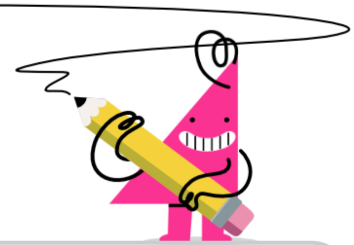
Name



# Exponential Function Solving - Decay (Continuous) - Scenario to Time

**1**

A whale population starts at 200. It declines continuously at 9% per year. After a certain number of years it has decreased to a population of 127 whales.

Solve for the time given this scenario?

| | |
|---|---|
| A $t = -\frac{\ln \frac{P}{P_0}}{r}$ | B $8 + t = -\frac{\ln P \cdot P_0}{r}$ |
| C $7 + t = -\frac{\ln P \cdot P_0}{r}$ | D $3 + t = -\frac{r}{\ln \frac{P}{P_0}}$ |
| | |

**2**

A radioactive material starts at an isotope concentration of 300ppm. It decays continuously at 9% per day. After a certain number of days it has decayed to an isotope concentration of 209ppm.

Solve for the time given this scenario?

| | |
|---|---|
| A $3 + t = -\frac{\ln R \cdot R_0}{r}$ | B $3 + t = -\frac{r}{\ln \frac{R}{R_0}}$ |
| C $6 + t = -\frac{r}{\ln \frac{R}{R_0}}$ | D $t = -\frac{\ln \frac{R}{R_0}}{r}$ |
| | |

**3**

A bacteria population starts at 700. It declines continuously at 9% per day. After a certain number of days it has decreased to a population of 340 bacteria.

Solve for the time given this scenario?

| | |
|---|---|
| A $1 + t = -\frac{\ln P \cdot P_0}{r}$ | B $t = -\frac{\ln \frac{P}{P_0}}{r}$ |
| C $3 + t = -\frac{r}{\ln \frac{P}{P_0}}$ | D $2 + t = -\frac{\ln P \cdot P_0}{r}$ |
| | |

**4**

A whale population starts at 200. It declines continuously at 9% per year. After a certain number of years it has decreased to a population of 116 whales.

Solve for the time given this scenario?

| | |
|---|---|
| A $6 + t = -\frac{\ln P \cdot P_0}{r}$ | B $3 + t = -\frac{\ln P \cdot P_0}{r}$ |
| C $1 + t = -\frac{\ln P \cdot P_0}{r}$ | D $t = -\frac{\ln \frac{P}{P_0}}{r}$ |
| | |

**5**

A bacteria population starts at 800. It declines continuously at 4% per month. After a certain number of months it has decreased to a population of 738 bacteria.

Solve for the time given this scenario?

| | |
|---|---|
| A $t = -\frac{\ln \frac{P}{P_0}}{r}$ | B $2 + t = -\frac{\ln P \cdot P_0}{r}$ |
| C $7 + t = -\frac{\ln P \cdot P_0}{r}$ | D $2 + t = -\frac{r}{\ln \frac{P}{P_0}}$ |
| | |

**6**

A radioactive material starts at an isotope concentration of 600ppm. It decays continuously at 3% per week. After a certain number of weeks it has decayed to an isotope concentration of 532ppm.

Solve for the time given this scenario?

| | |
|---|---|
| A $3 + t = -\frac{\ln R \cdot R_0}{r}$ | B $7 + t = -\frac{\ln R \cdot R_0}{r}$ |
| C $6 + t = -\frac{\ln R \cdot R_0}{r}$ | D $t = -\frac{\ln \frac{R}{R_0}}{r}$ |
| | |

**7**

A radioactive material starts at an isotope concentration of 300ppm. It decays continuously at 6% per hour. After a certain number of hours it has decayed to an isotope concentration of 174ppm.

Solve for the time given this scenario?

| | |
|---|---|
| A $9 + t = -\frac{\ln R \cdot R_0}{r}$ | B $6 + t = -\frac{\ln R \cdot R_0}{r}$ |
| C $4 + t = -\frac{\ln R \cdot R_0}{r}$ | D $t = -\frac{\ln \frac{R}{R_0}}{r}$ |
| | |

**8**

A bacteria population starts at 900. It declines continuously at 2% per year. After a certain number of years it has decreased to a population of 847 bacteria.

Solve for the time given this scenario?

| | |
|---|---|
| A $3 + t = -\frac{\ln P \cdot P_0}{r}$ | B $t = -\frac{\ln \frac{P}{P_0}}{r}$ |
| C $7 + t = -\frac{r}{\ln \frac{P}{P_0}}$ | D $5 + t = -\frac{\ln P \cdot P_0}{r}$ |
| | |