

Generalising number patterns and sequences

MODULE 10 · ALGEBRA — PATTERNS, EXPRESSIONS AND EQUATIONS ALGEBRA

HOW TO ANSWER TODAY

- **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



Cian is selling raffle tickets for the 5th class GAA fundraiser. Each book of tickets costs the same in euros, plus a fixed booklet fee added to every order. His sales notebook shows: **9** books \rightarrow **€58**; **6** books \rightarrow **€40**; **8** books \rightarrow **€52**. What is the rule linking the number of books to the total cost?

- 2 Oisín brings a bag of bread to the pond in Wicklow to feed the ducks. After feeding them for **1 minute** he has **14** pieces left, after **2 minutes** he has **9** pieces, after **3 minutes** he has **4** pieces, and after **4 minutes** he has **-1** pieces (he had to borrow one from his sister). Following the same pattern, how many pieces will he have after **5 minutes**?

What comes next in the sequence: 14, 9, 4, -1, ___?

3



Granny pays Niamh pocket money for helping with the calves at the farm. She uses a rule based on the number of calves Niamh feeds: **3** calves earns **€15**, **9** calves earns **€33**, and **10** calves earns **€36**. What is the rule?

- 4 The school canteen starts the week with **42** cartons of milk in the chiller. Each day the same number of cartons is sold, leaving **35** on Tuesday, **28** on Wednesday and **21** on Thursday. How many cartons will be left on Friday?

What comes next in the sequence: 42, 35, 28, 21, ___?

- 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?

What comes next in the sequence: 19, 25, 31, 37, ___?