Lesson 1: Simple Interest. *It’s of interest to you!*  

Banks pay you interest for the use of your money. When you deposit money in a bank account, the bank reinvests your money to make a profit.  

**Simple Interest:** is calculated on the initial value you invest (Principal), \( P \), at an annual interest rate, \( r \), expressed as a decimal for a period of time, \( t \) in years. The interest is added to the principal at the end of the period.  

\[
	ext{Interest} = \text{Principal} \times \text{Rate} \times \text{Time} \\
A = P + Prt \\
I = Prt \\
\]

or

\[
P = \frac{I}{rt} \\
r = \frac{I}{Pr} \\
t = \frac{P + I}{Pr} (\times 100\%) \\
\]

**Example 0:**  
Convert each rate to a decimal and each time to a fraction.  
\begin{align*}
\text{a) } &5\% & = & 0.05 \\
\text{b) } &6.1\% & = & 0.061 \\
\text{c) } &2.25\% & = & 0.0225 \\
\text{d) } &2 \text{ months} & = & \frac{2}{12} \text{ year} \\
\text{e) } &10 \text{ weeks} & = & \frac{10}{52} \text{ year} \\
\text{f) } &140 \text{ days} & = & \frac{140}{365} \text{ year} \\
\end{align*}

**Example 1:**  
Your visa credit card charges 17% annual interest. Your August bill is $1257. You pay the bill 2 months late. How much interest will they charge you?  

\[
I = Prt \\
I = 1257(0.17)(\frac{2}{12}) \\
I = 35.62 \\
\]

**Example 2:**  
You have $1500 to invest in a simple interest account that pays 8% interest. How long would you need to wait before you had $2000?  

\[
I = 2000 - 1500 \\
I = 500 \\
\]

\[
t = \frac{I}{Pr} \\
t = \frac{500}{1500(0.08)} \\
500 ÷ (1500 \times 0.08) \\
+ ÷ 4.2 \text{ years} \\
\]
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**Example 3,**

Three years ago you bought a $500 Simple interest Savings Bond. When you cashed in the Bond, it was worth $573.50. What rate of interest did the bond earn?

\[
I = 573.50 - 500 = 73.50 \\
I = \frac{r}{P} \\
73.50 = \frac{r}{500} \\
r = 73.50 \times 3 \\
r = 0.049 \\
r = 4.9\% \times 100\% \\

**Simple Interest**

1. Express the following interest rates as \( r \) in the simple interest formula.
   a) 6\%  
   b) 4.5\%  
   c) 1.25\%  
   d) 0.85\%  
   e) 32\%

2. Express the following lengths of time \( t \) in the simple interest formula.
   a) 18 months  
   b) 16 weeks  
   c) 88 days  
   d) 4 years  
   e) 52 weeks

3. Complete the following chart.

<table>
<thead>
<tr>
<th>Principle ($)</th>
<th>Interest rate %</th>
<th>Time</th>
<th>Interest Earned ($)</th>
<th>Total Amount ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>4.5</td>
<td>3 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>550</td>
<td>0.5</td>
<td>36 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1500</td>
<td>1.5</td>
<td>320</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2500</td>
<td>7.2</td>
<td>16 weeks</td>
<td>100</td>
<td>275</td>
</tr>
<tr>
<td>10000</td>
<td>6.75</td>
<td>240 days</td>
<td>55</td>
<td>125</td>
</tr>
<tr>
<td>780</td>
<td>1.3</td>
<td>6 weeks</td>
<td>58</td>
<td></td>
</tr>
</tbody>
</table>

4. $300 is invested for 2.5 years at 6\% simple interest. How much interest is earned?