

## Day 16. Chapter 15.

With another student, work through these exercises. 15.2, 15.4, 15.6, 15.8, 15.12. Look at the cartoon, discuss, and then discuss 15.10. For now, we're skipping the last section "Planning studies: the power of a statistical test."

At home, later, read the chapter very carefully and do the homework. On the course webpage you can review the answers to these even-numbered problems.

**Chapter 16 – Review Chapter.** All listed problems are supposed to be in bold.

In class next week – review of material from Test 2 as well as review of Chs 10, 11, 14, 15, and 16. We'll also discuss how researchers choose a significance level.

### Two more ideas from Chapter 14.

#### **Idea 1 : What does it mean to have 95% confidence?**

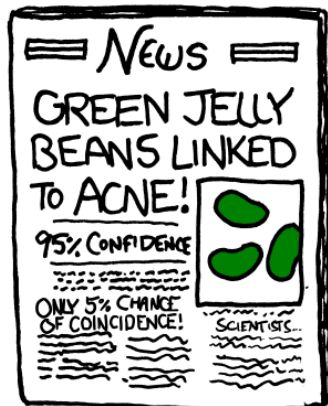
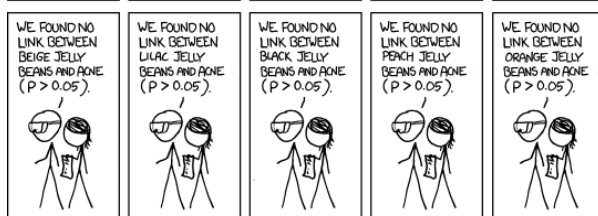
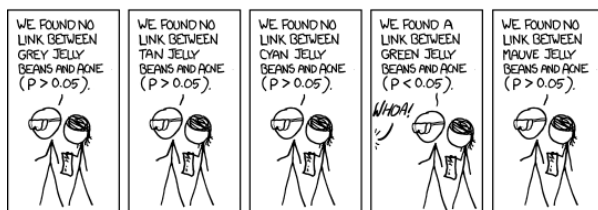
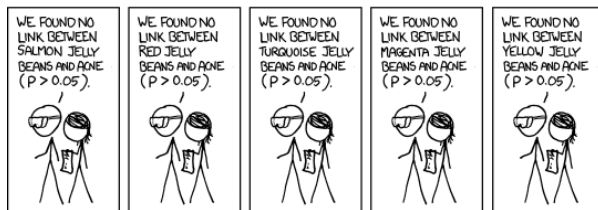
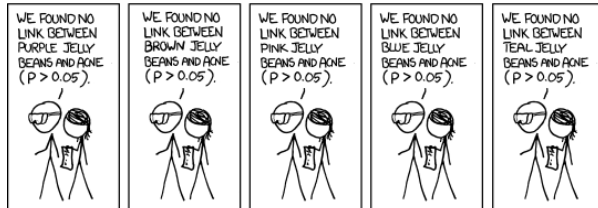
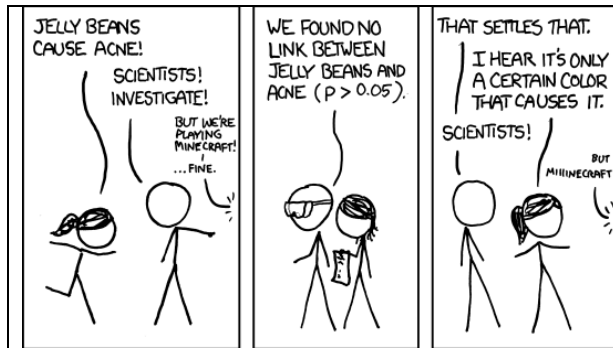
Answer: In "Margin of Error and Confidence Level" page 363, explain what the figure means. What is it telling you? See exercise 14.2 to do more of these yourself. It is very important that you understand this picture and it comes into your mind whenever you are thinking about a confidence interval.

**How does that relate to the way we write** the interpretation of the confidence interval, "I have 95% confidence that the population mean ..... lies between ... and ...." ?

Answer: The confidence interval is about the population mean, and it is not 100% confidence. It is not about the sample mean, nor is it about individual observations from the population.

**Idea 2: Learn to read Table C – the last line, labeled  $z^*$ .** This gives a very abbreviated version of the information from Table A, the normal table. Use Table C to do these:

- Find the z-score for a 95% confidence interval.
- Find the z-score for a 99% confidence interval.
- Recall that, for Exercise 14.6, in class we did the whole hypothesis test for the data set where the  $\bar{x}$  was 125.8. The z-score for the one-sided  $H_a$  test is 1.80 and the p-value is 0.0359. Use Table C to write a statement about the p-value. (Answer: It is between 0.025 and 0.05.) Do you see that the two tables are consistent with each other?
- Recall that, for Exercise 14.7, in class, we did the whole hypothesis test for the dataset where the  $\bar{x}$  was 4.7. The z-score for the two-sided  $H_a$  was -3.67, and the p-value was less than 0.0004. Use Table C to write a statement about the p-value. (Answer: It is less than 0.0005.) Do you see that the two tables are consistent with each other?



From the cartoon website



**A webcomic of  
romance,  
sarcasm, math, and  
language.**

XKCD updates every Monday,  
Wednesday, and Friday.

<http://www.xkcd.com/882/>

Also see

<http://xkcd.com/552/> (Correlation)