# Math 1324
# Section 4.1
# Simple Interest, Future Value, and Present Value

The videos corresponding to this worksheet can be found at
https://online.math.uh.edu/Math1324/.
UH students can also view the videos within the Math 1324 textbook.

**Simple Interest** is the simplest type of interest since the interest on the investment is only based on the original principal. Hence, charging or earning interest on interest is not included.

**Formula:** $I = Prt$, where $P$ is the principal, $r$ is the interest rate and $t$ is time (in years).

The **future value** is the principal plus any interest.

**Formula:** $F = P(1 + rt)$

***P*, *r* and *t* have the same meaning as above.**

Example 1: Find the simple interest on a $1,350 investment made for 2 years at an interest rate of 4% per year.

Example 2: Find the accumulated amount at the end of 7 months on a $900 bank deposit paying simple interest at a rate of 5% per year.

**Compound Interest** is interest charged or earned on the original principal and also on any previously charged or earned interest.

**Future Value with Compound Interest Formula:** $F = P(1+i)^n$, where $i = \frac{r}{m}$ and $n = mt$.

**Present Value with Compound Interest Formula:** $P = F(1+i)^{-n}$, where $F$, $i$ and $n$ have the same meaning as before.

$F$ = future value
$P$ = present value (principal)
$r$ = interest rate (written as a decimal)
$i$ = interest rate per compounding period (written as a decimal)
$m$ = number of compounding periods per year\
$t$ = time in years

Example 3: Tamara would like to take a vacation to the Caribbean Islands in 2 years. She invests $1,500 in a savings account that pays 5% per year compounded semiannually. How much will she have available for her vacation in 2 years?

Example 4: Charlie recently found out that he is going to be a grandfather. He's decided to plan ahead and invest some money in an account for his new grandchild's college education in 18 years. He's invested $5,000 in an account that pays 6% per year compounded quarterly. He plans to leave this investment in this account for 18 years. How much money will his grandchild have towards his/her college education in 18 years?

Example 5: Tyrone invested a sum of money 5 years ago in an account that paid 9.25% per year compounded quarterly. He recently closed the account and received $11,671.00. How much did he originally invest in this account?

Example 6: Kaylin is planning on buying a home in 6 years. She'd like to have $6,000 for a down payment in 6 years. Her credit union has an account that will pay 10% per year compounded monthly. How much must she invest now in this account to have the desired funds available in 6 years?