WARM UP In the following examples, determine what should come next.

a. 3, 4, 5, 6, __7__

b. 1, 3, 5, 7, __9__

c. 20, 15, 10, 5, __0__ , __–5__

Learning Target I can...identify and write an **arithmetic sequence.**

Adding Pattern

Arithmetic Sequence:	A sequence that increases or decreases by the same amount to get to each next term.
Common Difference: $d =$	$d = a_2 - a_1$ (a_2 = second number) (a_1 = 1st number) The number being repeatedly added / subt. to get to the next term.
Identifying an Arithmetic Sequence	Determine whether the sequences are arithmetic sequences. If yes, determine the common difference. 1) 1, 5, 9, 13... $+4 +4 +4$ ⟨yes⟩ $d = 4$ 2) 8, 6, 4, 2... $-2 -2 -2$ ⟨yes⟩ $d = -2$ 3) 5, 10, 20, 40... $+5 +10 +20$ ⟨no⟩ 4) 1, 3, 5, 8... $+2 +2 +3$ ⟨NO⟩ 5) -5, -8, -11, -14... $-3 -3 -3$ ⟨yes⟩ $d = -3$ 6) 7, 6, 5, 4... $-1 -1 -1$ ⟨yes⟩ $d = -1$
Continuing Arithmetic Sequences	Given the arithmetic sequence, find the next three terms. 7) 9, 13, 17, 21, __25__ , __29__ , __33__ 8) 5, 2, -1, -4, __-7__ , __-10__ , __-13__ 9) -8, -2, 4, 10, __16__ , __22__ , __28__
Arithmetic Sequence EXPLICIT Formula	The nth of an arithmetic sequence can be found using the formula: to find any # in a sequence the term # you're looking for $\boxed{a_n} = a_1 + d(n-1)$ 1st term common difference
Examples... Write the rule for the nth term, then find a_{19}.	10) 7, 13, 19, 25... $+6 +6 +6$ $a_1 = 7$ $d = 6$ $a_n = 7 + 6(n-1)$ $a_{19} = 7 + 6(19-1)$ $\boxed{a_{19} = 115}$	11) 30, 26, 22, 18... $a_1 = 30$ $d = -4$ $a_n = 30 - 4(n-1)$ $\boxed{a_{19} = -42}$ ②