1) The symbol p means the population proportion; this is the percent of individuals in a large group that possess a certain characteristic. The symbol $\hat{p}$ means sample proportion; this is the percent of individuals in a small group that possess a certain characteristic. The symbol p_0 means the proposed population proportion; it is the number that appears in the hypotheses when doing a hypothesis test for a population proportion. For example, if you have

H_0: p = 65%
H_a: p > 65%

then p_0 equals the 65%.

2) H_0: p = 45%
         H_a: $p \neq$ 45%

p-hat = 0.567, z = 1.44, p-value = 15.1%. We do not have evidence that the proportion of all CRC students with at least 2 siblings is different from 45%. Note: it is not correct to say: "We do not have evidence that 45% of all CRC siblings do not have at least 2 siblings."

3) H_0: p = 50%
         H_a: p > 50%

p-hat = 52.9%, z = 2.22, p-value = 1.3%. We do not have quite enough evidence that Phineas Flynn will win the election.

4) Critical z = 2.326, total sample size is about 657, you would need about 487 more people in the sample.

5a) We are 90% confident that between 9.8% and 16.4% of all potential Anclavin users experience OETS.
b) p-value is about 0.000001. We have very strong evidence that less than 25% of all Anclavin users experience OETS.
c) In (a), we see that 25% is not reasonable as an answer; the entire interval is below 25%. In (b), we also have evidence that the percentage is below 25%.