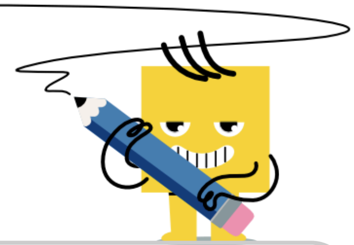
Name ______________________



Exponential Function Solving - Decay (Discrete) - Scenario to Time

1

A charitable endowment starts with $200. Each weekly it disburses 3% of its remaining funds. After a certain number of weeks its funds have decreased to $171.

How would you solve for the time given this scenario?

A: $t = \dfrac{\ln \frac{P}{P_0}}{\ln(1+r)}$

B: $t = \dfrac{\ln \frac{P}{P_0}}{\ln(1-r)}$

2

A whale population starts at 200. Each subsequent year it declines by 7%. After a certain number of years it has decreased to a population of 129 whales.

How would you solve for the time given this scenario?

A: $t = \dfrac{\ln \frac{P}{P_0}}{\ln(1+r)}$

B: $t = \dfrac{\ln \frac{P}{P_0}}{\ln(1-r)}$

C: $t = \dfrac{\ln P \cdot P_0}{\ln(1-r)}$

3

A whale population starts at 700. Each subsequent year it declines by 5%. After a certain number of years it has decreased to a population of 464 whales.

How would you solve for the time given this scenario?

A: $t = \dfrac{\ln \frac{P}{P_0}}{\ln(1+r)}$

B: $t = \dfrac{\ln P \cdot P_0}{\ln(1-r)}$

C: $t = \dfrac{\ln \frac{P}{P_0}}{\ln(1-r)}$

4

A whale population starts at 300. Each subsequent year it declines by 9%. After a certain number of years it has decreased to a population of 187 whales.

How would you solve for the time given this scenario?

A: $t = \dfrac{\ln \frac{P}{P_0}}{\ln(1-r)}$

B: $t = \dfrac{\ln \frac{P}{P_0}}{\ln(1+r)}$

5

A toxin starts at a concentration of 700mg/L. Each monthly dialysis reduces it by 2%. After a certain number of months it has decreased to a concentration of 658mg/L.

How would you solve for the time given this scenario?

A: $t = \dfrac{\ln \frac{C}{C_0}}{\ln(1-r)}$

B: $t = \dfrac{\ln C \cdot C_0}{\ln(1-r)}$

C: $t = \dfrac{\ln \frac{C}{C_0}}{\ln(1+r)}$

6

A whale population starts at 400. Each subsequent year it declines by 3%. After a certain number of years it has decreased to a population of 323 whales.

How would you solve for the time given this scenario?

A: $t = \dfrac{\ln \frac{P}{P_0}}{\ln(1-r)}$

B: $t = \dfrac{\ln \frac{P}{P_0}}{\ln(1+r)}$

C: $t = \dfrac{\ln P \cdot P_0}{\ln(1-r)}$

7

A toxin starts at a concentration of 300mg/L. Each monthly dialysis reduces it by 5%. After a certain number of months it has decreased to a concentration of 244mg/L.

How would you solve for the time given this scenario?

A: $t = \dfrac{\ln \frac{C}{C_0}}{\ln(1+r)}$

B: $t = \dfrac{\ln C \cdot C_0}{\ln(1-r)}$

C: $t = \dfrac{\ln \frac{C}{C_0}}{\ln(1-r)}$

8

A bird population starts at 600. Each subsequent year it declines by 5%. After a certain number of years it has decreased to a population of 398.

How would you solve for the time given this scenario?

A: $t = \dfrac{\ln \frac{P}{P_0}}{\ln(1-r)}$

B: $t = \dfrac{\ln \frac{P}{P_0}}{\ln(1+r)}$

C: $t = \dfrac{\ln P \cdot P_0}{\ln(1-r)}$