1. (5% each) Solve the problem.

Enrollment in a business seminar increased from 49 people to 81 people. What was the percent of increase?

\[
\text{percent} = \left(\frac{\text{new} - \text{old}}{\text{old}}\right) \times 100\%
\]

\[
\text{Change} = \left(\frac{81 - 49}{49}\right) \times 100\%
\]

\[
= \frac{32}{49} \times 100\%
\]

\[
= 65.3\%
\]
2. (5% each) Solve each problem. Round to the nearest hundredth.

a. 60% of what number is 96?

\[
\frac{96}{x} = \frac{60}{100}
\]

\[
\frac{96(100)}{60} = \frac{60x}{60}
\]

\[
x = 160
\]
b. 60% of 96 is what number?

\[
\frac{x}{96} = \frac{60}{100} \\
96(x) = \frac{60}{100}(96) \\
\text{\underline{x = 57.6}}
\]
3. (5%) Solve the problem. Assume that simple interest is being calculated. Round your answer to the nearest cent.

Sasha borrowed $7500 from a bank for 15 months with interest of 5% per year. Find the total amount she repaid on the due date of the loan. (Use $I = prt$)

\[
\begin{align*}
P &= 7500 \\
I &= 7500 \times 0.05 \times \frac{15}{12} = 468.75 \text{ (int.)} \\
\text{she must repay } P + I &= 7500 + 468.75 \\Rightarrow \boxed{7968.75}
\end{align*}
\]
In #4 and #5, use the compound interest formula:

\[ A = p \left(1 + \frac{r}{n}\right)^{nt} \]

4. (5%) Use the compound interest formula to compute the total amount of the investment.

$3000 at 10% compounded quarterly for 3 years.

\[ p = 3000 \quad r = 0.10 \quad n = 4 \quad t = 3 \]

\[ A = 3000 \left(1 + \frac{0.10}{4}\right)^{4 \times 3} = 3000 \left(1 + \frac{0.10}{4}\right)^{12} \]

\[ A = 4034.67 \]
5. (5%) Solve the problem.

Determine the effective annual yield for $1 invested for 1 year at 8.5% compounded monthly.

\[
effective\ annual\ yield = \left(1 + \frac{.085}{12}\right)^{12(1)} - 1
\]

\[
= \left(1 + \frac{.085}{12}\right)^{12} - 1
\]

\[
= \left(1 + \frac{.085}{12}\right)^{12} - 1
\]

\[
\left(1 + \frac{.085}{12}\right)^{12} - 1 = 8.84\%
\]

\[
(8.8\%)
\]

\[
5\%
\]

\[
8.84\%
\]
6. (5% each) In order to make some home improvements, a home owner spent $30,000. He paid 15% as a down payment and financed the balance of the purchase with a 36-month fixed installment loan with an APR of 7.5%. Determine the home owner’s a) total finance charge and b) monthly payment.

(see Table on next page)
Use this partial APR table for monthly payment plans

<table>
<thead>
<tr>
<th>Number of Payments</th>
<th>Annual percentage rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7.06%</td>
</tr>
<tr>
<td>24</td>
<td>7.45</td>
</tr>
<tr>
<td>30</td>
<td>9.30</td>
</tr>
<tr>
<td>36</td>
<td>11.16</td>
</tr>
</tbody>
</table>

Each entry in the table represents monthly cost of $100 at the given terms.

6. a) down payment = 0.15(30800) = 4500
   amount of loan = total cost - down pmt.
   = 30800 - 4500
   = 26300
   total fin. chg. = \( \frac{\text{amt. of loan}}{100} \times (\text{fin. chg. per $100}) \)
   = \( \frac{26300}{100} \times 11.98 = 3054.90 \)
b) total monthly payment

\[
\text{amt. to be repaid} = \text{amt. of loan + charge} = 25500 + 3054.90 = 28554.90
\]

\[
\text{monthly payment} = \frac{\text{amt. to be repaid}}{\text{no. of payments}} = \frac{28554.90}{36} = 793.19
\]
7. (5% each) Solve the problem.

Amortization of a $1000 Loan

<table>
<thead>
<tr>
<th>Interest rate</th>
<th>15-year loan</th>
<th>20-year loan</th>
<th>25-year loan</th>
<th>30-year loan</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.5% 10.45</td>
<td>$10.33</td>
<td>$9.33</td>
<td>$8.73</td>
<td>$8.41</td>
</tr>
<tr>
<td>10.0% 10.75</td>
<td>$10.66</td>
<td>$9.66</td>
<td>$9.09</td>
<td>$8.78</td>
</tr>
<tr>
<td>10.5% 11.06</td>
<td>$11.99</td>
<td>$9.99</td>
<td>$9.45</td>
<td><strong>$9.15</strong></td>
</tr>
<tr>
<td>11.0% 11.37</td>
<td>$10.33</td>
<td>$10.33</td>
<td>$9.81</td>
<td>$9.53</td>
</tr>
<tr>
<td>11.5% 11.69</td>
<td>$10.66</td>
<td>$10.16</td>
<td>$9.90</td>
<td></td>
</tr>
</tbody>
</table>

*monthly payment is 0.915 per $1000 borrowed*
a. What is the monthly payment on a 30-year loan of $85,000 if the annual interest is 10.5%?

\[
\text{monthly payment} = \frac{\text{amt. of loan}}{1000} \times (\text{cost per 1000}) \\
= \frac{85000}{1000} \times 19.15 = \$777.75
\]

b. What are the total interest charges over the life of the loan?

\[
\text{total amt. paid} = \text{(monthly)} \times \text{(no. of months)} \\
= (777.75)(360) \\
= 279990
\]

\[
\text{total interest} = \text{total amt. paid} - \text{original cost} \\
= 279990 - 85000 \\
= \$194990
\]
\[
\begin{align*}
85000 / 1000 & \times 9.15 \\
777.75 & \\
777.75 (360) & \\
279990 & \\
279990 - 85000 & \\
194990 & 
\end{align*}
\]
8. (5%) The Weigels gross monthly income is $6900. They have 15 remaining payments of $310 on a new car. What maximum monthly payment does the bank’s loan officer feel that the Weigels can afford?

\[
gross \text{ monthly income} - (\text{more than 10 mo.}) = \frac{\text{adjusted monthly income (AMI)}}{6900 - 310 = 6590 \ (AMI)}
\]

\[
can \ afford \ 28\% \ of \ AMI = .28(6590) = \$1845.20
\]
9. (2% each) Use one of the following items in each of your answers: interest, personal note, simple interest, Bank’s Rule, discount note, compound interest, present value, total installment price, annual percentage rate, conventional loan, adjustable rate loan, one point, open-end installment, fixed-installment.

Fill in the correct word or words.

a. A _______ is a document that states the terms and conditions of the loan.

b. _______ is interest that is computed on the principal and any accumulated interest.

c. In a _______, the interest rate may change every period as specified in the loan.
d. ____________ interest is based on the entire amount of the loan for the total period of the loan. **Banker's Rule**

e. The ____________ uses 360 as the number of days in a year.

f. In order to have an amount of money A in t years, the amount which needs to be invested now is called the ____________.

g. An ____________ loan is a loan on which you can make variable payments each month.
h. Interest is money the borrower pays for the use of the lender’s money.

i. The _________ rate is the true rate of interest charged for the loan.

j. In a ________, interest is paid at the time the borrower receives the loan.

Your test: interest, personal note, simple interest, Banker’s Rule, compound interest, present value, total installment price, conventional loan, adjustable rate loan, one point, open-end installment, fixed installment, effective annual yield, annual percentage rate.