Q1. As voters exit the polls, you ask a representative random sample of 6 voters if they voted for proposition 100. If the true percentage of voters who vote for the proposition is 55.1%, what is the probability that, in your sample, exactly 2 voted for the proposition and 4 did not?

Answer :- We have a binomial distribution with P=0.551 so

Binomial formula P(x=k)=(1-p Where N=number of trials, K=success of the N trials and

P=probability of success.

Now applying the formula we get.

P(2 yes votes exactly )= =18.50%.

Q2. Professor Willoughby is marking a test.

Here are the students’ results (out of 60 points):

20, 15, 26, 32, 18, 28, 35, 14, 26, 22, 17

Most students didn't even get 30 out of 60, and most will fail.

The test must have been really hard, so the Prof decides to standardize all the scores and only fail people 1 standard deviation below the mean. So who will fail?

Answer:-

Let us first calculate the mean for above data set.

20+15+26+32+18+28+35+14+26+22+17/11=23

So, the Mean is 23,

To find standard deviation first of all we need to calculate the variance.

After subtracting mean from each data point and squaring them off we will get the variance

9+64+9+81+25+25+144+81+9+1+36=484/11-1=484/10=48.4

Standard deviation is nothing but the sqrt of variance or equal to =6.6

Now the Standard Scores are:

-0.45, -1.21, 0.45, 1.36, -0.76, 0.76, 1.82, -1.36, 0.45, -0.15, -0.91

Only 2 students will fail (the ones who scored 15 and 14 on the test)