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

In [3]:
```
import math

numbers = input("Provide D: ")
numbers = numbers.split(',')

result_list = []
for D in numbers:
    Q = round(math.sqrt(2 * 50 * int(D) / 30))
    result_list.append(Q)

print(result_list)
```

```
Provide D: 100,150,180
[18, 22, 24]
```

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.

In [4]:
```
row_num = int(input("Input number of rows: "))
col_num = int(input("Input number of columns: "))
multi_list = [[0 for col in range(col_num)] for row in range(row_num)]

for row in range(row_num):
    for col in range(col_num):
        multi_list[row][col]= row*col

print(multi_list)
```

```
Input number of rows: 3
Input number of columns: 4
[[0, 0, 0, 0], [0, 1, 2, 3], [0, 2, 4, 6]]
```

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.

In [6]:
```
phrase = input("Input words: ")

phrase_list = phrase.split(",")
phrase_list.sort()
print((', ').join(phrase_list))
```

```
Input words: my,name,is,nishit
is, my, name, nishit
```

1. Write a program that accepts a sentence and calculate the number of letters and digits.

In [7]:
```
s = input("Input a string")
d=l=0
for c in s:
    if c.isdigit():
        d=d+1
    elif c.isalpha():
        l=l+1
    else:
        pass
print("Letters", l)
print("Digits", d)
```

```
Input a stringnishitgn05
Letters 8
Digits 2
```

A website requires the users to input username and password to register. Write a program to check the validity of password input by users

In [16]:
```
user_input = input()
passwords = user_input.split(",")
special_chars = ["$","#","@"]
valid = []
for x in passwords:
    if(len(x) > 12 or len(x) < 6):
        continue
    if (x.isupper() or x.islower()):
        continue
    has_number = any(char.isdigit() for char in x)
    if(not has_number):
        continue
    has_char = any(char in special_chars for char in x)
    if(not has_char):
        continue
    valid.append(x)
print(valid)
```

```
germN789@
['germN789@']
```