MEMORANDUM

Name: ..... Class: .....

Date: .....

MARK ____ / 26

Answer all questions. Show all your working — marks are awarded for method as well as the final answer. **Teacher copy: accept any correct equivalent method.**

1 Find the rule for 7, 10, 13, 16, ... *(find rule)* (2)

$d = 3$; $3(1) + c = 7 \rightarrow c = 4$; $\mathbf{T_n = 3n + 4}$ ✓✓ (2)

2 Find the rule for 2, 6, 10, 14, ... *(find rule)* (2)

$d = 4$; $4(1) + c = 2 \rightarrow c = -2$; $\mathbf{T_n = 4n - 2}$ ✓✓ (2)

3 For $T_n = 5n + 1$, find the 10th term. *(far term)* (2)

$5(10) + 1 = \mathbf{51}$ ✓✓ (2)

4 Find the 100th term of 4, 7, 10, ... *(far term)* (2)

$T_n = 3n + 1$; $T_{100} = \mathbf{301}$ ✓✓ (2)

5 Which term of 4, 7, 10, ... equals 100? *(work back)* (2)

$3n + 1 = 100 \rightarrow 3n = 99 \rightarrow n = \mathbf{33rd\ term}$ ✓✓ (2)

6 Which term of 5, 9, 13, ... equals 81? *(work back)* (2)

$4n + 1 = 81 \rightarrow n = \mathbf{20th\ term}$ ✓✓ (2)

7 Find the rule for 30, 25, 20, 15, ... *(decreasing)* (2)

$d = -5$; $-5 + c = 30 \rightarrow c = 35$; $\mathbf{T_n = -5n + 35}$ ✓✓ (2)

8 Find the rule for 12, 9, 6, 3, ... *(decreasing)* (2)

$d = -3$; $c = 15$; $\mathbf{T_n = -3n + 15}$ ✓✓ (2)

9 The tile pattern below grows in the same way each time. Determine a rule for the number of tiles in the n-th term. **(3)**



> $d = 3$, $c = 2$; $\mathbf{T_n = 3n + 2}$ ✓✓✓ **(3)**

10 Is 45 a term of 3, 7, 11, ...? *(check)* **(2)**

> $4n - 1 = 45 \rightarrow 4n = 46 \rightarrow n = 11{,}5$, not whole → **No** ✓✓ **(2)**

11 Position: 1 ; 2 ; 3 ; 4 and value: 1 ; 7 ; 13 ; 19. Find the rule and the value in position 25. **(3)**

> $T_n = 6n - 5$ *(2)*
> $6(25) - 5 = \mathbf{145}$ *(1)* ✓✓✓ **(3)**

12 Describe the rule of 4 ; 9 ; 14 ; 19 ; ... in words. **(2)**

> **Multiply the position number by 5, then subtract 1** ($T_n = 5n - 1$). ✓✓ **(2)**

TOTAL: 26 marks

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