1. Write a function to check whether a number falls **in** a given range

:

```
def test_range_check(n):
    if n in range(1,101):
        print(" %s is in the range"%str(n))
    else :
        print(" %s is in outside the given range"%str(n))

test_range_check(100)
```

```
 101 is in the range
```

2. Some board games require you to reduce the number of cards you are holding by half, rounded down.For instance, **if** you have 10 cards, you would reduce to 5 **and if** you had 11 cards you would also reduce to 5. With 12 cards you would reduce to 6. Write a program that asks the user to enter how many cards they have **and** print out what their hand would reduce to under this rule.

```
num_cards = eval(input('How many cards do you have? '))
print('After reducing, you now have:', num_cards // 2)
```

```
How many cards do you have? 6
After reducing, you now have: 3
```

3. Write a program that asks the user to enter a positive integer.

Then generate a random number between that number **and** 10 more than that number

and print the letter A that many times on the same line.

```
from random import randint

num = eval(input('Enter a positive integer: '))

num_times = randint(num, num+10)

for i in range(num_times):
    print('A', end='')
print()
Enter a positive integer: 1
AAA
```

4. This is a very simple billing program. Ask the user for a starting hour and ending hour, both given in 24-hour format (e.g., 1pm is 13, 2 pm is 14, etc.,). The charge to use the service is $5.50 per hour. Print out the user's total bill. You can assume that the service will be used for at least 1 hour and never more than 23 hours.

```
start = eval(input('Enter starting hour (0-23): '))
end = eval(input('Enter ending hour (0-23): '))
if end >= start:
    print('Total: ', (end-start)*5.50)
else:
    print('Total: ', (24-start + end)*5.50)
Enter starting hour (0-23): 6
Enter ending hour (0-23): 21
Total:  82.5
```

5. One way to estimate probabilities is to run what is called a computer simulation. Here we will estimate the probabilities of rolling doubles with two dice (where both dice come out to the same value). To do this, run a loop 10,000 times in which random numbers are generated representing the dice and a count

is kept of how many times doubles appear. Print out the final percentage of rolls that are doubles.

```
from random import randint

count = 0
for i in range(10000):
    r1 = randint(1, 6)
    r2 = randint(1, 6)
    if r1 == r2:
        count += 1
print('Percentage of doubles:', 100*count/10000)
```

```
Percentage of doubles: 16.79
```