

Consider a principal of \$5,400 invested at the rate of 6% for 4 years. We will consider two scenarios, a simple interest account and a compound interest account. We will address the compounding two different ways to compare repetitions of the simple interest formula to the compound interest formula.

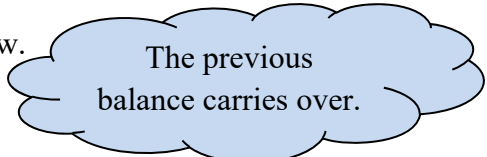
Simple interest:

1. How much simple interest is earned after 4 years for this investment? Use the familiar simple interest formula $I = PRT$. How much would the account hold after 4 years?

Compound interest (Through Simple interest):

For contrast, let's say now that the earned interest will be added to the account each year and therefore collect interest in subsequent years. We will work through this investment year-by-year using the familiar simple interest formula $I = PRT$. (Later we will see a formula to be used for compound interest calculations. We are using this method to illustrate the idea of compounding.)

2. Complete the table below.



Year	Beginning Balance	Simple Interest Calculation $I = PRT$ for $T = 1$ (one year)	Ending Balance
1	\$5,400	$I = 5400 \times .06 \times 1 = \324	$5400 + 324 = \$5,724$
2	\$5,724		
3			
4			

3. What is the balance in the account after 4 years using this compound interest?

4. Does this investment make more money using simple or compound interest? How much more? Why do you think that is?

Compound interest (Formula):

Again, there is a formula we will use to find compound interest, as opposed to doing it step-by-step. The formula is further explained in the notes but we will work it out here too.

Our formula is $A = P\left(1 + \frac{r}{m}\right)^n$

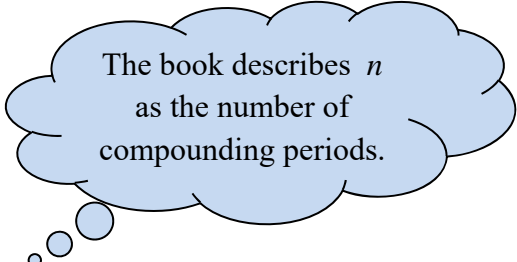
A = future value of investment

P = principal, initial investment

r = interest rate, in decimal form

m = number of times it compounds *per year*

n = *total* number of times it compounds (over the life of the investment)



5. We compounded every year with a rate of 6%. So, r is 6% or .06 and m is 1. We compounded a total of 4 times, so that is n . What is P ? Plug it in to verify the amount in the account after 4 years. It should match what you got in question 3.