9 Compound Interest

- SWBAT find compound interest.

Compound Interest Formula

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

Regular Interest

$I = Prt$

P = principal amount (the initial amount)

r = annual rate of interest (as a decimal)

t = the number of years the amount is borrowed or deposited for.

A = amount of money accumulated after t years (including interest)

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

SWBAT Find compound interest.

Ex 1: Compound Interest

An amount of $1,500.00 is deposited in a bank paying an annual interest rate of 4.3%, compounded quarterly. What is the balance after 6 years?

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

$A = ?$

$P = 1500$

$r = 4.3\% \Rightarrow .043$

$n = 4$

$t = 6$

$A = 1500\left(1 + \frac{.043}{4}\right)^{24}$

$1500\left(1 + \left(\frac{.043}{4}\right)\right)\text{^}24$

$A \approx 1938.836$

$1938.84

SWBAT Find compound interest.

Ex 2: Compound Interest

Kelly received $750 in graduation money. She puts it into an account that earns 4.25% interest compounded semi-annually for the 4 years she is away at college. How much will be in Kelly's account at the end of four years?

$A = ?$

$P = 750$

$r = .0425$

$t = 4$

$n = 2$

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

$$A = 750\left(1 + \frac{.0425}{2}\right)^{8}$$

$$A \approx 887.3967$$

about $887.40

SWBAT Find compound interest.

Ex 3: Compound Interest

Doctor Lee deposited $123,000 into a trust fund for his son that pays 4.5% annual interest compounded monthly. What is the balance in his account 4 years later?

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

$A = ?$

$P = 123{,}000$

$n = 12$

$r = .045$

$t = 4$

$$A = 123{,}000\left(1 + \frac{.045}{12}\right)^{48}$$

$A = 147{,}208.1684$

About $147,208.17

SWBAT Find compound interest.

Homework

- **Worksheet**

SWBAT: Find compound interest of word problems.