Problem 1: Can I make it in time?

Please write a Python program which asks the user the distance to their favorite city. Next, the user is asked at what average speed they are willing to drive at. Finally the program asks the user how much time they have to reach their favorite city. If there is enough time to reach the user's favorite city assuming the user starts driving instantaneously, print "Enough Time". Otherwise, print "You're going to be late".

Write your code here

Problem 2: Number of Factors

Please write a Python program which asks the user for a positive integer and prints out the number of positive factors of that integer. If the user enters 6, the positive factors of 6 are `[1, 2, 3, 6]` so the program should print out 4 in this case.

Write your code here

Problem 3: Retirement

Ask the user how much money they need for retirement. Ask the user how much money they will add to their bank account every year. Ask the user what rate of growth they expect. Print how long it will take them to retire. For example, if the rate of growth is 3% and the user puts in \$1000 into the account every year, then we can say the following: At the end of year 1, they'll have

$$\$1000.$$

At the end of year 2, they'll have

$$\$(1000 \times 1.03 + 1000) = \$2030.$$

At the end of year 3, they'll have

$$\$(1000 \times (1.03)^2 + 1000 \times 1.03 + 1000) = \$3090.90.$$

Write your code here

Problem 4: Divisible by 2 or 3

Please write a Python program which asks the user for an integer x ($1 \leq x \leq 10^8$) and prints how many integers from 1 to x inclusive are divisible by either 2 or 3. For extra credit, come up with an $\mathcal{O}(1)$ solution to this problem.

Write your code here

Problem 5: Wonderful weather we're having

Ask the user to enter a temperature in Celsius. The program should print a message based on the temperature (Source: *A Practical Introduction to Python Programming*):

- If the temperature is less than -273.15, print that the temperature is invalid because it is below absolute zero.
- If it is exactly -273.15, print that the temperature is absolute 0.
- If the temperature is between -273.15 and 0, print that the temperature is below freezing.
- If it is 0, print that the temperature is at the freezing point.
- If it is between 0 and 100, print that the temperature is in the normal range.
- If it is 100, print that the temperature is at the boiling point.
- If it is above 100, print that the temperature is above the boiling point.

Write your code here

Problem 6: Perfect square?

Ask the user to enter an integer x ($1 \leq x \leq 10^{14}$). Print YES if x is a perfect square, otherwise print NO. Note: If your program is too slow you'll only get half credit for this problem.

Write your code here