

Properties of operations – commutative, associative, distributive

MODULE 8 · ALGEBRA — PATTERNS, EXPRESSIONS AND EQUATIONS ALGEBRA

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

★ STRETCH PROBLEMS

- 1 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.)

- 2 At Camogie training under the floodlights, Aoife sets up 5 rows of 3 cones for a passing drill. Saoirse sets up 3 rows of 5 cones for the same drill, and notices both layouts have the same number of cones, so $5 \times 3 = 3 \times 5$. Which property of operations does this equation show: commutative, associative, or distributive?

- 3 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.)