1. (6% each) Solve the problem.

Sales volume for a particular company increased from $110 million to $132 million. What was the percent of increase?

\[ \frac{\text{new} - \text{old}}{\text{old}} \times 100 = \frac{(132 - 110)}{110} \times 100\% \]

\[ = 20\% \]
2. (6% each) Solve each problem. Round to the nearest hundredth.

a. 35 is what percent of 105?

\[
\frac{35}{105} = \frac{p}{105}
\]

\[
\Rightarrow p = \frac{35}{105} = \frac{333}{1000} = 33.3\%
\]

2a. 33.3%

b. 40% of what number is 80?

\[
\frac{40}{100} \times x = 80
\]

\[
\Rightarrow x = \frac{80 \times 100}{40} = 200
\]

2b. 200
3. (6% each) Solve the problem. Assume that simple interest is being calculated. Round your answer to the nearest cent.

Andrea borrowed $5500 from a bank for 18 months with interest of 6% per year. Use \( i = prt \).

\[
\begin{align*}
\text{t} &= \frac{18}{12} = 1.5 \text{ years} \\
\text{r} &= 6\% \text{ (annual rate)}
\end{align*}
\]

a. Find the interest she must repay on the due date of the loan.

\[
i = \text{prt} = 5500(0.06)(1.5) = 495. \quad 3a.
\]

b. Find the total amount she must repay on the due date of the loan.

\[
\text{P} + i = 5500 + 495 = 5995. \quad 3b.
\]
In #4 and #5, use the compound interest formula:

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

4. Use the compound interest formula to compute the total amount of the investment.

$12,000 at 6% compounded monthly for 5 years.

$15,000 at 7.5% compounded quarterly for 5 years

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

\[ = 15,000 \left(1 + \frac{.075}{4}\right)^{20} \]

\[ = 15,000 \left(1 + \frac{.075}{4}\right)^{20} = \$21,741.22 \]
5. (6%) Solve the problem.

Determine the effective annual yield for $1 invested for 1 year at 8% compounded quarterly.

\[ p = 1; t = 1 \] \quad \text{(APY)}

\[ 1 \left(1 + \frac{r}{n}\right)^n - 1 \] convert to %

\[ 1 \left(1 + \frac{0.08}{4}\right)^4 - 1 = 0.0824 \text{ or } 8.24\% \]
6. (6% each) In order to make some home improvements, a home owner spent $40,000. He paid 20% as a down payment and financed the balance of the purchase with a 30-month fixed installment loan with an APR of 7.50%. Determine the home owner’s a) total finance charge and b) monthly payment.

**Use this partial APR table for monthly payment plans**

<table>
<thead>
<tr>
<th>Number of Payments</th>
<th>7.00%</th>
<th>7.50%</th>
<th>8.00%</th>
<th>8.50%</th>
<th>Each entry in the table represents finance charge of given term.</th>
</tr>
</thead>
<tbody>
<tr>
<td>24</td>
<td>7.45</td>
<td>0.00</td>
<td>0.54</td>
<td>0.90</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>5.30</td>
<td>0.98</td>
<td>1.86</td>
<td>3.35</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>11.16</td>
<td>11.96</td>
<td>12.81</td>
<td>13.54</td>
<td></td>
</tr>
</tbody>
</table>

**Given**

a. **Finance Charge**: $3193.60

b. **Monthly Payment**: $1173.12

**Calculations**

- **Down Payment**: 
  \[ \frac{0.20(40000)}{100} = 8000 \]

- **Amount Financed**: 
  \[ 40000 - 8000 = 32000 \]

- **Finance Charge**: 
  \[ \frac{32000}{100} \times 9.98 = 3193.60 \]

- **Amount to be Repaid**: 
  \[ 32000 + 3193.60 = 35193.60 \]

- **Monthly Payment**: 
  \[ \frac{35193.60}{30} = 1173.12 \]
7. (6% each) Solve the problem.

Amortization of a $1000 Loan

<table>
<thead>
<tr>
<th>Interest rate</th>
<th>Monthly payment (25-year loan)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>15-year loan</td>
</tr>
<tr>
<td>9.5%</td>
<td>$10.45</td>
</tr>
<tr>
<td>10.0%</td>
<td>$10.75</td>
</tr>
<tr>
<td><strong>10.5%</strong></td>
<td><strong>$11.06</strong></td>
</tr>
<tr>
<td>11.0%</td>
<td>$11.37</td>
</tr>
<tr>
<td>11.5%</td>
<td>$11.69</td>
</tr>
<tr>
<td>12.0%</td>
<td>$12.01</td>
</tr>
<tr>
<td>12.5%</td>
<td>$12.33</td>
</tr>
<tr>
<td>13.0%</td>
<td>$12.66</td>
</tr>
</tbody>
</table>

a. What is the monthly payment on a 25-year loan of $150,000 if the annual interest is 10.5%?

\[
\frac{150000}{1000} \times 9.45 = 1417.50
\]

\[
\text{7a } 1417.50
\]

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

\[
\text{Total repaid } \frac{150000}{275250} = 425250
\]

\[
\text{Total borrowed } \frac{150000}{275250} = 275250
\]

\[
1417.50 \times 12 \times 25 = 425250
\]

\[
\text{7b } 275250
\]
8. (6%) The Smiths' gross monthly income is $4800. They have 18 remaining payments of $420 on a new car. What maximum monthly payment does the bank's loan officer feel that the Smiths can afford?

1. Gross income - (of 10 months or more) $1226.40

2. Take 28% of net income

\[ .28 \times 4380 = 1226.40 \]
9. (6%) The Wilsons' bank will charge them 3 points for a $170,000 mortgage. What is the amount of money they will pay for the points?

$$3\% \text{ of } 170000$$

$$= \frac{0.03}{1} \times 170000$$

$$= \$5100.$$
19. (2% each) Use one of the following items in each of your answers: interest, personal note, simple interest, Banker’s Rule, compound interest, cosigners, present value, total installment price, conventional loan, adjustable rate loan, one point, open-end installment, fixed-installment, effective annual yield, annual percentage rate, down payment.

Fill in the correct word or words:

a. ____________ is money the borrower pays for the use of the lender’s money.

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

c. The ____________ is the true rate of interest charged for the loan.

d. In a ____________, the interest rate is fixed for the duration of the loan.
e. A ____________ is a document that states the terms and conditions of the loan.

f. The ____________ is the sum of all the monthly payments and the down payment, if any.

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

h. The ____________ uses 360 as the number of days in a year.
i. An ______________ loan is a loan on which you can make variable payments each month.

j. The ______________ is the amount of cash the buyer must pay to the seller before the lending institution will grant the buyer a mortgage.

k. ______________ are other persons who guarantee the loan will be repaid.

l. ______________ is the equivalent simple interest rate.