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Warmup 11/ $(7 \times (2 + 1))$

Throwback Thursday

1. Which of the following numbers is NOT a solution of the inequality $3x - 5 \geq 4x - 3$?

A) -1

B) -2

C) -3

D) -5

2. If $\frac{3(x-11)}{2} = 15$ then what does x equal?

3. For all a>0, which of the following expressions is equal to a^{-2}?

a. -2a

b. $-a^2$

c. $\frac{1}{2a}$

d. $\frac{1}{\sqrt{a}}$

e. $\frac{1}{a^2}$

(get a calculator for today!)

HOMEWORK: We will go over it later!!!

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.

$15,000 invested at a rate of 4.8% compounded monthly; 2 years.

$$A = P\left(1 + \frac{r}{n}\right)^{12t}$$

$$= 15{,}000\left(1 + \frac{0.048}{12}\right)^{12t}$$

$$= 15{,}000(1.004)^{12t}$$

$$A = 15{,}000(1.004)^{12(2)}$$

$$= 15{,}000(1.004)^{24}$$

$$\approx 16{,}508.22$$

The balance after 2 years is $16,508.22.

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 3.5% compounded quarterly; 4 years

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

$$= 1{,}200\left(1 + \frac{0.035}{4}\right)^{4t}$$

$$= 1{,}200(1.00875)^{4t}$$

$$A = 1200(1.00875)^{4(4)}$$

$$= 1200(1.00875)^{16}$$

$$\approx 1379.49$$

- Matthew wants to put $20,000 in the bank to gain interest for twelve years. He can't decide which bank to put his money in.
- One bank gives simple interest compounded annually at a rate of 8%.
- Another bank gives compound interest compounded annually at a rate of 8%.

1. Write a function that would calculate Matthew's balance at each bank after "t" years.
2. Which bank will give him a higher balance after 12 years? How much more will this balance be?

Compare and Contrast

- Daniel wants to put $1,000,000 in the bank to gain interest for five years. He can't decide which bank to put his money in.
- **Who Wants to be a Millionaire? Bank gives 16% interest compounded annually.**
- **Ke$ha Bank gives 16% interest compounded quarterly.**
- **Piggy Bank gives 16% interest compounded monthly.**

1. Before you calculate anything, which bank do you think Daniel should put his money in?
2. Write an equation for each bank.
3. How much will Daniel have in each bank account after five years?

Going over the homework

Fry's Bank Activity

- First, we will watch a video that will lead to a question.
- Then, you and your partner will find the answer to that question.
- Last, we will find out the answer together!

Homework

- Student Loan Worksheet