

End-of-module challenge: pattern hunt

MODULE 8 · 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 $2n + 5 = 2 \times 3 + 5 = 11$

- **Find the rule.** Look at how each input changes to its output. Try $\times$ first, then $+$ or $-$.

$3 \rightarrow 6, 5 \rightarrow 10, 7 \rightarrow 14 \rightarrow$ rule is $\times 2$

STRETCH PROBLEMS

- 1 On the 5th class school-bag rota, each pupil carries 3 books plus 5 spare copybooks for the group. If n stands for the number of books per pupil and $n = 9$, work out $3n + 5$ to find the total number of items in one pupil's bag.

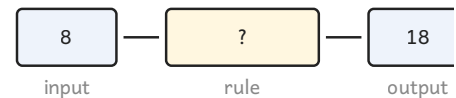
If $n = 9$, what is the value of $3n + 5$?

- 2 The 5th class library rota lists the page numbers each pupil reads aloud on Mondays: 23, 33, 43, 53, _____. The pattern continues in the same way. What page number comes next on the rota?

- 3 Mr Ó Briain is taking the roll on Monday morning in 5th class. He notices that the number of pupils present is given by $3n - 1$, where n is the number of tables in the room. If $n = 9$, how many pupils are present?

If $n = 9$, what is the value of $3n - 1$?

- 4 Cian is making a points chart for 5th class on the noticeboard. Every pupil starts the week with 10 bonus stickers, then earns extra stickers for reading. He writes the totals so far: $8 \rightarrow 18$, $3 \rightarrow 13$, $7 \rightarrow 17$. What rule turns the reading stickers into the total stickers on the chart?



- 5 At Camogie training under the floodlights, Aoife counts the cones laid out for each drill of the night. The first four drills use 19, 25, 31 and 37 cones, with the same number added each time. How many cones will be laid out for the fifth drill?