

# Pattern

## Python Review - Task : Section : 1

**1. What are *mean, median, mode, variance, and standard deviation* ?**

**a) mean :**

→ The mean() function is used to calculate the arithmetic mean of the numbers in the list.

### Example

```
import statistics  
  
datasets = [5, 2, 7, 4, 2, 6, 8]  
  
x = statistics.mean(datasets)  
  
print("Mean is :", x)
```

**Output:            Mean is : 4.857142857142857**

**b) median :**

→ The median() function is used to return the middle value of the numeric data in the list.

### Example

```
import statistics  
datasets = [4, -5, 6, 6, 9, 4, 5, -2]
```

```
print("Median of data-set is : % s " % (statistics.median(datasets)))
```

**Output:            Median of data-set is : 4.5**

### c) *mode* :

→ The mode() function returns the most common data that occurs in the list.

#### **Example**

```
import statistics
dataset =[2, 4, 7, 7, 2, 2, 3, 6, 6, 8]
print("Calculated Mode % s" % (statistics.mode(dataset)))
```

**Output:            Calculated Mode 2**

### d) *variance*

→ Variance helps in measuring how far a number or value of a dataset is from the mean or average value

→ The variance measurement explicitly helps in quantifying the spread or dispersion of a series of data.

#### **Example**

```
def variance(val)
numb = len(val)
m = sum(val) / numb
devi = [(x - m) ** 2 for x in val]
variance = sum(devi) / numb
```

return variance

```
print(variance([6, 6, 3, 9, 4, 3, 6, 9, 7, 8]))
```

Output: 4.49

### e) *standard deviation*

→ Standard deviation is a number that describes how spread out the values are.

→ A low standard deviation means that most of the numbers are close to the mean (average) value.

→ A high standard deviation means that the values are spread out over a wider range.

#### Example

```
import numpy
```

```
speed = [86,87,88,86,87,85,86]
```

```
x = numpy.std(speed)
```

```
print(x)
```

Output: 0.9035079029052513

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**3. What is Gaussian distribution?** is a probability distribution that is symmetric about the mean, showing that data near the mean are more frequent in occurrence than data far from the mean. In graph form, normal distribution will appear as a bell curve.