Interest and Depreciation Activity

This activity will demonstrate the importance of the interest rates given on a loan, as well as depreciation levels of assets.

In this activity, students will locate an asset they would like to attain (a car or something similar would be a good item to choose). Have students look up online the price it would take to purchase an asset of their choosing (Kelly Blue Book is a nice resource). Have students consider the full price of the asset, then hypothetically take out a portion of the loan after paying some amount down. Students may amortize the loan balance by either creating their own table using the resources provided, or by using the amortization template provided. All information regarding the loan is available in this spreadsheet. Have students note the amount of interest paid in addition to the amount of the loan. It is also useful to use this spreadsheet to see the amount of interest paid decrease as the time of the loan decreases.

After going through the amortization table a few times, have students depreciate this asset using straight-line depreciation.

Answer Key

**Simple Interest Practice**

1. Richard deposited $5,500 for 6 years on 2.40% interest rate in his saving account. How much simple interest will he earn?

I = PRT

I = 5,500 \* 6 \* .024

I = 792

2. Principal = $47,300, Rate = 3%, Time = 4 months. What will that total principal + interest payment be?

I = PRT

I = 47300 \* .03 \* (4/12)

I = 473

Principal + Interest = 47300 + 473 = $47,773

3. Andrew borrows $79,500 for 5 months on 6.30% interest rate in his saving account. Calculate the simple interest?

I=PRT

I = 79500 \* .063 \* (5/12)

I = 2086.875

4. John wants to open a showroom for that he borrows $48,000 on 12% interest rate. He plans to pay this after 4 years. What will that total principal + interest payment be?

I = PRT

I = 48000 \* .12 \* 4

I = 23040

Principal + Interest = 23040+48000

=$71,040

**Compound Interest Practice**

1. Your 3 year investment of $20,000 received 5.2% interested compounded semi-annually. What is your total return?

P = C (1 + r/n)^nt

P = 20000 \* (1 + (.052/2) \* (2)(3)

$23,329.97

2. You invest $1,900 at 4% and it’s compounded semi-annually for 3 years. How much will your $1,900 be worth in 3 years?

P = C (1 + r/n)^ nt

P = 1900 \* (1+(.04/2)) \* (3)(2)

$2,139.71

3. Your allowance of $190 got 11% compounded monthly for 1 2/3 years. What’s it worth after the 1 2/3 years?

P = C (1 + r/n)^ nt

P= 190 \* (1+(.11/12))^((1+(2/3))\*12)

$228.04

4. Your $440 gets 5.8% compounded annually for 8 years. What will your $440 be worth in 8 years?

P = C (1 + r/n)^ nt

P = 440 \* (1+(.058))^8

$690.78

**Continuous Interest Practice**

1. If you invest $1,000 at an annual interest rate of 5% compounded continuously, calculate the final amount you will have in the account after five years.

$$A=Pe^{rt}$$

A = 1000e^(.05\*5)

1284.02

2. If you invest $500 at an annual interest rate of 10% compounded continuously, calculate the final amount you will have in the account after five years.

$$A=Pe^{rt}$$

A = 500e^(.1\*5)

824.36

3. If you invest $2,000 at an annual interest rate of 13% compounded continuously, calculate the final amount you will have in the account after 20 years.

$$A=Pe^{rt}$$

A = 2000e^(.13\*20)

26927.47

4. If you invest $20,000 at an annual interest rate of 1% compounded continuously, calculate the final amount you will have in the account after 20 years.

$$A=Pe^{rt}$$

A = 20000e^(.01\*20)

24428.05

**DEPRECIATION PRACTICE PROBLEMS**

1. A fixed asset costs $30,000, is expected to last 10 years, and its "salvage value" is $3,000. Determine the amount of depreciation per year using straight-line depreciation

=(30000-3000)/10

=2,700

2. You would like to buy a new car, but would first like to see how much this car will depreciate in value after 10 years. The car initially costs $28,000.00, and you find that the same year model that is 10 years older typically sells for $7,500.00. Determine the amount of depreciation per year using straight-line depreciation.

=(28000-7500)/10

=2,050

3. A computer set is estimated to depreciate at a rate of $1,500.00/year. The set initially costs $8,000. How many years does it take to depreciate to the salvage value of $500?

1500=(8000-500)/x

1500x=8000-500

1500x=7500

X=5

4. A scientific microscope set has been sold at a value of $1,000. The set is known to be four years old, and was depreciated using straight-line depreciation at $3,500/year. What was the original price of the microscope set?

(x-1000)/4=3500

4\*(X-1000)/4=3500\*4

X-1000 = 14000

X = 15000

Worksheet Sources

Simple Interest: http://www.mathworksheetsland.com/topics/money/interest/ip.pdf

Compound interest: http://www.maranausd.org/DocumentCenter/View/37902

Continuous Interest: http://www.mathwarehouse.com/compound-interest/continuously-compounded-interest.php