**Week 8 Application**

**Finances**

Managing money wisely can help with all of those high value decisions in life from attending college, building a retirement fund or providing services to our loved ones.

Answer the following questions. Use Equation Editor on each question to show your answer, **show all of your work from problem statement through the solution steps to the final result**. First, save this file to your hard drive by selecting **Save As** from the **File** menu. Click the white space below each question to insert your answer to maintain proper formatting. When your document is complete, submit it as a Word document attachment to your Assignments page.

1. Samantha’s student loans total $20,000. Part was a personal loan at 12% interest; the other was a Stafford loan at 10%. After one year the loans accumulated $2160 in interest. What was the amount of each loan?
   1. Develop an equation to represent the sum of the loans, use ‘x’ for the personal loan, use ‘y’ for the Stafford loan.
   2. Develop an equation to represent the interest accumulated in the first year. Use ‘x’ for the personal loan, use ‘y’ for the Stafford loan.
   3. Use the equations from part a and b of this exercise as a system of equations. Use ***substitution*** to determine the amount of each loan. Show all your work from problem statement through the final result.
   4. What are the intercepts of the equation from part a of this problem? Where would the lines intersect if you solved the system by graphing?
2. Samantha’s parents have invested for many years. They invested a total of $20,000 one year. They invested part of the money in HP stock which returned 70% and another part in US Treasury Bonds which returned 5%. Their total return on their investments was $9,580.
   1. Develop an equation to represent the sum of the investments, use ‘x’ for the HP stock, use ‘y’ for the Treasury bonds.
   2. Develop an equation to represent the interest accumulated in the first year. Use ‘x’ for the HP stock, use ‘y’ for the Treasury bonds.
   3. Use the equations from part a and b of this exercise as a system of equations Use ***elimination*** to determine how much was invested in each Stock/Treasury bond. Show all your work from problem statement through the final result.
3. Samantha’s parents have decided to find an agency that can provide home services for Samantha’s grandparents. They searched online and are interested in contacting two agencies, “At Home Again” and “Comfort Cares”, to discuss their rates. “At Home Again” charges a $45 fee plus $22 per hour. “Comfort Cares” charges $37 per hour with no additional fees.
   1. Which agency provides a better deal for 2 hours of work? Show your work upon which the answer is based.
   2. Which agency provides a better deal for 8 hours of work? Show your work upon which the answer is based.
   3. For what values h (hours) does Comfort Cares offer the better deal? Express your answer as an inequality. Show all your work.