

Inquiry Question

How can programming used to make math easier? Design a program to calculate simple interest.

Name: _____ Date: _____



General Instructions

Have you ever googled something like “5 feet in inches” or “15 CAD to USD”? Programs exist to do almost any type of calculation that you could ever want, as long as the user inputs the correct variables. You might think that this makes math skills less important - but someone has to write these programs in the first place!

In this project you will program a calculator that uses the simple interest formula to solve for an unknown value.

Materials you'll need:

- Pencil
- Computer

Project submission:

Submit the completed pages of this project as well as the .py code file for your simple interest calculator.

Design Specifications

- The ability to solve for Principal, Interest, Rate, or Time.
- Answers are displayed with correct units.
- Makes use of if-elif-else selection structures, user input, and text output

Bonus Options

- Display the output rounded to 2 decimal places.
- Add option to calculate compound interest.

Hints and Resources

The formula to calculate simple interest is as follows:

Simple Interest Formula

$$I = P \times R \times T$$

Where:

I = the Interest Money created in dollars

P = the "Principal" starting amount of money

R = the Interest Rate per year (in decimal form)

T = the Time the money is Invested,
or Borrowed, in Years

It is this form of the formula that you should use if your user wants to calculate I. You would ask the user to provide P, R, and T, multiply them together, and then output the result.

However, what if the user wants to calculate T instead? Then you need to ask them to provide I, P, and R and manipulate the formula algebraically to solve for T. To do this, you would divide P and R from both sides of the equation to get T by itself on one side.

$$T = \frac{I}{PR}$$

Your program should display a “Menu” of the different options to calculate for and then ask for the appropriate variables depending on what they choose.

For more details about solving simple interest questions and some examples, [check out this website](#).

Questions

The formulas to calculate T and I are shown above. What are the formulas you would use to calculate P and R?

The simple interest formula assumes R is a decimal. That means that if the interest rate is 5%, R will be 0.05. If your user is going to enter R as a percentage, what calculation do you need to do in order to convert it into a decimal?

Did you run into any difficulties while coding this project? How did you solve any problems?

What happens in your program if the user enters something unexpected? For example, if you have choices 1 through 3 and the user enters 4?