Assignment #1 Arithmetic Sequences — Name

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Arithmetic Sequences - Practise

Finding terms and differences

(1) Consider the arithmetic sequence that starts 5, 16, 27, 38

a) What is the common difference for this sequence? _____

b) What would be the next three terms? _____

c) What would be the 20th, 50th and 100th term of this sequence U_{20} =

U_{50} =

U_{100} =

(2) *Generating terms of a sequence*

The following sequences are defined by their general terms. Work out the value of the terms requested

	General Term	a)	b)	c)
a)	$U_n = 3 + 6(n - 1)$	U_3 =	U_8 =	U_{20} =
skip	~~$U_n = 23 + 2(n - 1)$~~	~~U_2 =~~	~~U_{10} =~~	~~U_{63} =~~
skip	~~$U_n = 10 - 3(n - 1)$~~	~~U_1 =~~	U_8 =	U_{13} =
b)	$U_n = -105 + 11(n - 1)$	U_5 =	U_{10} =	U_{15} =
c)	$U_n = 5 + ½ (n - 1)$	U_2 =	U_7 =	U_{100} =

(3) *General term of Arithmetic Sequences*

Work out the general term (U_n) of the following arithmetic sequences — N^{th} term

	Terms	General term
a)	7, 15, 23	$U_n = 7 + 8(n-1)$
b)	- 6, -2, 2	
c)	3, 3 ¼ , 3 ½	
d)	8, 5.25, 2.5	

Be on the look out for the word "sum" or it's equivalent

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Summing Arithmetic Sequences

(4) Find the sum of the following arithmetic sequences to the number of terms given. Use an explicit formula

a) 3, 9, 15 to 10 terms (S_{10})

b) 6, 8, 10 to 30 terms (S_{30})

c) $U_n = 3 + 6(n - 1)$ to 100 terms (S_{100})

d) $U_n = -5 + 7(n - 1)$ to 25 terms (S_{25})

Problem Solving

(5) An arithmetic sequence has $U_1 = 20$ and $U_7 = 44$. What is the common difference (d) for this sequence, the general term (U_n) and the sum of the first 7 terms (S_7)

a)

b) An arithmetic sequence has $U_3 = 2$ and $U_8 = 47$. Find the common difference (d), the first term (U1) the general term (U_n) and the sum of the first 20 terms (S_{20})

c) The sum of an arithmetic sequence to the first 10 terms (S_{10}) = 240, the first term $U_1 = 6$, what is the general term (U_n) of the sequence.

Investigate! - What other sequences have the sum of their first 10 terms = 240?

IB Style Questions

6) ***Number and Algebra – Arithmetic sequences***

A man deposits \$50 into his daughter's savings account on her first birthday. On her second birthday he deposits \$75, \$100 on her third birthday and so on.

(a) How much money would he deposit on her 16^{th} birthday?

(b) How much would he have deposited in total after her 16^{th} Birthday?

Answers

(a) _____

(b) _____

Question reference NAP1AS1

IB Style Questions

Number and Algebra – Arithmetic Sequences

7)

The first 5 terms of an arithmetic sequence are shown below

3, 8, 13, 18, 23

(a) Write down the 6^{th} number in the sequence

(b) Calculate the 150^{th} term in the sequence

(c) Calculate the sum of the first 70 terms of the sequence

Answers

(a) _____

(b) _____

(c) _____

Question reference NAP1AS2