

**4A: Taking Control of Your Finances**

Class Prep Assignment

Due at the beginning of next class

**Personal Reflections:**

1. Do you use a budget? Why or why not?

2. List some places in your finances where you might be able to save a few dollars or more per week or per month.

**4B: Simple and Compound Interest**

**Simple Interest**

Definition: Interest is only earned (or paid) on the original amount.

Example: You invest \$500 and you earn 6% interest every year for 5 years.

Year	Interest	Balance
Start		\$500
1		
2		
3		
4		
5		

**Compound Interest**

Definition: Interest is earned on the original amount and any interest added to the account.

Example: You invest \$500 at a rate of 6% interest compounded yearly for 5 years.

Year	Interest	Balance
Start		\$500
1		
2		
3		
4		
5		

**Formulas:**

**Using Spreadsheet Formulas for Compound Interest**

You will need to use Microsoft Excel or Google Sheets while you watch these videos. You can use a computer, tablet or smart phone with the Google Sheets App.

**Future Value Formula**
$$=FV(\text{rate}, \text{nper}, \text{pmt}, [\text{pv}], [\text{type}])$$
**Present Value Formula**
$$=PV(\text{rate}, \text{nper}, \text{pmt}, [\text{fv}], [\text{type}])$$

Inputs:

rate =

nper =

pmt =

pv =

fv =

[type] =

**Example 1.** If you invest \$500 at 6% interest, calculate the balance after 5 years for each compounding interval. Write the formula used and inputs in proper syntax.

Simple Interest

Compounded Yearly

Compounded Quarterly

Compounded Monthly

Compounded Daily (365)

Compounded Continuously

**Compounding Continuously**

If we let the number of compounding periods go to infinity we get a base of  $e$  in our function.

$$A = Pe^{rt}$$

$$= P * \exp(\text{rate} * \text{years})$$

**Effective Rate**

The corresponding rate if compounded yearly. Used to compare different compounding options.

=effect(nominal rate, periods per year)

**Example 2.** Write the formula used and the inputs in proper syntax. Answer each question with a complete sentence, including units.

a. How much would you need to deposit in an account that pays 5.25% compounded monthly to have \$20,000 in 20 years?

b. You get an inheritance of \$15,000 and you decide to put it in an account that pays 7.1% interest compounded continuously. How much would it be worth in 25 years?

c. You decide to save your tax refund of \$1000 in an account that pays 6.5% compounded quarterly. How much would you have in 15 years?

d. You are shopping for savings accounts and you find one with a rate of 3.25% compounded monthly and one with a rate of 3.15% compounded daily. Find the effective rates to determine which account has a better rate.

This box will be given on the quiz and tests. The inputs are also given when you start typing in a spreadsheet. You do not need to memorize the formulas, just know how to use them.

**Financial Formulas**

=P + P\*rate\*years

=FV(rate, nper, pmt, [pv], [type])

=PV(rate, nper, pmt, [fv], [type])

=P\*exp(rate\*years)

=effect(nominal rate, periods per year)

=PMT(rate, nper, pv, [fv], [type])