



ACHIEVE ACADEMY

GCSE Maths — Foundation Tier

Sequences · Practice Booklet

NAME: _____

CLASS: _____

DATE: _____

☐ Developing

☒ Secure

☐ Greater Depth

Answer every question in the working space provided. Method marks are available for correct working even if the final answer is wrong. Check the time allowed with your tutor before you start.

Sequences

Total marks available: 80

● Sequences

✓17

Q1 · ● Developing · 2 marks

METHOD

$$2 \times 9 - 1 = 17$$

✓40

Q2 · ● Developing · 2 marks

METHOD

$$2 \times 17 + 6 = 40$$

✓-13

Q3 · ● Developing · 2 marks

METHOD

Common difference = -1

$$\text{Next term} = -12 - 1 = -13$$

✓-33

Q4 · ● Developing · 2 marks

METHOD

Common difference = -8

$$\text{Next term} = -25 - 8 = -33$$

✓53

Q5 · ● Developing · 2 marks

METHOD

$$6 \times 7 + 11 = 53$$

✓ -10

Q6 · ● Developing · 2 marks

METHOD

Common difference = -2

Next term = $-8 - 2 = -10$

✓ 57

Q7 · ● Developing · 2 marks

METHOD

$6 \times 7 + 15 = 57$

✓ 24

Q8 · ● Developing · 2 marks

METHOD

Common difference = 4

Next term = $20 + 4 = 24$

✓ 82

Q9 · ● Developing · 2 marks

METHOD

$8 \times 10 + 2 = 82$

✓ 69

Q10 · ● Developing · 2 marks

METHOD

$5 \times 13 + 4 = 69$

✓ No

Q11 · ● Secure · 3 marks

METHOD

$n = (20 - 3) \div 6 = 2.83$, not a positive whole number

✓No

Q12 · ● Secure · 3 marks

METHOD

$$n = (105 - 6) \div 7 = 14.14, \text{ not a positive whole number}$$

✓No

Q13 · ● Secure · 3 marks

METHOD

$$n = (132 - 5) \div 9 = 14.11, \text{ not a positive whole number}$$

✓No

Q14 · ● Secure · 3 marks

METHOD

$$n = (123 - 7) \div 9 = 12.89, \text{ not a positive whole number}$$

✓Yes ($n = 15$)

Q15 · ● Secure · 3 marks

METHOD

$$n = (65 - 5) \div 4 = 15, \text{ a positive whole number}$$

✓ $9n + 14$

Q16 · ● Secure · 3 marks

METHOD

Common difference = 9

$$n\text{th term} = 9n + 14$$

✓ $5n + 4$

Q17 · ● Secure · 3 marks

METHOD

Common difference = 5

$$n\text{th term} = 5n + 4$$

✓ $5n - 12$

Q18 · ● Secure · 3 marks

METHOD

Common difference = 5

nth term = $5n - 12$

✓ No

Q19 · ● Secure · 3 marks

METHOD

$n = (19 + 10) \div 2 = 14.5$, not a positive whole number

✓ $2n - 5$

Q20 · ● Secure · 3 marks

METHOD

Common difference = 2

nth term = $2n - 5$

✓ 63

Q21 · ● Greater Depth · 4 marks

METHOD

matchsticks in pattern 15 = $7 + (15 - 1) \times 4 = 7 + 56 = 63$

✓ 1875

Q22 · ● Greater Depth · 2 marks

METHOD

Multiplier = $15 \div 3 = 5$

Next term = $375 \times 5 = 1875$

✓ 38

Q23 · ● Greater Depth · 4 marks

METHOD

tiles in pattern 11 = $8 + (11 - 1) \times 3 = 8 + 30 = 38$

✓405

Q24 · ● Greater Depth · 2 marks

METHOD

$$\text{Multiplier} = 15 \div 5 = 3$$

$$\text{Next term} = 135 \times 3 = 405$$

✓2

Q25 · ● Greater Depth · 2 marks

METHOD

Each term is half of the term before, so the multiplier is $\frac{1}{2}$

$$\text{Next term} = 4 \div 2 = 2$$

✓512

Q26 · ● Greater Depth · 2 marks

METHOD

$$\text{Multiplier} = 8 \div 2 = 4$$

$$\text{Next term} = 128 \times 4 = 512$$

✓36

Q27 · ● Greater Depth · 4 marks

METHOD

$$\text{matchsticks in pattern } 12 = 3 + (12 - 1) \times 3 = 3 + 33 = 36$$

✓16

Q28 · ● Greater Depth · 4 marks

METHOD

$$\text{dots in pattern } 6 = 6 + (6 - 1) \times 2 = 6 + 10 = 16$$

✓81

Q29 · ● Greater Depth · 4 marks

METHOD

$$\text{matchsticks in pattern } 13 = 9 + (13 - 1) \times 6 = 9 + 72 = 81$$

✓4

Q30 · ● Greater Depth · 2 marks

METHOD

Each term is half of the term before, so the multiplier is $\frac{1}{2}$

Next term = $8 \div 2 = 4$