

ALGEBRA 1

Chapter 8, Section 6

Exponential Decay Functions

VOCABULARY:

- Exponential Decay –

GOALS:

- Write and use models for exponential growth.
- Graph models for exponential growth.

EXPONENTIAL GROWTH MODEL

$y = C(1-r)^t$

C is the initial amount

t is the time period

$(1-r)$ is the decay factor where r is the decay rate, where $0 < r < 1$.

The percent of increase is $100r$.

1. Writing an Exponential Decay Model:

You bought a used car for \$18,000. The value of the car will be less each year because of depreciation. The car depreciates (loses value) at a rate of 12% per year. What will be the value of your car (V) in 8 years?

$$V = C(1-r)^t$$

Write exponential growth model.

$$V = 18000(1-0.12)^8$$

Substitute $C = 18000$, $r = 0.12$, $t = 8$

$$V = 18000(0.88)^8$$

Simplify

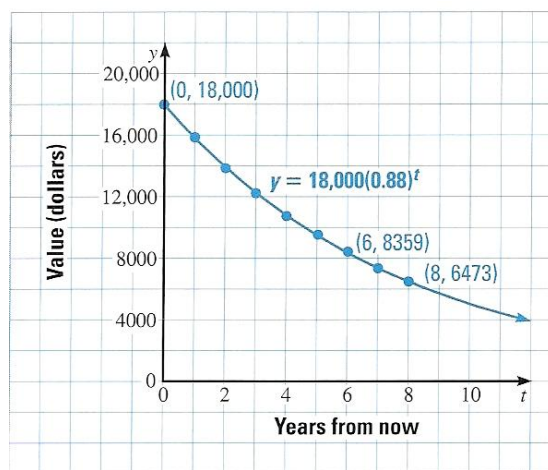
$$V \approx 6473$$

Evaluate

So the value of your car will be \$6473 after 8 years.

2. Graph an Exponential Decay Model:

Calculating values for different years allows us to graph the exponential decay shown at the right.



Homework: Handout 8.6, Practice A