

Letter-symbols – using a letter for an unknown

MODULE 8 · ALGEBRA — PATTERNS, EXPRESSIONS AND EQUATIONS ALGEBRA

We use a **letter** to stand for an unknown number. The letter is a placeholder until we figure out the value.

→ $n + 5 = 12$. The letter n stands for 7 (because $7 + 5 = 12$).

→ **3a = 21**. The letter a stands for 7 (because $3 \times 7 = 21$).

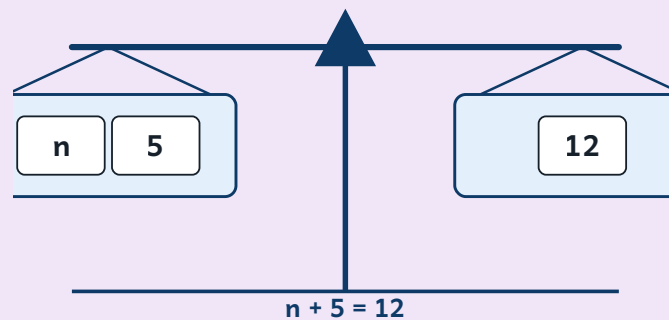
HOW TO ANSWER TODAY

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

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

 TRY IT ON THE LINE

Each balance is in EQUILIBRIUM (the beam is level). That means the two sides are equal. Find the value of the letter on each set of scales.



1. Above: $n + 5 = 12 \rightarrow n = \underline{\hspace{2cm}}$
2. Solve: $a + 3 = 10 \rightarrow a = \underline{\hspace{2cm}}$
3. Solve: $k + 7 = 15 \rightarrow k = \underline{\hspace{2cm}}$
4. Solve: $x + x = 14$ (two x's add to 14) $\rightarrow x = \underline{\hspace{2cm}}$

 PRACTICE

- 1** On the sponsored cycle, Tadhg plans to do **3** laps of the cycle path at n kilometres per lap, but he stops **1 kilometre** short on his final lap. The total distance he cycles is $3n - 1$ kilometres. If $n = 7$, how many kilometres does Tadhg cycle?

If $n = 7$, what is the value of $3n - 1$?

- 2 On the sponsored cycle around the school cycle path, Tadhg cycles $2n + 7$ laps, where n is the number of laps his younger sister completes. If $n = 5$, how many laps does Tadhg cycle?

If $n = 5$, what is the value of $2n + 7$?