**1. 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?**

**Solution # 1 :**

Let p is the probability for voters who vote for the proposition

Given

p = 55.1% = 0.551

Sample size n = 6

Then

Probability for voter who dint vote for proposition = 1 – p = 0.449

Now the probability that exactly 2 voted for the proposition and 4 did not out of sample of 6 = 6C2 \* (0.551) ^2 \* (0.449) ^4

= 15 \* (0.551) ^2 \* (0.449) ^4

= 0.185

**2. 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?**

**Solution # 2**



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