

Math HW

15. A poll. Suppose that a news article refers to a poll that surveyed 906 registered voters and carries a margin of error of plus or minus 3.5 percentage points. Assume a 95% confidence level, and calculate the margin of error. Is your answer 3.5%? If not, how might you explain the difference between your answer and the one given in this news article?

11. Estimating the margin of error. A sample size of 900 people is used for a poll. What is the approximate margin of error for a 95% confidence interval?

13. Estimating margin of error. A polling organization conducts a poll by making a random survey of 1500 people. Estimate the margin of error at a confidence level of 95%. Round your answer as a percentage to one decimal place.

Government surveillance. A poll of 803 adults in the United States found that a majority—59%—said that changes should be made in government surveillance programs. The poll reported a margin of error of 3.5%. Exercises 16 through 18 refer to this poll. US E for 17

17. Explain in plain English what we can conclude from this poll. Can you assert with confidence that a majority of Americans support making changes in government surveillance programs?

20–21. An imaginary poll. Suppose we conduct a poll to determine American public opinion concerning our current relations with Europe. We will give the respondents three options: approve, disapprove, or no opinion. Here are some hypothetical data.

Approve	36%
Disapprove	31%
No opinion	33%

Use these data for Exercises 20 and 21.

21. Suppose this poll has a 95% confidence level with a margin of error of 3.5%. Explain in practical terms what this means, and estimate how many people were sampled.

25. **Surveying 1000 people.** In this exercise, we consider surveys of 1000 people.

a. If we survey 1000 people, what is the approximate margin of error for a 90% confidence level? Round your answer as a percentage to one decimal place.

27. **Sample size and margin of error.** The margin of error for a given sample size presented in Rule of Thumb 6.2 is a good estimate but it is not exactly right. To get the exact number, we need to make a complicated calculation using the methods developed in Section 5.4. Suppose 25% of Americans actually believe Congress is doing a good job, but we don't know this. So we select n Americans at random and ask their opinion about Congress. The probability that our poll will show between 23% and 27% (for a margin of error of 2%) depends on the sample size n and is given in the table below. (This table is the same as the one on page 434.)

Number n selected	100	500	1000	1500	2000	2500
Probability 23% to 27%	0.44	0.72	0.87	0.93	0.96	0.98

- a. For a 2% margin of error, what confidence level will a sample size of 1000 give?
- b. We wish to have a margin of error of 2%. What sample size should we choose for a 72% confidence level?

