PROBLEM 6: LOAN CALCULATOR

For this exercise you must write a program that helps borrowers calculate all of the costs associated with a loan they are considering. The user will input the amount of money they wish to borrow, the term of the loan (how long it will take to pay off), and the annual interest rate for the loan. Your program must then output the monthly payment, the total amount of money that will be paid over the lifetime of the loan, and the total amount of interest that will be paid over the lifetime of the loan.

Given a total amount borrowed P, a periodic interest rate r, and a total number of payments n, the monthly payment of a loan A can be calculated with the following formula:

$$A = P \cdot \frac{r(1+r)^n}{(1+r)^n - 1} \tag{1}$$

Note, however, that since you are calculating a *monthly* payment, the periodic interest rate and length of the loan must be expressed in *months*. For example, if you are given an annual percentage rate of 6%, you must first convert 6% to a decimal number (0.06) and then divide that number by 12 to get the monthly interest rate: $\frac{6\%}{12} = \frac{0.06}{12} = 0.005$. Similarly, if you are given a loan length of 10 years, you must multiply that number by 12 to get the number of months: $10 \times 12 = 120$.

Your program will receive input as soon as it launches. The first input will be the amount to be borrowed expressed as an integer without a dollar sign ($) and without any separators. The second input will be the annual percentage rate (APR) expressed as a floating point number without the percent sign. The third input will be length of the loan in years. Your program must then output the monthly payment, the total amount to be paid over the lifetime of the loan, and the total amount of interest to be paid over the lifetime of the loan, each on a separate line. All amounts you output must be formatted as US currency, with a leading dollar sign ($), a comma (,) as a thousands separator, exactly two digits after the decimal point, and all values rounded to the nearest whole cent (e.g. $1,070.34). You may safely assume that the given amount of money to be borrowed will be a positive integer less than 1,000,000,000, the APR will be less than 100, and length of the loan will be less than 100 years. If there is an error during the calculation, your program must output the message, "Unable to calculate."

*Your program's output must match the examples given below **exactly**. Your program must not prompt for input. Note carefully the spelling, capitalization, punctuation, and spacing of the output. The input that will be given to your program is highlighted in **red**.*

EXAMPLE RUN 1

```
100000
6
10
$1,110.21
$133,225.20
$33,225.20
```

EXAMPLE RUN 2

```
20000
5
5
$377.42
$22,645.20
$2,645.20
```

EXAMPLE RUN 3

```
20000
5
0
Unable to calculate.
```