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| **Question 1:** |
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| **Write a program that calculates and prints the value according to the given formula:** |
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| **Q = Square root of [(2 \* C \* D)/H]** |
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| **Following are the fixed values of C and H:** |
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| **C is 50. H is 30.** |
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| **D is the variable whose values should be input to your program in a comma-separated sequence.** |
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| **Example** |
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| **Let us assume the following comma separated input sequence is given to the program:** |
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| **100,150,180** |
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| **The output of the program should be:** |
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**18,22,24**

import math  
c=50  
h=30  
l=[]  
d=input("Enter the nos:")  
d=d.split(',')  
for i in d:  
 q=round(math.sqrt((2\*c\*int(i))/h))  
 l.append(q)  
print(l)

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| **Question 2:** |
| **Write a program which takes 2 digits, X,Y as input and generates a 2-dimensional array. The element value in the i-th row and j-th column of the array should be i\*j.** | |
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| **Note: i=0,1.., X-1; j=0,1,¡­Y-1.** |
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| **Example** |
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| **Suppose the following inputs are given to the program:** |
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| **3,5** |
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| **Then, the output of the program should be:** |
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| **[[0, 0, 0, 0, 0], [0, 1, 2, 3, 4], [0, 2, 4, 6, 8]]** |
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import numpy as np  
X=int(input())  
y=int(input())  
def arr(x,y):  
 ar=[[(i\*j) for j in range(0,y)] for i in range(0,x)]  
 a=np.matrix(ar)  
 return a  
print(arr(X,y))

**Question 3:**

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| **Write a program that accepts a comma separated sequence of words as input and prints the words in a comma-separated sequence after sorting them alphabetically.** |
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| **Suppose the following input is supplied to the program:** |
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| **without,hello,bag,world** |
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| **Then, the output should be:** |
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**bag,hello,without,world**

s=input()  
s=sorted(s.split(','))  
s

**Question 4:**

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| **Write a program that accepts a sequence of whitespace separated words as input and prints the words after removing all duplicate words and sorting them alphanumerically.** |
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| **Suppose the following input is supplied to the program:** |
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| **hello world and practice makes perfect and hello world again** |
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| **Then, the output should be:** |
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**again and hello makes perfect practice world**

s=input()  
s=sorted(s.split(' '))  
s=set(s)  
s

**Question 5:**

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| **Write a program that accepts a sentence and calculate the number of letters and digits.** |
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| **Suppose the following input is supplied to the program:** |
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| **hello world! 123** |
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| **Then, the output should be:** |
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| **LETTERS 10** |
|  |

**DIGITS 3**

s=input()  
l=0  
d=0  
for i in range(len(s)):  
 if(s[i].isdigit()): d=d+1  
 elif(s[i].isalpha()): l=l+1  
print("LETTERS ",l,"\n DIGITS ",d)

**Question 6:**

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| **A website requires the users to input username and password to register. Write a program to check the validity of password input by users.** |
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| **Following are the criteria for checking the password:** |
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| **1. At least 1 letter between [a-z]** |
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| **2. At least 1 number between [0-9]** |
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| --- |
| **1. At least 1 letter between [A-Z]** |
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|  |
| --- |
| **3. At least 1 character from [$#@]** |
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| --- |
| **4. Minimum length of transaction password: 6** |
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| **5. Maximum length of transaction password: 12** |
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| **Your program should accept a sequence of comma separated passwords and will check them according to the above criteria. Passwords that match the criteria are to be printed, each separated by a comma.** |
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| **Example** |
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| **If the following passwords are given as input to the program:** |
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| **ABd1234@1,a F1#,2w3E\*,2We3345** |
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| **Then, the output of the program should be:** |
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**ABd1234@1**

import re  
pwd=input("Enter the password: ")  
pwd=pwd.split(',')  
passw=[]  
for i in pwd:  
 if(not re.search("([a-z])+",i)): continue  
 elif(not re.search("([0-9])+",i)): continue  
 elif(not re.search("([A-Z])+",i)): continue  
 elif(not re.search("([$#@])+",i)): continue  
 elif(len(i)<6 or len(i)>12): continue  
 else: passw.append(i)  
print((" ").join(passw))