# Year 9 Algebraic Expressions – Challenge

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Year 9 · Maths · Expanding, Index Laws and Algebraic Fractions · Level 3 Challenge · 8 questions

**Name** _____ **Date** _____

## A. Think like a mathematician

**1.** Kofi says $(3x + 6)/3$ simplifies to $x + 2$. Is Kofi right? Explain.

Answer _____

**2.** Jade says $(x + 4)/4$ simplifies to $x + 1$. Is Jade right? Explain.

Answer _____

**3.** Bella says $(x + 9)^2 = x^2 + 81$. Explain the mistake and write the correct answer.

Answer _____

**4.** Amir expands $(x + 6)(x - 8)$ and gets $x^2 - 48$. Explain the mistake and write the correct answer.

Answer _____

**5.** Work out $3 \times 7 - 5^2$, $6 \times 10 - 8^2$ and $13 \times 17 - 15^2$. What do you notice? Use algebra to show it is always true, by simplifying $n \times (n + 4) - (n + 2)^2$.

Answer _____

**6.** Show that $(x + 9)^2 - x(x + 18)$ simplifies to 81.

Answer _____

**7.** A triangle has a base of $2x$ cm and a perpendicular height of $(x + 2)$ cm. Write an expanded expression for its area in cm².

Answer _____

**8.** Factorise, then simplify $(a^2 - 9a)/(5a - 45)$.

Answer _____