

Algebra investigation – patterns and rules

WHAT THIS LESSON TEACHES

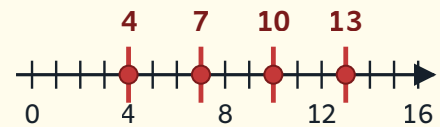
A growing pattern gets bigger by the same set amount at every step. To find the rule, spot the starting number and the fixed jump you add each time.

- Matchstick squares: 1 square is 4 sticks, 2 squares is 7, 3 squares is 10 — start at 4, add 3.
- The sequence 5, 8, 11, 14 has the rule 'start at 5, add 3 each time'.

MODEL THIS ON THE BOARD

FINDING THE RULE FOR STICKS

- ① The counts marked on the line are **4, 7** and **10**.
- ② Each jump is the same: $7 - 4 = 3$ and $10 - 7 = 3$.
- ③ The rule is start at **4** and add **3** each time, so the next count is **13**.



DISCUSSION STARTER

REFLECT How did you work out the rule for a growing pattern you had not built yet?

ANSWER KEY

b) 13

c) 16, 19

Q1: 9

Q2: 11

Q3: 18

Q4: 14, 17

Q5: 22, 34, 46, 58

EXTENSION SHEET · STRETCH ANSWERS

S1: $\times 3 + 7$

S2: $\times 5 + 1$

S3: $\times 5 + 4$

S4: $\times 2 + 5$

S5: 63

Investigation: How does your pattern grow? — open-ended; scan pupils' working for valid solution paths rather than a single answer.