

According to a recent study in 2014 by the RAND corporation, in the U.S. 9.3 million more people have gained health care coverage over the previous year with an error of ± 3.5 million people based on the statistical study.



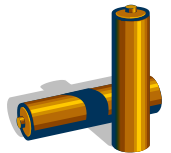
1. This type of error in a study is often referred to as a margin of error.
 - a. What is the **least** number of people that have gained coverage based on the study?
 - b. What is the **most** number of people that have gained coverage based on the study?

2. A recent study in 2013 conducted in Canada showed that house values were reduced in value by an average amount of 15% with a margin of error of $\pm 4.9\%$ because the previous owner smoked in the house.
 - a. What is the maximum percentage the house value average could have been reduced?



- b. The median house price in a Ontario Canada was equivalent to \$244,000 US dollars. What might be the worst possible average price for home owners that have smokers in their house (i.e. use the maximum possible reduced value percentage from part “a”)?

3. A study conducted at a school showed that the batteries used by calculators lasted an average of 101 days with a margin of error of $\pm 9\%$.
 - a. What is the minimum average number of days a teacher can expect to have the batteries last in her classroom?



- b. There are roughly 279 days from the first day of school until the last day of school, The teacher has 24 TI-84 calculators and each one requires 4 triple A batteries. If the teacher can buy triple A batteries whole sale at 52 cents a battery, how much do you think she will need to spend at most on batteries for calculators over the year?



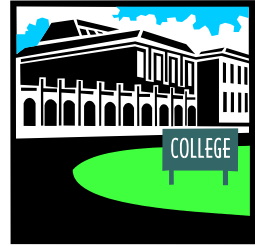
4. According to a recent 2013 government study, the average 4-year education at a public college or university will cost about \$8,944 per year with a margin of error of $\pm 7.2\%$.

a. What is the minimum average cost of tuition?

b. What is the minimum average cost of tuition?

c. Living Expenses and books are expected to cost another \$11,120 per year with a margin of error of $\pm 5.2\%$. What is the maximum average cost for the additional expenses?

d. If the college you plan to attend charges that are roughly the average amount, what is the maximum amount you will need to spend for a 4-year bachelor's degree including tuition, living expenses, and books (and assuming you attend for 4 years).



5. A new anti-viral flu study found that participants that took their medication found the flu lasted an average of 2.8 days with a margin of error of $\pm 11.3\%$. A control group that did not take any anti-viral medicine found that the flu lasted 4.1 days with a margin of error of $\pm 15.3\%$.

Could you guarantee that average of those taking the new anti-viral medicine had an average of less time having the flu? Explain.



6. Confidence intervals are commonly created that bound a population parameter with a certain level of confidence. Using a very high confidence interval, the median salary for a Georgia Household in 2013 was determined by a government census to be between \$45,400 and \$53,800.

a. In a newspaper they wanted to use a point estimate (i.e. a single number) to represent the median salary. What should be the point estimate based on the interval?



b. The newspaper also wanted to list the margin of error. List the margin of error as both a dollar amount and as a percentage of the point estimate.