

Exponential Growth and Decay formula

$$A(t) = a(1 \pm r)^t$$

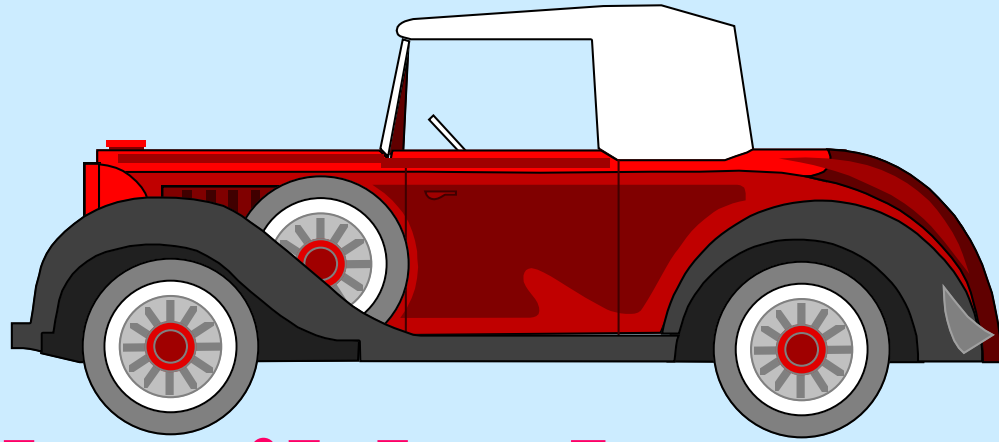
a=starting amount

r=rate (decimal form)

t=time (# of years)

+ is growth

- is decay



A collectible depreciates in value at a rate of 12% per year. If you purchased the item for \$500 find its value after 6 years.

$$A = 500 (1 - .12)^6$$

$$A = 500 (.88)^6$$

$$A = \$232.20$$



At the zoo a herd of antelopes increase in population at a rate of 3% per year. If you started with a herd of 12 antelopes how many antelopes would you have after 10 years.

$$A = 12 (1 + .03)^{10}$$

$$A = 12 (1.03)^{10}$$

$$A = 16 \text{ antelope}^{**}$$

**Note: you can't have .13 of an antelope

Patrick was given an ant farm with a population of 10 ants. The ants double in number every month. Find the number of ants left after 6 months.



$$A = 10(2)^6$$



Note: when it says doubling always use 2 as your base (1+1)



$$A = 640 \text{ ants}$$



A plastic bottle made of PlasticCompound-60 has a half-life of about 5 years. You begin with 200 grams. How much of the bottle remains after 40 years?





$$A = 200(.5)^8$$

Note: when it says half-life always use $1/2$ as your base (1-.5)

$$A = .781 \text{ gms.}$$