ARITHMETIC AND GEOMETRIC SEQUENCES

Learning Log - Sequences

Arithmetic Sequence - there is a common difference
(you add the same number every time) *Linear

$a_0 = 0$ $a_0 = 32$ (y=mx+b)

5, 10, 15, 20, 25, ... or 30, 28, 26, 24, 22, ...

add 5 add -2

explicit → $t(n) = mn + b$ or $a_n = mn + a_0$ ← recursive

m = the common difference (growth or slope)

n = the term number (the 4th term, the 5th term, etc)

b or a_0 = the zeroth term - the one before the first term you see in the list

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Geometric Sequence - there is a common multiplier or ratio (you multiply by the same number every time)

$a_0 = \frac{3}{2}$ $a_0 = 400$ *Exponential

3, 6, 12, 24, 48, ... or 200, 100, 50, 25, 12.5, ...

multiply by 2 multiply by $\frac{1}{2}$ ($\div 2$)

explicit → $t(n) = ab^n$ or $a_n = a_0 \cdot b^n$ recursive

b = the common ratio (multiplier) or the sequence generator

n = the term number (the 4th term, the 5th term, etc)

a or a_0 = the zeroth term - the one before the first term you see in the list

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In recursive sequences (arithmetic or geometric):

a_n = the n^{th} term

a_{n-1} = the term BEFORE the n^{th} term (the PREVIOUS term)

a_{n+1} = the term AFTER the n^{th} term (the NEXT term)