

I. Complete the chart below. Must show work for credit!

Given Sequence	Determine If Arithmetic	Common Difference d	Next Three Terms
1.) 7, 11, 15, 19, ...	$11-7=4$ $19-15=4$ $15-11=4 \rightarrow \boxed{\text{Yes}}$	$d=4$	$a_5 = 19+4 = 23$ $a_6 = 23+4 = 27$ $a_7 = 27+4 = 31$
2.) 3, 6, 9, 13, ...	$6-3=3$ $13-9=4$ $9-6=3 \rightarrow \boxed{\text{No}}$	$d = \text{N/A}$	XXXXX
3.) 31, 23, 15, 7, ...	$23-31=-8$ $7-15=-8$ $15-23=-8 \rightarrow \boxed{\text{Yes}}$	$d = -8$	$a_5 = 7-8 = -1$ $a_6 = -1-8 = -9$ $a_7 = -9-8 = -17$
4.) 4.1, 1.7, -0.7, ...	$1.7-4.1=-2.4$ $-0.7-1.7=-2.4 \rightarrow \boxed{\text{Yes}}$	$d = -2.4$	$a_4 = -0.7-2.4 = -3.1$ $a_5 = -3.1-2.4 = -5.5$ $a_6 = -5.5-2.4 = -7.9$

II. Find the indicated term of each arithmetic sequence. Must show work for credit!

5.) $a_1 = 2$ and $d = 6$; find the 12 th term $a_{12} = 2 + 6(12-1)$ $a_{12} = 68$	6.) $a_1 = -10$ and $d = 2$; find the 28 th term $a_{28} = -10 + 2(28-1)$ $a_{28} = 44$	7.) Find a_{65} for sequence 12, 5, -2, ... $d = 5-12 = -7$ $a_{65} = 12 + (-7)(65-1)$ $a_{65} = -436$	8.) Find a_{23} for sequence 4, 16, 28, ... $d = 16-4 = 12$ $a_{23} = 4 + 12(23-1)$ $a_{23} = 268$
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III. Considering all given sequences are arithmetic – Find what is asked. SHOW WORK!!!

9.) If the forty-sixth term is 203 and the common difference is 4, then what is the first term? $203 = a_1 + 4(46-1)$ $203 = a_1 + 180$ -180 $a_1 = 23$	10.) If first term is 36 and the 52 nd term is 597 in a sequence, then what is the common difference? $597 = 36 + d(52-1)$ $597 = 36 + 51d$ $561 = 51d$ $11 = d$ $d = 11$	11.) Which term of the sequence -15, -3, 9, ... is 417? $d = 3$ $417 = -15 + d(n-1)$ $432 = 12n - 12$ $444 = 12n$ $37 = n$ $n = 37$ 37th term
12.) If 18 th term of the sequence is -105 and $d = -7$, then what is the sixth term? $-105 = a_1 + (-7)(18-1)$ $-105 = a_1 - 119$ $+119$ $a_1 = 14$ $a_6 = 14 + (-7)(6-1)$ $a_6 = -21$	13.) The 23 rd term of a sequence is 103 and the 36 th term is 155. What is the first term of the sequence? $103 = a_1 + 22d$ $155 = a_1 + 35d$ $-52 = -13d$ $d = 4$ $103 = a_1 + 88$ $a_1 = 15$	14.) What is the n th term formula for sequence of 4, 12, 20, 28, ...? $d = 12-4 = 8$ $a_n = 4 + 8(n-1)$ $a_n = 4 + 8n - 8$ $a_n = 8n - 4$
15.) What are the three arithmetic means between 6 and 38? $6, _, _, _, 38$ $38 = 6 + d(5-1)$ $38 = 6 + 4d$ $32 = 4d$ $d = 8$ $a_2 = 6 + 8 = 14$ $a_3 = 14 + 8 = 22$ $a_4 = 22 + 8 = 30$ $a_5 = 30 + 8 = 38$	16.) Is -50 a part of the following sequence: 17, 14, 11, ...? Explain your answer. $d = -3$ $-50 = 17 + (-3)(n-1)$ $-67 = -3n + 3$ $-70 = -3n$ $n = 23.3 \rightarrow \text{no, } n \text{ not a whole \#}$	17.) If $a_1 = 5$ and $a_{31} = 185$, then what is the eleventh term of the sequence? $185 = 5 + d(31-1)$ $185 = 5 + 30d$ $180 = 30d$ $d = 6$ $a_{11} = 5 + 6(11-1)$ $a_{11} = 65$
18.) The 42 nd term is -190 and the 34 th term is -150. What is the 26 th term of the sequence? $-190 = a_1 + 41d$ $-150 = a_1 + 33d$ $-40 = 8d$ $d = -5$ $-190 = a_1 + 41(-5)$ $-190 = a_1 - 205$ $a_1 = 15$ $a_{26} = 15 + (-5)(26-1)$ $a_{26} = -110$	19.) What are the two arithmetic means between 16 and -2? $16, _, _, -2$ $-2 = 16 + d(4-1)$ $-2 = 16 + 3d$ $-18 = 3d$ $d = -6$ $a_2 = 16 + (-6) = 10$ $a_3 = 10 + (-6) = 4$ $a_4 = 4 + (-6) = -2$	20.) The sixteenth term is 117 and the seventeenth term is 124. What is the 21 st term of the sequence? $117, 124 \rightarrow d = 7$ $117 = a_1 + 7(16-1)$ $117 = a_1 + 105$ $a_1 = 12$ $a_{21} = 12 + 7(21-1)$ $a_{21} = 152$