

Algebra 1: 5.1 Homework  
Simple and Compound Interest

Name \_\_\_\_\_ Period \_\_\_\_\_

1. Find the total amount for each year and the amount of simple interest per year if you borrow \$5,000 at 12%.  $A = P + (Pr)t$ .

principal      interest

	Total Amount	Interest Only $I = A - P$
Year 1	$A = 5000 + 5000(0.12)1 = \$5600$	$5600 - 5000 = \$600$
Year 2	$A = 5000 + 5000(0.12)2 = \$6200$	$6200 - 5000 = \$1200$
Year 3	$A = 5000 + 5000(0.12)3 = \$6800$	$6800 - 5000 = \$1800$
Year 4	$A = 5000 + 5000(0.12)4 = \$7400$	$7400 - 5000 = \$2400$
Year 5	$A = 5000 + 5000(0.12)5 = \$8000$	$8000 - 5000 = \$3000$

+600  
+600  
+600  
+600

2. Do you notice a pattern in the "interest only" column of problem 1? What does it mean?  
Each year, the interest increases by \$600. The rate of change is constant so its an arithmetic sequence.  $d = 600$
3. Find the total amount for each year and the amount of compound interest per year if you borrow \$5,000 at 12%.  $A = P(1+r)^t$ . Round to the nearest 100th.

principal + interest

	Total Amount	Interest Only $I = A - P$
Year 1	$A = 5000(1 + 0.12)^1 = \$5600$	$5600 - 5000 = \$600$
Year 2	$A = 5000(1 + 0.12)^2 = \$6272$	$6272 - 5000 = \$1272$
Year 3	$A = 5000(1 + 0.12)^3 = \$7024.64$	$7024.64 - 5000 = \$2024.64$
Year 4	$A = 5000(1 + 0.12)^4 = \$7867.60$	$7867.60 - 5000 = \$2867.60$
Year 5	$A = 5000(1 + 0.12)^5 = \$8811.71$	$8811.71 - 5000 = \$3811.71$

4. Find the total amounts only using both simple interest and compound interest.

Simple Interest:  $A = P + (Pr)t$

Compound Interest:  $A = P(1 + r)^t$

a. \$2,000 at 12% for 3 years

Simple	Compound
$A = 2000 + 2000(.12)3$	$A = 2000(1 + .12)^3$
$A = 2000 + 720$	$A = 2000(1.404928)$
$A = \$2720$	$A = \$2809.86$

b. \$5,000 at 12% for 20 years

Simple	Compound
$A = 5000 + 5000(.12)(20)$	$A = 5000(1 + .12)^{20}$
$A = 5000 + 12000$	$A = \$48231.47$
$A = \$17000$	

5. If you owe money which method would you hope you were being charged? (Simple or Compound)

Why? Simple interest because the interest increases at a constant rate. You would owe less than if the interest was compounded.

6. If you were the bank charging the interest which method are you likely to use? (Simple or Compound)

Why? Compound interest because the interest increases exponentially and the bank would make more money.