Random Question Generator Documentation

How the program works:

1- The user must enter a question
2- A Solution Equation to the question entered
3- Number of decimals for the answer
4- Number of Questions to be generated

Instructions for writing questions and equations:

1- Enter a question and write the variables that you wish to give random values in square brackets []
example: `A car moves with speed [V] and Direction [D], find the time required to cross this distance`

2- When writing a solution equation**,** write it in terms of the variables used in the question entered
example: `D/V`

3- **ONLY WRITE** quantities that have changing variables in square brackets []

4- **DO NOT** use the same letter for multiple variables

5- Use Only one letter of the English alphabet (Upper or Lower Case) for only one variable **EXCEPT**
The letters {"i",e"}

6- For any variable used, the program will ask to enter the minimum, maximum values of the variable and the option to use decimal values or not
Minimum and Maximum Values of Variables **MUST BE INTEGERS**

7- Use the asterisk symbol "*" for any multiplication operation, for example: a*b

8- Exponents should be written as

$$a\text{^}b$$

$$where\ "a"\ is\ the\ base, and\ "b"\ is\ the\ exponent$$

9- When doing complex computations like this formula

$$a = g\frac{2m}{M + 2m}$$

Write the formula as

```
(9.81 * 2 * m) / (M + 2*m)
```

This method of writing equations ensures that the order of operations is applied so we can have correct results

10- Always write the values of any physics constant to avoid confusion , for example g = 9.81 or q=1.6x10^-19

11- Some functions (trig, exponential,etc….) must be written in a specific way, listed below a table of popularly used functions and their Python syntax

Note: Trig functions will always deal with the variables in radians, cos(3) = -0.989992497 rad

Table 1: Table of functions and how to insert them in the program

Function	Python Syntax
cosine(x)	`cos(x)`
sine(x)	`Sin(x)`
tan(x)	`tan(x)`
arccosine(x)	`acos(x)`
arcsine(x)	`asin(x)`
arctan(x)	`atan(x)`
e^x	`exp(x)`

log(x)	log(x)
logb(a)	log(b,a) b is the base and a is the exponent
n!	factorial(n)
Gamma(x)	gamma(x)
Square root of X	sqrt(x)

12- Some letters might cause the program to reevaluate them as mathematical constants which causes miscalculations

for example:

Table 2: Table of letters and their interpretation

Letter	Interpretation
e	2.718281828459045
i	Complex number "i" sqrt(-1)

13- The use of Greek letters should be avoided

14- **DO NOT** write equations in form of derivative/integral/series or any other format other than standard operations {addition,subtraction,multiplication,division} and the operations given in Table 1

Remarks:

1- The program name is main.html and the file style.css must exist within the same directory as main.html

2- **ALWAYS Refresh the page after generating questions,** this is to avoid creating confusion for the program