Simple Interest Problems

1. Randy deposits $2,000.00 into a savings account earning 3% simple interest per annum.
   
a) Calculate the interest his money will have earned at the end of one year.

\[ \text{Interest} = 2000 \times 0.03 \times 1 = \$60.00 \]

b) How much interest would Randy earn in 5 months?

\[ \text{Interest} = 2000 \times 0.03 \times \left( \frac{5}{12} \right) = \$25.00 \]

2. Find the simple interest for each of the following cases and complete the chart.

<table>
<thead>
<tr>
<th>Principal Paid</th>
<th>Rate of Interest</th>
<th>Term</th>
<th>Interest</th>
</tr>
</thead>
<tbody>
<tr>
<td>$530</td>
<td>4%</td>
<td>2 years</td>
<td>$42.40</td>
</tr>
<tr>
<td>$1600</td>
<td>5.2%</td>
<td>3 years</td>
<td>$249.60</td>
</tr>
<tr>
<td>$1200</td>
<td>3.6%</td>
<td>8 months</td>
<td>$28.80</td>
</tr>
<tr>
<td>$840</td>
<td>2.5%</td>
<td>80 days</td>
<td>$4.40</td>
</tr>
<tr>
<td>$1860</td>
<td>3.8%</td>
<td>10 months</td>
<td>$58.90</td>
</tr>
<tr>
<td>$4000</td>
<td>6.6%</td>
<td>7 years</td>
<td>$1848.00</td>
</tr>
<tr>
<td>$3600</td>
<td>4.8%</td>
<td>200 days</td>
<td>$94.68</td>
</tr>
</tbody>
</table>
3. Find the following:

a) If the interest is $22.00 and the rate is 6% for two years, what is the principal?

\[ P = \frac{I}{rt} = \frac{22}{(0.06 \times 2)} = \$183.33 \]

b) Find the time in days if the interest is $180, the principal is $5,000, and the interest rate is 8%.

\[ t = \frac{I}{Pr} = \frac{180}{(5000 \times 0.08)} = 0.45 \times 365 = 164.14 \text{ days} \]

c) Find the annual rate if the interest is $410 on a principal of $4,040 for three years.

\[ \frac{410}{(4040 \times 3)} \times 100 = 3.38\% \]

d) Find the amount of a loan if the interest is $385 and the rate is 12% for seven months.

\[ P = \frac{385}{\left(\frac{7}{12} \times 0.12\right)} = \$5500.00 \]

e) Find the time in days if a deposit is $3,580, the rate is 4.5%, and the interest is $155.

\[ t = \frac{155}{3580 \times 0.045} = 351 \text{ days} \]
4. Robyn invested a certain sum of money in a financial institution. She earned $300.00 interest after four years. If the annual interest rate was 6%, how much money did Robyn invest?

\[ P = \frac{I}{r t} = \frac{300.00}{(0.06 \times 4)} = 1250.00 \]

5. Warren has $15,000 to invest in a financial institution. Calculate the annual rate of interest if he plans to earn $3,500 at the end of two years.

\[ r = \frac{I}{P t} = \frac{3500}{(15000 \times 2)} = \frac{3500}{30000} = 0.11666 \times 100 = 11.67\% \]

6. Miranda invests $1,500 in an account earning simple interest at a rate of 7.25%.

a) Calculate the number of months she left her money in the account if it earned $300 interest.

\[ t = \frac{I}{Pr} = \frac{300}{(1500 \times 0.0725)} = 2.76 \text{ yrs} \times 12 = 33 \text{ months} \]

b) Calculate the number of days she must keep the money in her account to earn $250 in interest.

\[ t = \frac{250}{1500 \times 0.0725} = 2.2988 \text{ yrs} \times 365 = 839 \text{ days} \]
7. Claude borrowed $550 from a business associate. Four months later he repaid the loan and interest with a cheque of $562.83. What was the interest rate?

\[ \frac{562.83}{550} = \frac{r \times 550}{550} \]

\[ \frac{12.83}{550} \times \frac{4}{12} = \frac{0.06998}{100} \]

\[ r = 0.06998 \times 12.83 = 0.92\% \]

8. Andrew loaned $5,000 to his brother at 6%. If his brother gave him $5,750 cash, how long in years did Andrew have to wait to get paid?

\[ t = \frac{P}{Pr} = \frac{750}{5000 \times 0.06} = 2.5 \text{ years} \]

9. Tanya borrows money from a bank to buy a used car. Her bank charges 9% on this personal loan. If Tanya repays the loan in ten months, including interest of $225, how much did she borrow?

\[ P = \frac{I}{r +} \]

\[ = \frac{225}{0.09 \times (10/12)} = \frac{3000}{0.09} \]

10. Julie took out a personal loan of $5,000 for ten months. If the amount of interest was $455, what was the annual interest rate?

\[ \frac{455}{5000 \times (10/12)} = \frac{0.092 \times 100}{10} \]

\[ = 10.92\% \]

11. Andy wants to save for a trip to Mexico in two years. What amount will he have to put away in a fund if he is able to earn simple interest of $425.00 at a rate of 2.75%?

\[ P = \frac{I}{r +} \]

\[ = \frac{425}{0.0275 \times 2} \]

\[ = 7727.27 \]