1. BMW Company is testing the top speed of its new model X70. It has tested 100 units and found the average top speed to be 230Km/hr with a standard deviation of 10km/h. whereas company believes the average top speed to be 260Km/hr. Company asks: Do you think being in Indian Road affects the top speed?

**Answer:**

Z = data value – mean / standard deviation

Standard deviation = sigma/Square root (n)

Z = (260 – 230)/10/10

Z = 30

P(x = 260) = P (Z = 30)

Since Z = 30, the probability is 1. Hence it is clear that the Indian roads affect the top speed

1. On an average, males drink 2L water per day with standard deviation s = 0.7L. We are planning for a full day trip for 50 Men with 110L of water. What is the probability that we will run out of water? With a Significance level of 5 %, can we say that we will run of water?

**Answer:**

Mean =  2 liters/day

Mu0 =  110 liters/50 men = 2.2 liters/day  
Standard Deviation = 0.7 liters/day              
n = 50

Z = (Mean – Mu0)/Standard Deviation/ SQRT (n)

Z = - 2.02

Alpha = 0.05

Critical value at 0.05 Significance is 1.64

The test value of **- 2.02 is below 1.64**. Hence we can say that we **WILL NOT** run out of water