probablity problem

. There are 1000 students who's marks are captured based on their ability in the test. if the same test is given to a new student.what is the probablity of getting 50 marks

In [1]:

```
from numpy.random import randint as ri
import pandas as pd
```

In [5]:

```
# Randomly generating 100 int b/w 30 to 100
marks = ri(30,100,1000)
stu_marks=pd.Series(marks)
stu_marks.head()
```

Out[5]:

```
0    43
1    51
2    66
3    95
4    68
dtype: int32
```

In [6]:

```
# Let's take mean and standard deviation (std). we need these data to find the probablity
```

In [8]:

```
#Mean
marks_mean= stu_marks.mean()
print('mean marks=', marks_mean)

#std
marks_std=stu_marks.std()
print('marks std = ',marks_std)
```

```
mean marks= 64.487
marks std =  19.80308039151973
```

In [9]:

```
# what is the probability of a student scoring UPTO 50%
x=50
```

probability always between 0-1 and starts from 0

In [10]:

```
import scipy.stats as st

# when x(data) is given than , use cdf function to find the probability of scoring marks up
prob=st.norm.cdf(x,loc=marks_mean,scale=marks_std)
print(prob)
```

```
0.23222076630718658
```

In [11]:

```
 # if you want to the find the probability of scoring marks greater than 50, you can minus

    #z=(x-mean)/std
```

In [12]:

```
score=(x-marks_mean)/marks_std
score
```

Out[12]:

```
-0.7315528550903504
```

In [13]:

```
#problem 2
#Find the probability of getting marks between 50-60
#Rewrite the problem in below form

# p(50<z<60)
# p((50-mean)/std<z<(60-mean)/std)
z
```

In [14]:

```
#for 50
(50-marks_mean)/marks_std
```

Out[14]:

```
-0.7315528550903504
```

In [15]:

```
#for 60
(60-marks_mean)/marks_std
```

Out[15]:

```
-0.22658091121629045
```

In [ ]:

```
# now look into the z-table for both 50 and 60. difference is the probability
```