Name 11th - 12th Grade Answer Key Date _____

Introduction to Earning Interest
Assessment Worksheet

Planning for the future by saving money is not only smart a thing to do, it is essential. Making smart decisions about investments begins by educating yourself about what types of investments are available to you and which will work the best for you in your particular situation.

The compound interest formula is a tool you can use to evaluate different investments. Make it work for you.

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

GOAL: You want to have **$10,000** saved in a five-year timeframe.

How much principal would you need to put away in a bank account offering a **4% APR** and **compounding monthly** in order to reach that goal?

A = $10,000
P = Unknown
r = 4% = .04
n = 12
t = 5

$$\$10,000 = P(1+\frac{.04}{12})^{12x5}$$
$$\$10,000 = P(1.00333)^{60}$$
$$\$10,000 = P(1.220753)$$
$$P = \frac{\$10,000}{1.220753} = \$8,191.67$$

Answer: Invest $8,191.67 to accumulate $10,000 five years from now.

Challenge:

You have **$8,250** to invest and you won't need the money until five years from now. You decide you will put the money into a **bank account compounding monthly** for that period of time. If your goal is to have **$10,000** when the investment matures, what **APR** do you need to achieve your goal?

A = $10,000
P = $8,250
r = unknown
n = 12
t = 5

$$\$10,000 = \$8,250(1+\frac{r}{12})^{12x5}$$

$$\frac{\$10,000}{\$8,250} = (1+\frac{r}{12})^{60}$$

$$1.21212121 = (1+\frac{r}{12})^{60}$$

$$\sqrt[60]{1.21212121} = \sqrt[60]{(1+\frac{r}{12})^{60}} = (1+\frac{r}{12})$$

$$1.003211344 = (1+\frac{r}{12})$$

$$.003211344 = \frac{r}{12}$$

$$(.003211344)\times 12 = r = .038536 = 3.8536APR$$

Answer: Invest with an APR of 3.8536% to accumulate $10,000 five years from now.