

Simplifying simple expressions

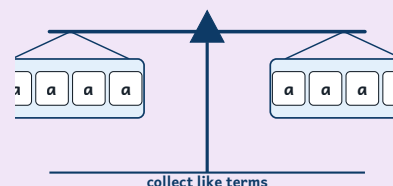
MODULE 10 · ALGEBRA — PATTERNS, EXPRESSIONS AND EQUATIONS

ALGEBRA

Simplify an expression by collecting **like terms** — the ones with the same letter.

$$\rightarrow 3n + 2n = 5n.$$

$$\rightarrow 4a + 3 + 2a = 6a + 3.$$

**SIMPLIFY $4a + 3 + 2a$**

- 1 Collect the **like terms** (the ones with a): $4a + 2a = 6a$.
- 2 Keep the 3 separate: $6a + 3$.

HOW TO ANSWER TODAY

- **Property names.** Order swaps ($a + b = b + a$) $\rightarrow$ commutative. Brackets move ($((a+b)+c = a+(b+c))$) $\rightarrow$ associative. One spreads over two ($a(b+c) = ab+ac$) $\rightarrow$ distributive.
 $5 + 3 = 3 + 5 \rightarrow$ commutative $\cdot 2 \times (4 + 5) = 2 \times 4 + 2 \times 5 \rightarrow$ distributive
- **Solve for x .** Do the **OPPOSITE** operation to both sides. $+$ becomes $-$; $\times$ becomes $\div$.
 $x + 7 = 15 \rightarrow x = 15 - 7 = 8$ $3x = 21 \rightarrow x = 21 \div 3 = 7$
- **Letter expressions.** A letter stands for a number. Swap the letter for its value, then work out the answer.
 If $n = 3$, then $2n + 5 = 2 \times 3 + 5 = 11$

WARM-UP

- 1 Mr Ó Briain is in the photocopier room sorting worksheets for tomorrow. He notices the pile has $19 + 13$ worksheets, while Ms Walsh's pile beside it has $13 + 19$ worksheets, and the totals are the same. Which property of operations does the equation $19 + 13 = 13 + 19$ show: commutative, associative, or distributive?
 Which property of operations does this equation show: $19 + 13 = 13 + 19$? (Choose: commutative, associative, or distributive.)

- 2 Saoirse is tidying the class library log for the week. She sees that $29 + 8 = 8 + 29$ gives the same total of books, whether she counts returns first or borrows first. Which property of operations does this equation show: commutative, associative, or distributive?
 Which property of operations does this equation show: $29 + 8 = 8 + 29$? (Choose: commutative, associative, or distributive.)