In [1]:

```
import pandas as pd
import numpy as np
from scipy import stats
from scipy.stats import norm
```

Mean profit from two different divisions of a company = Mean1 + Mean2

In [12]:

```
Mean = 5+7
print('Mean profit ₹', Mean*45,'Million')
```

```
Mean profit ₹ 540 Million
```

Variance of profit from two different divisions of a company = SD^2 = SD1^2 + SD2^2

In [11]:

```
SD = (3^2)+(4^2)
print('Standard Deviation ₹', SD*45, 'Million')
```

```
Standard Deviation ₹ 315 Million
```

A.

In [22]:

```
print('Ranges from Rs',(stats.norm.interval(0.95,540,315)),'in Millions')
```

```
Ranges from Rs (-77.38865513011706, 1157.388655130117) in Millions
```

B.

To compute the 5th Percentile we use the formula X=μ + Zσ
wherein from z table value of 5 percentile = -1.64

In [21]:

```
X= 540+(-1.64)*(315)
print('5th percentile profit (in Million Rupees) is',np.round(X,2))
```

```
5th percentile profit (in Million Rupees) is 23.4
```

C.

Probability of Division 1 making a loss P(X<0)

In [6]:

```
stats.norm.cdf(0,5,3)
```

Out[6]:

```
0.0477903522728147
```

Probability of Division 2 making a loss P(X<0)

In [7]:

```
stats.norm.cdf(0,7,4)
```

Out[7]:

```
0.040059156863817086
```