

1. Fill in the following table

Formula	G/D	Amount	Rate %	Time
$f(t) = 500(1+.25)^{10}$	G	500	25%	10
$f(t) = 200(0.75)^5$	D	200	25%	5
$f(t) = 100(1.33)^2$	G	100	33%	2
$f(t) = 1000(1-0.001)^{10}$	D	1000	.1%	10

Use the growth/decay formula we learned in class to solve the following problems. Please write out your formula and show your work for each problem. Round each problem to the nearest whole number for objects or the nearest cent for money.

2. A hunk of a radioactive material was discovered in Russia! The hunk currently has 260 atoms in it but is decaying at a rate of 8% a month. A

a. Write out your exponential function $f(t)$

$$f(t) = 260(1 - 0.08)^t$$

$$f(t) = 260(0.92)^t$$

b. How many atoms will be left in 4 months?

$$= 260(0.92)^4$$

$$= 186.26 \dots$$

$$= 186$$

c. in 2 years? 2 years = 24 months

$$= 260(0.92)^{24}$$

$$= 35.14 \dots$$

$$= 35$$

3. Malik bought a new car for \$ 15,000. As he drove it off the lot, his best friend, Will, told him that the car's value just dropped by 15% and that it would continue to depreciate 15% of its current value each year.

a. Write out your exponential function $f(t)$

$$f(t) = 15,000(1 - 0.15)^t$$

$$= 15,000(0.85)^t$$

b. How much will the car be worth after 5 years?

$$= 15,000(0.85)^5$$

$$= \$6655.58$$

4. The duck population in Central Park increases by 12% each year. There are 1,780 ducks in the park right now. About how many ducks will there be in 3 years?

$$\begin{aligned}f(t) &= 1780(1.12)^3 \\ &= 1780(.88)^3 \\ &= 1213.02\end{aligned}$$

1213 Ducks

5. Mister Mack won the lottery! He is going to invest \$10,000 into a stock that gains 3% interest every month. How much money will he have in 12 months?

$$\begin{aligned}&= 10,000(1+0.03)^{12} \\ &= 10,000(1.03)^{12}\end{aligned}$$

14,257

6. The Bumble Bee population in North Dakota decreases at a rate of 32% a week in the fall. If there are 8,200 bees at the end of August, about how many will there be at the end of November (12 weeks later)?

$$\begin{aligned}&= 8,200(1-.32)^{12} \\ &= 8,200(0.68)^{12}\end{aligned}$$

780 Bees

7. A huge ping-pong tournament is held in Beijing, with 65,536 participants at the start of the tournament. Each round of the tournament eliminates half the participants. How many participants remain after 10 rounds of play?

.50

$$\begin{aligned}&= 65,536(1-.5)^{10} \\ &= 65,536(.5)^{10}\end{aligned}$$

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