In [1]:

```python
import statistics
```

In [2]:

```python
# mean , median, mode
```

In [3]:

```python
val = [5,4,6,8,12,5]
```

In [4]:

```python
m = statistics.mean(val)
print("mean of given data is: ",m)
```

```
mean of given data is:  6.666666666666667
```

In [6]:

```python
med = statistics.median(val)
print("median of given data is: ",med)
```

```
median of given data is:  5.5
```

In [7]:

```python
mod = statistics.mode(val)
print("mod of given data is: ",mod)
```

```
mod of given data is:  5
```

In [8]:

```python
# average and weighted average
```

In [9]:

```python
import numpy as np
```

In [10]:

```python
np.average(val)
```

Out[10]:

```
6.666666666666667
```

In [11]:

```python
arr  = np.arange(5)
arr
```

Out[11]:

```
array([0, 1, 2, 3, 4])
```

In [12]:

```python
w = np.arange(5,10)
w
```

Out[12]:

```
array([5, 6, 7, 8, 9])
```

In [13]:

```python
weighted_avg = np.average(arr,weights=w)
weighted_avg
```

Out[13]:

```
2.2857142857142856
```

In [14]:

```python
# spread : min, max, range, variance, std dev
```

In [15]:

```python
data = [1,2,3,4,5]
```

In [16]:

```
# min

minimum = min(data)
minimum
```

Out[16]:

```
1
```

In [17]:

```
# max

maximum = max(data)
maximum
```

Out[17]:

```
5
```

In [18]:

```
# range

range_data = maximum - minimum
range_data
```

Out[18]:

```
4
```

In [19]:

```
# variance
```

In [20]:

```
from statistics import variance
from statistics import stdev
```

In [23]:

```
sample_data = (1,2,3,4,5,6,7,8,11,12)
var = variance(sample_data)
var
```

Out[23]:

```
13.433333333333334
```

In [25]:

```
std = stdev(sample_data)
std
```

Out[25]:

```
3.665151201974256
```

In [26]:

```
# covarince

arr1 = np.array([1,2,3])
arr2 = np.array([2,4,5])

covariance = np.cov(arr1,arr2)
covariance
```

Out[26]:

```
array([[1.        , 1.5       ],
       [1.5       , 2.33333333]])
```

In [27]:

```
# correlation

x = np.arange(10,20)
y = np.array([2,1,4,5,8,12,34,67,18,96])

r = np.corrcoef(x,y)
r
```

Out[27]:

```
array([[1.        , 0.78100034],
       [0.78100034, 1.        ]])
```

In [28]:

```
import scipy.stats

scipy.stats.pearsonr(x,y)
```

Out[28]:

```
PearsonRResult(statistic=0.7810003430715909, pvalue=0.007652641631
82357)
```

In [29]:

```
scipy.stats.spearmanr(x,y)
```

Out[29]:

```
SignificanceResult(statistic=0.9515151515151514, pvalue=2.27985492
0641689e-05)
```

In [30]:

```
# percentiles
```

In [31]:

```
d = [19,3,7,1,36]
```

In [32]:

```
# 25th percentiles
np.percentile(d,25)
```

Out[32]:

```
3.0
```

In [33]:

```
# 50th percentiles
np.percentile(d,50)
```

Out[33]:

```
7.0
```

In [ ]:

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