

Lesson Title 11.1 Solving Simple & Compound Interest DAY THREE NOTES B2A2 Date _____

OBJECTIVE 3: Simple Interest: $I = Prt$

Remember simple interest is $I = Prt$ where

- I is the interest earned
- P is the principal amount
- r is the rate of interest (in decimal)
- t is the time in years

OBJECTIVE 4: Compound Interest: $A = P(1 + r)^t$

Most of the time, the interest computed on money borrowed or money deposited is compound interest. Compound interest, unlike simple interest, is computed on original principal AND interest already earned.

Compound Interest is $A = P(1 + r)^t$

- A is the final amount of money
- P is the principal amount of money (deposited or invested)
- r is the interest rate (in decimal)
- t is the time in years

Task 1: Applying to the real world

If \$100 is invested at a simple interest rate of 5% annually, at the end of 3 years the total interest I earned is....?

$$I = Prt$$

$$I = 100(0.05)(3)$$

$$= \$15$$

$$100 + 15 = \$115$$

0.95%

Task 2: Applying to the real world

Find the interest rate, r , if \$2000 compounded annually grows to \$2420 in 2 years.

$r = ?$ P

$$A = P(1+r)^t$$

$$\frac{2420}{2000} = \frac{2000(1+r)^2}{2000}$$

$$\Rightarrow \sqrt{\frac{121}{100}} = \sqrt{(1+r)^2} \Rightarrow 1+r = \frac{11}{10}$$

$$-1 = -\frac{10}{10}$$

$$\Rightarrow +\frac{11}{10} = 1+r \Rightarrow r = -1 + \frac{11}{10}$$

$$r = \frac{-10+11}{10} = \frac{1}{10} = 0.1$$

$$r = \frac{-10}{10} + \frac{11}{10}$$

$$r = 0.10$$

10%

$$\rightarrow \frac{-10-11}{10} = \frac{-21}{10} \quad \times$$

Task 3: Applying to the real world

Find the interest rate, r , if \$5000 compounded annually grows to \$5618 in 2 years.

$r = ?$

$$A = P(1+r)^t$$

$$\frac{5618}{5000} = \frac{5000(1+r)^2}{5000} \Rightarrow$$

$$\sqrt{\frac{2809}{2500}} = \sqrt{(1+r)^2} \Rightarrow$$

$$\Rightarrow \pm \frac{53}{50} = 1+r$$

$$\Rightarrow r = -1 \pm \frac{53}{50}$$

$$r = \frac{-50}{50} \pm \frac{53}{50} = \frac{3}{50} = 0.06$$

6%

Reminders to myself about the Square Root Property:

- % moves the decimal 2 spots
- to decimal $\leftarrow 2$
- to % $\rightarrow 2$

Still need help with: