

Name: _____

Simple Interest Review #1 (long way)

Directions: Solve the simple interest equations using the long method. (Advice: You could copy the interest formula before each practice question, so you do not miss a step in the calculation.)

1.) Mario borrows \$625 from Luigi so he can go fight a dragon guarding a princess, along with the help of a talking mushroom, before returning to his plumbing business. Luigi charges Mario 11% interest on this loan. How much will Mario have to pay back at the end of the year?

$$\begin{aligned}\text{Return} &= \text{Principal} \times (1 + \text{rate of change as a decimal}) \\ \text{Return} &= \$625 \times (1 + 0.11) \\ \text{Return} &= \$625 \times (1.11) \\ \text{Return} &= \mathbf{\$693.75}\end{aligned}$$

2.) Donkey Kong decides to engage in commodities futures trading for bundles of bananas - a thing that actually exists! He borrows \$75,000 for his margin account. The margin account charges 2.4% yearly interest. How much must Donkey Kong return to this investment bank at the end of the year?

$$\begin{aligned}\text{Return} &= \text{Principal} \times (1 + \text{rate of change as a decimal}) \\ \text{Return} &= \$75,000 \times (1 + 0.024) \\ \text{Return} &= \$75,000 \times (1.024) \\ \text{Return} &= \mathbf{\$76,800}\end{aligned}$$

3.) Gumby gets a loan for \$4,562 to build a stable for his talking donkey friend. How much must Gumby return to the bank at the end of the year if the bank charges 5% yearly interest?

$$\begin{aligned}\text{Return} &= \text{Principal} \times (1 + \text{rate of change as a decimal}) \\ \text{Return} &= \$4,562 \times (1 + 0.05) \\ \text{Return} &= \$4,562 \times (1.05) \\ \text{Return} &= \mathbf{\$4,790.10}\end{aligned}$$

Simple Interest Review #2 (financial calculator)

1.) Mario borrows \$625 from Luigi so he can go fight a dragon guarding a princess, along with the help of a talking mushroom, before returning to his plumbing business. Luigi charges Mario 11% interest on this loan. How much will Mario have to pay back at the end of the year?

625
+/-
PV
11
I/YR
1
N

FV = \$693.75

2.) Donkey Kong decides to engage in commodities futures trading for bundles of bananas - a thing that actually exists! He borrows \$75,000 for his margin account. The margin account charges 2.4% yearly interest. How much must Donkey Kong return to this investment bank at the end of the year?

75,000
+/-
PV
2.4
I/YR
1
N

FV = \$76,800

3.) Gumby gets a loan for \$4,562 to build a stable for his talking donkey friend. How much must Gumby return to the bank at the end of the year if the bank charges 5% yearly interest?

4562
+/-
PV
5
I/YR
1
N

FV = \$4,790.10

Compound Interest Review #3 (financial calculator)

1) Count Chocula gets a cavity, which severely limits his ability to suck blood, chocolate, or whatever it is that sustains this potentially pre-diabetic human bat. He needs dental surgery immediately! He pays for his treatment by signing up for a \$7,000 loan with 18% interest that does not need to be paid back until the end of the 15th year of the loan. How much will Count Chocula need to return for the loan if he waits until the 15th year?

7,000
+/-
PV
18
I/YR
15
N

FV = \$83,816.24

2) The bee from Honey Nut Cheerios catches an assault charge after stinging Smokey the Bear, even though he just locked in 25-years to life for an Arson case in the Rocky Mountains. The two of them make-up and decide to co-sign on a \$500,000 loan to hire a law firm to settle their legal cases. The loan interest rate is 51%. How much will they need to pay back at the end of the 3rd year of the loan?

500,000
+/-
PV
51
I/YR
3
N

FV = \$1,721,475.50

3) Captain Crunch gets charged a \$750 fine for operating a boat without proper registration or carrying adequate boating insurance. The fine grows with 12% interest every year the loan is not paid. How much will Captain Crunch owe if he does not pay the loan back until year 6?

750
+/-
PV
12
I/YR
6
N

$$FV = \$1,480.37$$

Inflation Review #4 (financial calculator)

1) Today, a large iced coffee at Starbucks costs about \$5. Assume 3% annual inflation each year. How much will this item cost in 30 years?

$$\begin{array}{r} \underline{5} \\ +/- \\ PV \\ \underline{3} \\ I/YR \\ \underline{30} \\ N \end{array}$$

$$FV = \$12.14$$

2) Today, Acme advertises \$12 containers of sushi. If inflation is 4% a year, how much will Acme charge for their hoagies 25 years from now?

$$\begin{array}{r} \underline{12} \\ +/- \\ PV \\ \underline{4} \\ I/YR \\ \underline{25} \\ N \end{array}$$

$$FV = \$31.99$$

3) The government said inflation was 3% in 2023. Mr. LaSalle believes it is actually 8%. Assuming Mr. LaSalle is correct, and the 8% inflation rate continues over the next decade, how much would a pound of ground beef coast in 10 years if it costs \$6.99 today?

$$\begin{array}{r} \underline{6.99} \\ +/- \\ PV \\ \underline{8} \\ I/YR \\ \underline{10} \\ N \end{array}$$

$$FV = \$15.09$$

Annuity Review #5 (Mix of Present Value and Future Value Annuities)

(1) Rick believes he will spend lots of money in retirement traveling parallel universes. To afford this lifestyle, he believes he will need \$55,000 a year in retirement. He plans to be in retirement from the age of 40 to the age of 100, and his money will grow 8% a year during that time. How much money will Rick need on his first day of retirement, on his 40th birthday, to afford this lifestyle until age 100?

$$\begin{array}{c} \underline{55,000} \\ +/- \\ PMT \\ 8 \\ I/YR \\ \underline{60} \\ N \\ PV = \$680,710.35 \end{array}$$

(2) Angelica wants a retirement that allows her to eat all the cookies she wants. She believes she will spend 30 years in retirement - from age 70 to age 100 - and her money will grow 6% a year during that time. She also believes she needs \$25,000 a year to live off of during those 30 years. By age 100, how much will she have paid herself plus any leftover money she will have had?

$$\begin{array}{c} \underline{25,000} \\ +/- \\ PMT \\ 6 \\ I/YR \\ \underline{30} \\ N \\ FV = \$1,976,454.66 \end{array}$$

(3) Squidward has many lofty goals for himself in retirement, such as getting a second Tikki Head and mastering the clarinet. He believes he will be in retirement for 60 years and he will need \$20,000 a year in retirement to achieve this. He expects his money to grow 10% a year while in retirement. How much money will Squidward need in the bank on his first day of retirement to pull off this plan?

$$\begin{array}{c} \underline{20,000} \\ +/- \\ PMT \\ 10 \\ I/YR \\ \underline{60} \\ N \\ PV = \$199,343.15 \end{array}$$

(4) Larry the Lobster's gym franchises really took off across Bikini Bottom. Larry believes he can afford to retire for the next 80 years, paying himself \$50,000 a year, while his money grows 8% a year. How much money will Larry have paid himself during those 80 years, plus any leftover money?

$$\begin{array}{c} \underline{50,000} \\ +/- \\ PMT \\ 8 \\ I/YR \\ \underline{80} \\ N \\ FV = \$294,346,771.42 \end{array}$$