7.SP Election Poll, Variation 1

Task

Members of the seventh grade math group have nominated a member of their group to be class president. Every student in seventh grade will cast a vote. There are 2 candidates in the race and a candidate needs at least 50% of the votes to be elected. The math group wants to conduct a survey to assess their candidate’s prospects. There are almost 500 students in the seventh grade at their school. They do not have the resources to interview all seventh graders so they have decided to interview a sample of 40 seventh graders. They will obtain the seventh grade list of names from their school principal’s office and select the sample from this list. They plan to ask each student in the sample whether they plan to vote for their candidate or the other candidate.

a. How should the students select the sample of 40 to have the best chance of obtaining a representative sample? Describe clearly how they could use the random number table provided below to select the sample of 40 students. "Clearly" means that someone other than you could duplicate the sampling process by following your description.
b. Suppose that all 40 students selected from the list of seventh graders in the school respond to the survey, and the results showed that 18 students would vote for the math group's candidate. In order to get elected, a candidate must receive at least 50% of the votes. Some members of the math group believe that on the basis of this sample outcome it is unreasonable to think that their candidate can win. Others in the group believe that it is possible that their candidate might win. Based on the initial survey results, should the math group students be discouraged, or is it reasonable to think their candidate might win? Justify your response statistically.