Problem Statement - Normal Distribution

The mean weight of a morning breakfast cereal pack is 0.295 kg with a standard deviation of 0.025 kg. The random variable weight of the pack follows a normal distribution.

a)What is the probability that the pack weighs less than 0.280 kg?

b)What is the probability that the pack weighs more than 0.350 kg?

c)What is the probability that the pack weighs between 0.260 kg to 0.340 kg?

In [1]:
```
import scipy.stats as stats
```

a)What is the probability that the pack weighs less than 0.280 kg?

In [2]:
```
z = (0.28-0.295)/0.025
```

In [3]:
```
z
```

Out[3]:
```
-0.5999999999999983
```

In [5]:
```
stats.norm.cdf(-0.6) # normal-cdf(cumulative density function or continous are
```

Out[5]:
```
0.2742531177500736
```

27.43 % that a particular product have wait less than 0.280 kg.

b)What is the probability that the pack weighs more than 0.350 kg?

In [7]:
```
z = (0.35-0.295)/0.025
```

In [8]:
```
z
```

Out[8]:
```
2.1999999999999997
```

In [9]:
```
1 - stats.norm.cdf(2.2)
```

Out[9]:
```
0.01390344751349859
```

1.4 % that a particular product have wait more than 0.350 kg.

c)What is the probability that the pack weighs between 0.260 kg to 0.340 kg?

In [10]:
```
z1 = (0.26-0.295)/0.025
```

In [11]:
```
z2 = (0.34-0.295)/0.025
```

In [12]:
```
stats.norm.cdf(z2)- stats.norm.cdf(z1)
```

Out[12]:
```
0.8833130216533032
```

88.33 % chance that a particular product wait is between 0.260 kg to 0.340 kg

Problem Statement - Normal Distribution

The mean salaries of Data Scientists working in Chennai, India is calculated to be 7,00,000 INR with a standard deviation of 90,000 INR. The random variable salary of Data Scientists follows a normal distribution.

What is the probability that a Data Scientist in Chennai has a salary more than 10,00,000 INR? What is the probability that a Data Scientist in Chennai has a salary between 6,00,000 & 9,00,000 INR? What is the probability that a Data Scientist in Chennai has a salary less than 4,00,000 INR?

What is the probability that a Data Scientist in Chennai has a salary more than 10,00,000 INR?

In [13]:
```
z = (1000000 - 700000)/90000
```

In [14]:
```
z
```

Out[14]:
```
3.3333333333333335
```

In [15]:
```
1-stats.norm.cdf(3.333)
```

Out[15]:
```
0.00042957471189908336
```

based on above data the change of salary more than is 10 lakh very minimal .0043%

What is the probability that a Data Scientist in Chennai has a salary between 6,00,000 & 9,00,000 INR?

In [16]:
```
z1 = (600000 - 700000)/90000
z2 = (900000 - 700000)/90000
```

In [18]:
```
stats.norm.cdf(z2) -  stats.norm.cdf(z1)
```

Out[18]:
```
0.8536055914064735
```

The chance of data scientist salary in chennai between 6 lakh and 9 lakh is very high that is 85.37 %.

Q.3 = What is the probability that a Data Scientist in Chennai has a salary less than 4,00,000 INR?

In [19]:
```
z = (400000-700000)/90000
```

In [20]:
```
z
```

Out[20]:
```
-3.3333333333333335
```

In [21]:
```
stats.norm.cdf(-3.333)
```

Out[21]:
```
0.00042957471189910326
```

In [22]:
```
#### chance is very less .00430 % that salary be less than 4,00,000
```

In [ ]:
```

```