#### EconEdLink: Simple Interest

Name \_\_\_\_

When you borrow money from a bank, the amount you borrow is called the **Principal**, **P**. The amount you pay for the use of the money you borrowed is called the **Interest**, **I**. The amount of interest you pay depends on the amount you borrow, the interest rate in percent, and the **Time**, **T**, or length of time you borrow the money in years.

In this worksheet, you will learn how to calculate simple interest using a building blocks method that proceeds from simple calculations to complex.

### Building Block 1 (Basic formula)

Amy Ni wants to borrow, \$450.00 at 6% for 2 years. Find the interest in dollars that Amy will have to repay and the total amount, principal plus interest Amy will repay.

Amy will use the formula: I = (P)(R)(T) to find the interest in dollars she will repay. Amy knows that 6% = 6/100 or .06. Thus, I = P R T equals (450)(.06)(2) or \$54.00. Amy will pay back \$504.00 when the loan is due. (Note that 2 years was not expressed as 24 months!) To multiply by 24 would have been saying that Amy had the loan for 24 years.

#### Practice Set #1

Calculate the amount of interest and the amount to repay in the table below.

No	Principal	Rate	Time	Interest	Amount to Repay
Ex.	\$450.00	<b>6</b> %	2	\$54.00	\$504.00
1	\$4500.00	<b>9</b> %	6		
2	\$800.00	5%	3		
3	\$3,000.00	10%	5		
4	\$9,500.00	12%	2		
5	\$1,000.00	10%	1		
6	\$45,280.00	14%	2		

# Building Block 2 (When Time is less than a year)

When the time of the loan is less than a year, Time has to be expressed as parts of a year. Taylor Price needs to borrow \$300 for 6 months. If the interest rate is 6% how much will Taylor pay in interest? How much will Taylor repay?

Taylor will use the formula: I = (P)(R)(T) to find the interest she will pay. But first, she will convert six (6) months as a fraction of a year. There are 12 months in a year, so Taylor will have the loan for 6/12 or  $\frac{1}{2}$ , or .5 of the year. Thus, Taylor will multiply \$300 \* .5 \* .06 to find that she will owe \$9.

# Practice Set #2

What fraction of a year are the following times, assuming there are **360** days in a year?

- 1. 180 days \_\_\_\_\_
- 2. 90 days \_\_\_\_\_
- 3. 365 days \_\_\_\_\_
- 4. 3 months \_\_\_\_\_ 5. 9 months \_\_\_\_\_

Practice Set #3

Complete the table below.

	Principal	Rate	Time	Interest
i.e.	\$300.00	6%	6 months	\$9
1	\$4500.00	<b>9</b> %	180 days	
2	\$800.00	5%	90 days	
3	\$3,000.00	10%	365 days	
4	\$9,500.00	12%	3 months	
5	\$1,000.00	10%	9 months	
6	\$45,280.00	14%	6 months	

# Building Block 3 (Correctly calculating the interest rate in percent)

Students often have trouble expressing the interest rate as a decimal to use in their calculations. This building block is intended to eliminate that mistake. To convert the interest rate as a percent to decimal, simply divide by 100 as the following examples show.

Interest Rate	Divide by	Interest Rate
As a Percent	100	As a Decimal
10%	10/100	.10
6%	6/100	.06
6.25%	6.25/100	.0625
125%	125/100	1.25

The interest rate might include fractions. If the interest rate contains a fraction, convert the fraction to a decimal as shown in the following table. For example,  $\frac{1}{4}$  = .25. This makes sense when you think that there are four quarters in a dollar.

Interest Rate With Fraction	Interest Rate As a Decimal
<b>6</b> <sup>1</sup> ⁄ <sub>4</sub>	6.25
<b>6</b> <sup>1</sup> / <sub>2</sub>	6.50
<b>6</b> <sup>3</sup> ⁄ <sub>4</sub>	6.75

### Practice Set #5

Complete the table below:

	Principal	Rate	Time	Interest
i.e.	\$300.00	6%	6 months	\$9
1	\$4500.00	<b>9</b> ¼%	180 days	
2	\$800.00	<b>5</b> ½%	90 days	
3	\$3,000.00	10 ¾%	365 days	
4	\$9,500.00	<b>12</b> ¼%	3 months	
5	\$1,000.00	10 ¾%	3 years	
6	\$45,280.00	<b>14</b> ¼%	1 year	

Practice Set # 6

	Principal	Rate	Time	Interest
i.e.	\$300	6%	6 months	\$9
1	\$700	<b>8</b> ¼	4 years	
2	\$2000	10 1⁄4	45 days	
3	\$845	<b>6</b> ½	7 months	
4	\$5,125	3	9 years	
5	\$2,250	<b>5</b> ½	165 days	