

Investigation – the staircase pattern

MODEL THIS ON THE BOARD

STAIRCASE PATTERN – FIND THE RULE

- 1 Step 1 uses 1 square. Step 2 uses 3 squares. Step 3 uses 6 squares. Step 4 uses 10 squares.
- 2 Differences between terms: +2, +3, +4... each difference grows by 1.
- 3 Rule in words: 'add **n** more squares to get the **n-th step**.'
- 4 Step 5 uses $10 + 5 = 15$ squares. Step 6 uses $15 + 6 = 21$.

ANSWER KEY

a) $n=5 \rightarrow 15$ squares.

Q2: 64

b) Rule: total = $n \times (n + 1) \div 2$ (the triangular-number formula).

Q3: 63

Q4: 14

Q1: 45

EXTENSION SHEET · STRETCH ANSWERS

S1: $\times 3 + 8$

S4: 68

S2: 2

S5: $\times 3 + 6$

S3: -6