XT - MATHS Grade 12

Name: _____   **Class:** _____

Subject: Series and Sequences 1: Arithmetic   **Date:** _____

Total Marks: 84

Question 1: True/False [10]

11 + 13 + 15 + ...
A minimum number of ten terms of this series will give a sum which is larger than **200**.

TRUE	**FALSE**

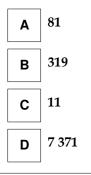**Question 2: True/False [4]**

If **13** and **19** are the first two terms of an arithmetic progression,
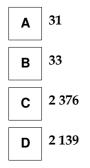then the value of the thirty-fifth term of this sequence will be **219**.

TRUE	**FALSE**

Question 3: Multiple Choice [6]

4 + 9 + 14 + ... + 54
The sum of this series is equal to ...

A | 81

B | 319

C | 11

D | 7 371

Question 4: Multiple Choice [8]

The sum of all the multiples of **3** between **22** and **121** is equal to ...
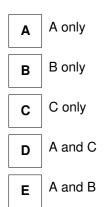
A | 31

B | 33

C | 2 376

D | 2 139

Question 5: Multiple Choice [4]

Which of the following progressions represent arithmetic sequences?

A : $9 \; ; \; 7 \; ; \; 5 \; ; \; 3 \; ;$ ...

B : $3 \; ; \; 9 \; ; \; 27 \; ;$ ...

C : $(x + 4) \; ; \; (3x + 3) \; ; \; (5x + 2) \; ;$ ...

A	A only
B	B only
C	C only
D	A and C
E	A and B

Question 6: Socrates [8]

If $\displaystyle\sum_{k=1}^{n} (2k - 1) = 144,$ then $n = ...$

Type the number only.

Question 7: Socrates [4]

Given: $11 \; ; \; 6 \; ; \; 1 \; ; ...$

The sum of the first nineteen terms of this sequence will be equal to ...
Type the number only.

Question 8: Socrates [2]

The arithmetic mean of **16** and **25** is ...
Give your answer in decimal form.

Consider the recursive number pattern: $T_n = T_{n-1} + T_{n-2},\ T_1 = 1,\ T_2 = 3$

The first six terms of this pattern are (ans 1).
The number pattern (ans 2) an arithmetic pattern.
The name of the particular pattern generated is the (ans 3) series.

1	

2	

3	

▸ *1, 3, 4, 7, 11, 18*   ▸ *4, 7, 11, 18, 29, 47*   ▸ *1, 3, 1, 3, 1, 3,*

▸ is   ▸ is not   ▸ arithmetic

▸ Euclidean   ▸ Lucas

Consider the number pattern: *-6, 2, 14, 30, 50, ...*

The next two terms in the sequence are (ans 1).
This pattern has its second difference constant; thus it is a (ans 2) pattern.
The recursive formula (ans 3) generates this number pattern.

1	

2	

3	

▸ *74, 102*   ▸ *74, 104*   ▸ *70, 92*

▸ linear   ▸ quadratic   ▸ cubic

▸ $T_n = T_{n-1} + 4n,\ T_1 = -6$ ▸ $T_n = 2n^2 + 2n - 10$ ▸ $T_n = 2T_{n-1} + 14,\ T_1 = -6$

The sixth term of an arithmetic sequence is **- 21** and the thirteenth term is **14**.
To calculate the value of d, two equations must be used simultaneously.
These two simultaneous equations are $a + 5d = -21$ and (Ans. 1).
The value of d will then be equal to (Ans. 2) and the
first term of this sequence will be (Ans. 3).

1	

2	

3	

▸ - 35   ▸ 5   ▸ $a + 12d = 14$

▸ $a + 13d = 14$ ▸ -7   ▸ 1

▸ -46   ▸ -26   ▸ 14

$-7\ ;\ -4\ ;\ -1\ ;\ ...$

The nth term of this arithmetic sequence is given by $T_n = ...$

The greatest value of k for which $\sum\limits_{t=1}^{k}(2t-3) < 528$ is ...

Type the number only.

The nth term of a sequence is $3n - 2$.
The eighth term of this sequence will be equal to ...

| A | 22 |

| B | $3n - 2$ |

| C | $\dfrac{10}{3}$ |

| D | 2 |

$3 ; x ; y ; 63$ are the first four consecutive terms of an arithmetic sequence.
The numerical values of x and y are ...

| A | $x = -23$ and $y = 43$ |

| B | $x = 23$ and $y = 43$ |

| C | $x = -43$ and $y = 23$ |

| D | $x = -23$ and $y = 43$ |

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15 Questions, 4 Pages