



Write exponential equations from contexts

1

What does this term represent in a model of quarterly compounding growth of money in a savings account?

$$P = P_0 \cdot (1 + r)^t$$
$$P_0 = ?$$

- A P_0 = final cash
- B P_0 = starting cash
- C P_0 = rate

2

What is the starting debt in this equation for a growth in credit card debt with quarterly interest?

$$1,034 = 700 \cdot (1 + 0.05)^{(8)}$$

- A $D_0 = 5$
- B $D_0 = 8$
- C $D_0 = 700$

3

What is the value of the final population given this model of a growth of an insect population that breeds once per year?

$$P = 300 \cdot (1 + 0.06)^{(9)}$$

- A $P = 655$
- B $P = 610$
- C $P = 580$
- D $P = 506$

4

What is the rate in this equation for a decline of a bird population (yearly breeding cycle)?

$$812 = 900 \cdot (1 - 0.05)^{(2)}$$

- A $r = 900\%$
- B $r = 5\%$
- C $r = 812\%$

5

Rearrange this equation to solve for the starting debt given this model of a growth in credit card debt with quarterly interest?

$$477 = D_0 \cdot (1 + 0.03)^{(6)}$$

- A $D_0 = \frac{477}{(1 - 0.03)^6}$
- B $D_0 = \frac{477}{(1 + 0.03)^6}$

6

What is the value of the starting debt given this model of a growth in credit card debt with quarterly interest?

$$782 = D_0 \cdot (1 + 0.03)^{(9)}$$

- A $D_0 = 500$
- B $D_0 = 700$
- C $D_0 = 900$
- D $D_0 = 600$

7

A rabbit population starts at 400. Each subsequent yearly breeding season it grows by 9%. After 3 years it has increased to a population of 518 rabbits.

- A $518 = 400 \cdot (1 + 0.03)^{(9)}$
- B $518 = 900 \cdot (1 + 0.04)^{(3)}$
- C $518 = 400 \cdot (1 + 0.09)^{(3)}$

8

An insect population starts at 500. Each subsequent yearly breeding season it grows by a certain percent. After 8 years it has increased to a population of 684.

- A $r = 5\%$
- B $r = 4\%$
- C $r = 2\%$
- D $r = 1\%$

**Write exponential equations from contexts****9**

Rearrange this equation to solve for the starting cash given this model of a balance of a charitable endowment (yearly disbursements)?

$$249 = P_0 \cdot (1 - 0.09)^{(5)}$$

A

$$P_0 = 249 \cdot (1 - 0.09)^5$$

B

$$P_0 = \frac{249}{(1 - 0.09)^5}$$

C

$$P_0 = \frac{249}{(1 + 0.09)^5}$$

10

A rabbit population starts at 900. Each subsequent yearly breeding season it grows by 4%. After 7 years it has increased to a population of 1,184 rabbits.

A

$$1,184 = 700 \cdot (1 + 0.04)^{(9)}$$

B

$$1,184 = 400 \cdot (1 + 0.09)^{(7)}$$

C

$$1,184 = 900 \cdot (1 + 0.04)^{(7)}$$

11

A credit card starts with \$600 of debt. Each subsequent quarter it grows by 9% in interest. After 7 quarters the debt has grown to a certain amount.

A

$$D = 1,480$$

B

$$D = 1,096$$

C

$$D = 1,110$$

D

$$D = 1,350$$

12

A rabbit population starts at 200. Each subsequent yearly breeding season it grows by 8%. After a certain number of years it has increased to a population of 342 rabbits.

A

$$t = 6 \text{ years}$$

B

$$t = 8 \text{ years}$$

C

$$t = 7 \text{ years}$$

D

$$t = 5 \text{ years}$$