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 10th term of 3 ; 7 ; 11 ; ... *(arithmetic term)* (2)

$a = 3,\ d = 4;\ T_{10} = 3 + 9(4) = \mathbf{39}$ ✓✓ (2)

2 8th term of 2 ; 5 ; 8 ; ... *(arithmetic term)* (2)

$a = 2,\ d = 3;\ T_8 = 2 + 7(3) = \mathbf{23}$ ✓✓ (2)

3 5th term of 3 ; 6 ; 12 ; ... *(geometric term)* (2)

$a = 3,\ r = 2;\ T_5 = 3{\cdot}2^4 = \mathbf{48}$ ✓✓ (2)

4 6th term of 1 ; 3 ; 9 ; ... *(geometric term)* (2)

$a = 1,\ r = 3;\ T_6 = 3^5 = \mathbf{243}$ ✓✓ (2)

5 Which term of 4 ; 7 ; 10 ; ... is 61? *(which term)* (3)

$4 + (n - 1)3 = 61 \rightarrow n = \mathbf{20}$ ✓✓✓ (3)

6 Which term of 2 ; 4 ; 8 ; ... is 256? *(which term)* (3)

$2{\cdot}2^{n-1} = 256 \rightarrow 2^n = 256 \rightarrow n = \mathbf{8}$ ✓✓✓ (3)

7 Sum of the first 10 terms of 2 ; 4 ; 6 ; ... *(arithmetic sum)* (3)

$S_{10} = \frac{10}{2}[2(2) + 9(2)] = 5(22) = \mathbf{110}$ ✓✓✓ (3)

8 Sum of the first 15 terms of 3 ; 5 ; 7 ; ... *(arithmetic sum)* (3)

$S_{15} = \frac{15}{2}[6 + 14(2)] = \frac{15}{2}(34) = \mathbf{255}$ ✓✓✓ (3)

9 Sum to infinity of $6 + 3 + 1{,}5 + \ldots$ *(S∞)* **(3)**

$r = \frac{1}{2}$; $\frac{6}{1 - \frac{1}{2}} = \mathbf{12}$ ✓✓✓ (3)

10 Sum to infinity of $10 + 2 + 0{,}4 + \ldots$ *(S∞)* **(3)**

$r = 0{,}2$; $\frac{10}{1 - 0{,}2} = \frac{10}{0{,}8} = \mathbf{12{,}5}$ ✓✓✓ (3)

TOTAL: 26 marks

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