This page contains the following errors:

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error on line 264 at column 2501: Expected ';', but got ' '.
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Below is a rendering of the page up to the first error.

6. Sequences and Series

Name:	Class:	Date:

Mark	/ 20	%

1) Find the next three terms of the following sequence and state the rule to find the next term in each case.

6, 14, 22, 30, 38, ___, ___, ___,

[1]

2) Find U_1, U_2, U_3 and U_{12} given the sequence [1]

$U_n = 92 - 3n$

3) Find the value of n for which U_n has the given value [1]

$U_n = (2n + 3)^2$ $U_n = 169$

4) A sequence is generated according to the formula $U_n = an + b$, where a and b are constants. Given that $U_3 = 10$ and $U_6 = 25$, find the values of a and b.

[1]

5) Find first four terms of the following recurrence relationship [1]

$U_{n+1} = 4U_n$ $U_1 = 1$

6) Find a recurrence relationship for the following [1]

2, 1, -1, -5,...

7) Find the recurrence relationship given the following [1]

$$U_n = \frac{2n-1}{5}$$

8) A sequence of terms is defined by the recurrence relationship $U_{n+1} = kU_n + 2$ and $U_1 = 2$ where $n \geq 1$ and k is a constant.

a) Find two expressions in terms of k for U_2 and U_3.

b) Given $U_3 = 42$ find the values of k.

[1]

9) Find the 20th and the nth term of the following arithmetic series [1]

$35 + 31 + 27 + 23 + 19 + ...$

10) Find the number of terms of the following arithmetic series [1]

$30 + 26 + 22 + 18 + 14 + \ ... - 106 - 110$

11) Given that the 5th term of an arithmetic sequence is 37 and the 10th term is 72. Find the first term, a, and the common difference, d.

[1]

12) Find the value of x given the first three terms of an arithmetic series below. [1]

$5x + 36 + 13x + \ ...$

13) Find the sum of the following series [2]

a) $2 + 13 + 24 + 35 + 46 + \ ...$ (19 terms)

b) $56 + 50 + 44 + 38 + 32 + \ ... - 52$

14) Find the number of terms in the following series [1]

$6 + 9 + 12 + 15 + 18 + \ ... + 39 = 270$

15) Amy starts a new job on a salary of £18000. She is given an annual wage rise of £400 at the end of every subsequent year until she reaches her maximum salary of £20000. Find the total amount she earns in the first 7 years and 8 years?

[1]

16) The sum of the first 8 terms of an arithmetic sequence is 380. If the 14th term is 152, find the first term, a, and the common difference, d.

[1]

17) Rewrite the following arithmetic series using sigma notation [1]

$3 + 10 + 17 + 24 + 31 + \ ... + 80$

18) Find the first four terms of the arithmetic sequence given in sigma notation [1]

$$\sum_{n=1}^{17} 3n + 5$$

19) Find the value of n that satisfies the following [1]

$\sum_{n=1}^{n} 7n - 4$ first exceeds 1130

Solutions for the assessment 6. Sequences and Series

1) Missing terms: 46, 54, 62 and rule: + 8

2) $U_1 = 89$, $U_2 = 86$, $U_3 = 83$ and $U_{12} = 56$

3) $n = 5$

4) $a = 5$ and $b = -5$

5) First four terms are 1, 4, 16, 64,...

6) $U_{n+1} = 2\,U_n - 3 \qquad U_1 = 2$

7) $U_{n+1} = U_n + \frac{2}{5} \qquad U_1 = \frac{1}{5}$

8) a) $U_2 = 2k + 2$ and $U_3 = 2k^2 + 2k + 2$