There are 12 questions for a total of 95 points. Express all numeric answers in the appropriate number of significant digits.

(5) 1. Suppose you invest $13517 in an account. The interest rate is 5.75% compounded daily. How much money will be in the account after four years.

\[ A = P \times \left(1 + \frac{\text{APR}}{n}\right)^{n \times t} \]
\[ A = \$13517 \times \left(1 + \frac{0.0575}{365}\right)^{365 \times 4} \]
\[ A = \$17012.20 \]

(5) 2. Imagine you wanted to save money for the next 12 years. Your goal is to have $25,000 after 12 years. If the interest rate is 5% compounded monthly how much should your initial investment be if you do not plan to make any future investments?

\[ P = \frac{A}{\left(1 + \frac{\text{APR}}{n}\right)^{n \times t}} \]
\[ P = \frac{\$25000}{\left(1 + \frac{0.05}{12}\right)^{12 \times 12}} \]
\[ P = \$13747.40 \]

(5) 3. An individual wants to start saving for retirement. The individual plans to retire in 30 years, and believes he will need $150,000. If the interest rate is 6% compounded monthly how much should the individual make for monthly payments?

\[ PMT = \frac{A \times \text{APR}}{\left(\left(1 + \frac{\text{APR}}{n}\right)^{n \times t} - 1\right)} \]
\[ PMT = \frac{\$150,000 \times 0.06}{\left(\left(1 + \frac{0.06}{12}\right)^{12 \times 30} - 1\right)} \]
\[ PMT = \$149.33 \]
4. After taking the advice of your great uncle Sam you decide to purchase government bonds. You purchase $10,000 in bonds. If every year you get $750 what is APY on the bonds?

\[ APY = \left( \frac{A}{P} \right)^{\frac{1}{t}} - 1 \]
\[ APY = \left( \frac{10750}{10000} \right)^{\frac{1}{1}} - 1 \]
\[ APY = 7.5\% \]

5. What would the payments on a $245,000 house be if one wanted to take out a 30 year loan at 6% compounded monthly.

\[ PMT = \frac{P \times APR \times \left(1 + \frac{APR}{12}\right)^{n \times y}}{(1 - (1 + \frac{APR}{12})^{-n \times y})} \]
\[ PMT = \frac{245000 \times 0.06}{(1 - (1 + \frac{0.06}{12})^{-30 \times 12})} \]
\[ PMT = $1468.90 \]

6. How much would you have paid on the above house after 30 years. $528804
The following table displays the tax information you will need for the next two questions.

<table>
<thead>
<tr>
<th>Tax Rate</th>
<th>Single</th>
</tr>
</thead>
<tbody>
<tr>
<td>10%</td>
<td>up to $7,000</td>
</tr>
<tr>
<td>15%</td>
<td>$7,001 to $28,400</td>
</tr>
<tr>
<td>25%</td>
<td>$28,401 to $68,800</td>
</tr>
<tr>
<td>28%</td>
<td>$68,801 to $143,500</td>
</tr>
<tr>
<td>33%</td>
<td>$143,501 to $311,950</td>
</tr>
<tr>
<td>35%</td>
<td>$311,951 or more</td>
</tr>
</tbody>
</table>

7. Robert is a single man. If James earns a salary of $167,000 and has a standard deduction of $4750 and a exemption of $3050 what is his tax liability?

\[
167000 - 4750 - 3050 = 159200
\]

\[
.1(7000) + .15(28400 - 7000) + .25(68800 - 28400) + .28(143500 - 68800) + .33(159200 - 143500) = 40107
\]

8. Ann is a single woman who earns $285,000. She takes a standard exemption of $3050 and a standard deduction of $4750. What is her tax liability?

\[
285000 - 4750 - 3050 = 277200
\]

\[
.1(7000) + .15(28400 - 7000) + .25(68800 - 28400) + .28(143500 - 68800) + .33(277200 - 143500) = 79047
\]
9. What would the FICA contribution be for both James and Ann?

10. Explain the difference between Simple random sampling and Convenience Sampling.
11. Draw a pie graph that properly displays how much time you spend in each of your classes with respect to all of your classes. For example if you spend 1 hour on Math120, 2 hours on Bio101, and 2 hours on Eng123. You would make your pie chart out of 5 hours.

12. In one or two sentences explain why pictographs can be misleading.