Year 9 Sequences and Functions – Foundation

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Answers and worked solutions · 10 questions

A. Sequence and function skills

1. **16, 8, 4, 2, 1**

Apply the rule to each term in turn: 16 → 8 → 4 → 2 → 1

2. **−2, −3, −5, −9, −17**

Apply the rule to each term in turn: −2 → −3 → −5 → −9 → −17

3. **−4, −1, 4, 11**

Substitute n = 1, 2, 3 and 4 into $n^2 - 5$

n = 1: −4, n = 2: −1, n = 3: 4, n = 4: 11

4. **−4 1/2, −4, −3 1/2, −3**

Substitute n = 1, 2, 3 and 4 into (1/2)n − 5

n = 1: −4 1/2, n = 2: −4, n = 3: −3 1/2, n = 4: −3

5. **(1/3)n + 4/3**

Difference 1/3, so the rule starts (1/3)n

n = 1 gives 1/3; first term 1 2/3

(1/3)n + 4/3

6. **(1/3)n + 2**

Difference 1/3, so the rule starts (1/3)n

n = 1 gives 1/3; first term 2 1/3

(1/3)n + 2

7. **$n^2 + 6$**

Compare with the square numbers 1, 4, 9, 16, 25, the cube numbers 1, 8, 27, 64, 125 and with n/a

$n^2 + 6$

8. **$n^2 + 2$**

Compare with the square numbers 1, 4, 9, 16, 25, the cube numbers 1, 8, 27, 64, 125 and with n/a

$n^2 + 2$

9. **117**

$x^2 = 25$

$5 \times 25 - 8 = 117$

10. **second difference 2; pattern 6 has 40 counters**

First differences 3, 5, 7; second difference 2 (constant, so quadratic)

Continue the first differences up to pattern 6: 40