**Compound Interest (Chapter 9)**

**Finding the FUTURE (Maturity) VALUE of an investment**

**(How much will something be worth in…?)**

Compound interest is interest that is added (compounded) on interest over time

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| **Year** | **Year 0 - Deposit** | **10% interest rate applied yearly**  **Year 1** | **10% interest rate**  **Applied yearly**  **Year 2** |
| **Calculation** | $100 | Principal - $100  Interest – ($100\*10%) | Balance $110  Interest – ($110\*10%) |
| **Balance** | Balance $100 | Balance $110 | Balance $121 |

In order to calculate compond interest, we can use the following formula:

**FV = PV (1+i)n**

* FV = Future value of an amount of money
* PV = Present value of an amount of money
* I = interest rate
* n= number of compounding periods

We can calculate the future value in year 2 of the initial deposit of $100 at 10% annual interest by simply plugging into the equasion:

**FV(in two years) of $100 = $100 (1+.10)2 = $121**

**But what about when we have other than yearly interest?**

Although the concept of calculating compound interest is straightforward, we need to be aware that sometimes interest is applied in a semi-annual, annual, daily etc. way. In these cases we need to calculate the value of “I” – called the Periodic Value of Interest and also calculate the value of “n” – called the number of compounding periods so that we can apply them in the formula.

1. **Periodic Rate of interest( I ) = Nominal Rate of interest/Compounds per year**
2. **Number of Compounding Periods(n) = Number of years in term \* Number of compounding periods in a year**

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| **Refer to** | **Examples 9.2 A, B & C pp319-321** |  |
| **Practice** | **Review Exercises 9.1 p319** | **# 1, 2, 3, 4** |
|  | **Review Exercises 9.2 p330-331** | **# 1 – 8** |

**Finding the PRESENT VALUE of an investment**

**(How much would you have to invest to accumulate $X in Y time…?)**

Sometimes it is necessary to determine how much you need to put aside now in order to have a desired amount of money in the future.

**PV = FV / (1+i)n**

* PV (the amount you’d need today)
* Future Value (the amount you want in the future)
* I = interest rate
* n= number of compounding periods

**But what about when we have other than yearly interest?**

Although the concept of calculating compound interest is straightforward, we need to be aware that sometimes interest is applied in a semi-annual, annual, daily etc. way. In these cases we need to calculate the value of “I” – called the Periodic Value of Interest and also calculate the value of “n” – called the number of compounding periods so that we can apply them in the formula.

1. **Periodic Rate of interest( I ) = Nominal Rate of interest/Compounds per year**
2. **Number of Compounding Periods(n) = Number of years in term \* Number of compounding periods in a year**

**Promissary Notes**

**Calculating the value of Promissary notes are an application of PV and FV concepts**

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| **Refer to** | **Examples 9.3 A, B & C pp331-334** |  |
| **Practice** | **Review Exercises 9.3 p336** | **# 1, 2, 3, 4** |
| **Practice** | **Review Exercises 9.4 p340+341** | **# 1 – 8** |
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