**To be copied in your Unit Packet on the Tab “Compound Interest”:**

A specific type of exponential growth is **COMPOUND INTEREST.**

The equation for compound interest is:

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

A = Current amount of investment

P = Principal (original amount of investment)

r = **annual** rate of interest (as a decimal)

n = number of times the interest is compounded each year

t = number of years the money is invested

Ex: Maria’s parent’s invested $14,000 at 6% per year compounded monthly. How much money will there be in 10 years.

P = 14,000

r = .06 (convert 6% into a decimal)

n = 12 (because it is compounded monthly, it compounds 12 times a year)

t = 10 (the money is going to earn interest for 10 years.

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

$$A=14,000(1+\frac{.06}{12})^{12(10)}$$

Your turn:

1. Determine the amount of an investment if $300 is invested at an annual interest rate of 3.5% compounded monthly for 22 years.
2. Suppose Karen has $1000 that she invests in an account that pays 3.5% interest compounded quarterly. How much money does Karen have at the end of 5 years?
3. William wants to have a total of $4,000 in two years so that he can put a hot tub in his backyard. He finds an account that pays 5% interest compounded monthly. How much should William put in this account so that he’ll have $4,000 at the end of 2 years?
4. The first credit card that you got charges 12.49% interest to its customers and compounds that interest monthly. Within one day of getting your first credit card, you max out the credit limit by spending $1,200. If you do not buy anything else on the card and you do not make any payments, how much money would you owe the company after 6 months?