Name _____ Class _____ Date _____

Enrichment 8-2

A Closer Look at Compounding

The formula for finding the amount of money accumulated in an account is $A = P\left(1 + \frac{r}{n}\right)^{nt}$.

The variable ***P*** represents the **principal**, or amount initially invested.
The variable ***r*** represents the interest **rate** as a decimal.
The variable ***n*** represents the number of times per year the interest is **compounded**.
The variable ***t*** represents the **time**, or number of years for which the money is invested.

1. $750 is invested at 11% compounded quarterly. How much is in the account after 10 yr?

2. If we consider the formula for $P = \$1, r = 1.0$, and $t = 1$ yr, what is the formula?

3. Remember that n is the number of times the interest is compounded. Let's find out what happens as n grows. In other words, we are finding the effect of compounding more often. Fill in the following table. Round answers to eight decimal places.

n	$\left(1 + \frac{1}{n}\right)^n$
1	
10	
100	
1,000	
10,000	
100,000	
1,000,000	
10,000,000	
100,000,000	
1,000,000,000	

4. The table suggests that as n increases, the value of $\left(1 + \frac{1}{n}\right)^n$ gets closer to _____. If the value of n is increased further, the decimal approximation in the table will get very close to the value of a number known as e. This number is used in many growth and decay applications.

5. As n grew, we were getting closer to compounding continuously. The formula for continuous compounding is $A = Pe^{rt}$. Rework Question 1 assuming that compounding is continuous.