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.

**Interest = Principal \times Rate \times Time**  
**Amount, A = P + Prt**

\[
I = Prt \
\]

or

\[
I = \frac{P \cdot r \cdot t}{100} 
\]

**Example 0:**  
Convert each rate to a decimal and each time to a fraction.  
a) 5%  
b) 6.1%  
c) 2.25%  
d) \(\frac{3}{12}\)  
e) \(\frac{10}{52}\)  
f) \(\frac{140}{365}\)

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

\[
I = Prt = 1257 \times 0.17 \times \left(\frac{3}{12}\right) = 35.62 
\]

**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?

\[
t = \frac{I}{Pr} = \frac{2000 - 1500}{1500 \times 0.08} = \frac{500}{120} \approx 4.2 \text{ years}
\]
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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?

\[ r = \frac{I}{P_t} \]
\[ I = 73.50 \]
\[ r = \frac{73.50}{500 \times 3} \]
\[ r = 0.049 \times 100\% = 4.9\% \]

**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 a (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>2222.50</td>
</tr>
<tr>
<td>550</td>
<td>0.5</td>
<td>36 months</td>
<td></td>
<td>320</td>
</tr>
<tr>
<td>1500</td>
<td>1.5</td>
<td></td>
<td>320</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?
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5. Joe borrowed $500 from his parents to buy an ipod. They charged him 2.5% simple interest. He paid them back in 14 months. How much interest did he pay them? How much did he pay them in total?

6. Peter invested in a GIC that paid 3.25% simple interest. In 36 months, he earned $485. How much did he invest originally?

7. What rate of simple interest is needed for $700 to double, in 3 years?

8. Kadeem’s investment matured from $1300 to $1750. It was invested at a simple interest rate of 4.25%. How long was it invested for?

9. $4500 was invested at a 5% simple interest for 300 days. How much interest was earned? What was the total amount of the investment?

10. $600 is invested at 4% simple interest for 2 years.
   a) How much interest is earned?
   
   b) If the interest rate is doubled to 8% is the interest earned doubled?
   
   c) If the time was doubled to 4 years, would the interest earned be doubled?