LINEAR GROWTH

If a quantity starts at size P_0 and grows by d every time period, then the quantity after n time periods can be determined using either of these relations:

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$P_n = P_{n-1} + d$

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$P_n = P_0 + d \cdot n$

In this equation, d represents the common difference – the amount that the population changes each time n increases by 1.

$$P_n = P_0 + d \cdot n$$

$$y = m \cdot x + c$$

Example

A coastal town recorded a dolphin population of 450 in 2012, and by 2018, the population had risen to 630. Assuming the dolphin population continues to increase at a steady rate, what is the expected population in 2025?

P0 = ________ P6 = ________

d = slope = ________ = ____ =

$P_n = P_0 + d \cdot n$, $P_n = 450 + 105d$ EXPLICIT

$P_0 = 450$, $P_n = P_{n-1} + 105$ RECURSIVE

Question

In a protected park, the number of oak trees was recorded at 3,200 in 2015. By 2020, the oak tree population had increased to 4,000. Assuming the tree population grows at a constant rate, what is the expected oak tree population in 2028?