Warmup 11/ (Miss Niemiec's half-birthday)

WHOOPS WEDNESDAY

Explain the Error A student was asked to find the value of a $2500 item after 4 years. The item was depreciating at a rate of 20% per year. What is wrong with the student's work?

$$2500(0.2)^4$$

$4

(get a calculator for today!)

Go over Quiz

Go over Homework

FINISH: Nashville Population Task

Simple Interest, Compound Interest

What is interest?

Simple Interest

- **Simple Interest** is always paid on only the initial amount.

- You deposit $500 into a savings account. You will earn 3% interest per year. If we are using simple interest, how much money will you have in your bank account after 5 years?

◻Simple interest is **not** very common.

◻If you put money in a bank account and you only get interest on the original amount, you don't get as much money. Who can explain why?

Compound Interest

- **Compound Interest** is paid on the initial amount *and* interest already earned in the past.

- You deposit $500 into a savings account. You will earn 3% interest per year. If we are using **compound** interest, how much total money would you have in your bank account after 5 years?

Compound Interest

- You deposit $500 into a savings account. You will earn 3% interest per year, twice a year. If we are using **compound** interest, how much total money would you have in your bank account after 5 years?

Compound Interest

$$A = P\left(1 + \frac{r}{n}\right)^{nt}$$

A represents the balance after t years.

P represents the principal, or original amount.

r represents the annual interest rate expressed as a decimal.

n represents the number of times interest is compounded per year.

t represents time in years.

Reading Math

For compound interest

- *annually* means "once per year" ($n = 1$).

- *quarterly* means "4 times per year" ($n = 4$).

- *monthly* means "12 times per year" ($n = 12$).

Write a compound interest function to model each situation. Then find the balance after the given number of years.

$1200 invested at a rate of 2% compounded quarterly; 3 years.

$$A = P\left(1 + \frac{r}{n}\right)^{4t}$$

$$= 1200\left(1 + \frac{0.02}{4}\right)^{4t}$$

$$= 1200(1.005)^{4t}$$

$$= 1200(1.005)^{12}$$

$$\approx 1274.01$$

The balance after 3 years is $1,274.01.

Homework

- Worksheet