

## Practice Predicting from Survey Results

A random sample of forty students at your school was selected, and students were asked whether or not they have a family pet. The table below gives the results of the survey

	Girls	Boys	Total
Has a family pet	15	14	29
Does not have a family pet	7	4	11
	22	18	40

Suppose another student is randomly selected from the student body. Use the results of the survey to estimate the following probabilities.

1. What is the probability that the student is a boy?
2. What is the probability that the student does not have a family pet?
3. What is the probability that the student has a cat?
4. If the randomly selected student is a girl, what is the probability that she has a family pet? Use mathematics to explain how you determined your answer. Use words, symbols, or both in your explanation.
5. Suppose there are 1,600 students in the school. How many would you expect to have a family pet? Use mathematics to explain how you determined your answer. Use words, symbols, or both in your explanation.
6. Would it be reasonable to use the sample results to make predictions about the student population at a different school? Use mathematics to justify your answer.
7. Suppose the students selected for the original survey were not a simple random sample of the student body. Would it be reasonable to make predictions about the entire student population based on the sample results? Use the principals of simple random sampling to justify your answer.

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### Answer Key

1.  $\frac{18}{40} = 0.45$
2.  $\frac{11}{40} = 0.275$
3. Cannot estimate this probability because there is not enough information.
4.  $\frac{15}{22} = 0.6818$
5.  $\frac{29}{40}(1600) = 1160$
6. No. The sample represents the population of the particular school and would not necessarily be representative of students at a different school.
7. No. Without randomness in the sample selection, we cannot be sure that each member in the population has the same chance of being chosen or the members of the population were selected independently from each other. The sample will most likely *underrepresent* particular groups, so the results from the sample would not reflect the views of these groups.