trays in the school polytunnel. Each row holds $3(n - 1) + 4$ seedlings, where n is the number of pupils planting in that row. If $n = 7$, what is the value of $3(n - 1) + 4$?
- Saoirse watches the classroom bird-feeder for 9 days. Each day she counts 9 finches and 14 sparrows visiting the feeder. To work out the total visits, she writes $9 \times (9 + 14) = 9 \times 9 + 9 \times 14$ in her maths copy. Which property of operations does this equation show: commutative, associative, or distributive?
- Mr Ó Briain hands out pencils from the classroom store. Each table gets $3(n - 1) + 4$ pencils, where n is the number of pupils at the table. If $n = 6$, how many pencils does the table get?
 If $n = 6$, what is the value of $3(n - 1) + 4$?
- At granny's house for Sunday dinner, Saoirse explains to her younger cousin how $7 \times (4 + 10) = 7 \times 4 + 7 \times 10$ must be true without working out either side. Which property of operations is she showing: commutative, associative, or distributive?
 Which property of operations does this equation show: $7 \times (4 + 10) = 7 \times 4 + 7 \times 10$? (Choose: commutative, associative, or distributive.)
- On the 5th class nature walk through the local park, Oisín spots groups of leaves on the ground. He writes $(7 \times 4) \times 4 = 7 \times (4 \times 4)$ in his nature copy to show two ways of counting the leaves. Which property of operations does his equation show: commutative, associative, or distributive?
 Which property of operations does this equation show: $(7 \times 4) \times 4 = 7 \times (4 \times 4)$? (Choose: commutative, associative, or distributive.)