AChor/MBF3C **Name: _____**
Date: _____

Worksheet 6-2: Compound Interest

Often, when money is borrowed or invested, the interest is added on to the principal after a set period of time. Then, after the same period of time, interest is calculated again. If no repayment or withdrawal has been made, the interest will be calculated on the **new amount**, which includes the **principal and interest**. This continues until the loan or investment is finished. This type of interest calculation is called **compound interest**.

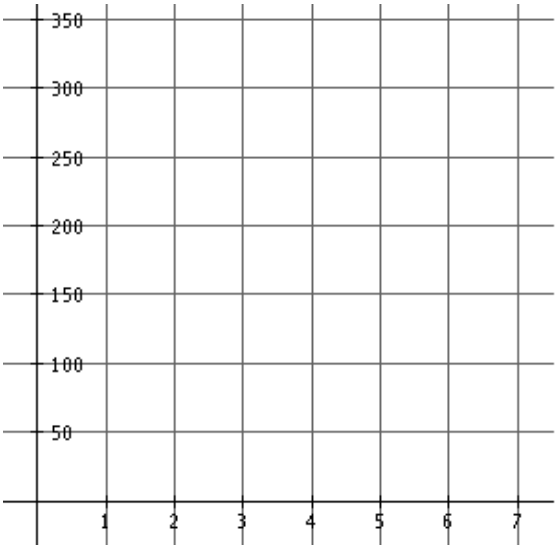
Compound Interest Investigation:

Suppose Rachel's grandparents leave the interest in the account so that each year, the interest earned is added to the principal instead of being taken out. As a result, Rachel does not receive a cheque every year on her birthday but a cheque of total interest earned on her 5th birthday.

Year (t)	**Amount in Account** (P)	**Interest Rate** (r) **per year**	**Interest Earned per year**	**Total Interest** (I)
1	\$1000	6% = 0.06	$1000 \times 0.06 = \$60$	\$60.00
2	\$1060	6% = 0.06	$1060 \times 0.06 = \$63.6$	\$123.60
3		6% = 0.06		
4		6% = 0.06		
5		6% = 0.06		

(a) What pattern do you see in the table? **Explain the patterns.**

(b) Plot Total Interest against Year.
Describe how the total interest grows.



Assigned Work: WS 6-2; p. 428 #4-7, #8 (b), #9

Develop a simplified formula to calculate the amount in the account after *n* years if

- *A* is the final amount of an investment including the principal and the accumulated interest
- *P* is the principal of the investment (initial amount)
- *i* is the interest rate (growth factor of the investment) ***in decimal form***
- *n* is the number of years

$A =$

Example 1: Compare Simple and Compound Interest

(a) Larry wants to invest $700 for five years. Compare the growth of his investment at 4% per year, simple interest, to the same investment at 4% per year, compounded annually.

(b) Harry wants to invest $800 for ten years. Compare the growth of his investment at 8% per year, simple interest, to the same investment at 8% per year, compounded annually.

Answers: 1. (a) $140 (Simple), $151.66 (Compound), (b) $640 (Simple), $927.14 (compound)