| Prob & Stats | Name: | |
|---|---|---|
| Building a Confidence Interval | Date: | Period: |

## Activity 1

**a.** To test your eye dominance hold at arm's length with both hands, an 8" by 11" piece of paper with a 1" by 1" square cut out of the center. Look, with both eyes open, through the square at a relatively small object across the room. Close one eye. If you still see the object, the open eye is the dominant eye. If not then the closed eye is the dominant eye.

**b.** What proportion of the class is right-eye dominant?

**c.** How many students are in class today? **n =**

We will come back to this later.

## Activity 2

In this activity you will be taking samples from a population in which 66% have some characteristic in order to see how close the proportions in the samples come to 66%.

**a.** Use your calculator to simulate taking a sample of size 40 from a population with 66% successes.
> *Use the **randInt(1,100,n) STO> L1:SortA(L1)** to create and store a list of numbers in list L1. **n** is the number of students in class today. Then <u>count</u> the number of digits that are 1 thru 66 which will represent your "successes". Digits 67 thru 100 represent the "failures".)*

**b.** Enter your proportion in the class data table on the computer.

**c.** Repeat this process until everyone has entered four values.

**d.** Tally the class data into your own frequency table.

**e**. Comparing the class proportion from Activity 1 above to the frequency table, is it plausible (meaning it has a reasonable chance of being true) that 66% of the population are right-eye dominant? Explain.

**f.** Answer the following based on the frequency table from **step b**:
    What value cuts off the bottom 5% of proportions _____?
    What value cuts off the top 5% of proportions _____?

**g.** Make a dot plot of the class data. Draw thin vertical lines at the values you wrote in the step above. The interval between these lines represent the 90% confidence interval for a proportion of 0.66.

**h.** Do you think this 90% interval makes sense - in other words do they seem good boundaries for "plausibility" to you? If <u>yes</u>, then explain. If <u>no</u>, then what confidence interval would you use and why?

**Activity 3 - wrap up**
**1.** About 33% of Americans aged 19 to 28 claim the <u>have used</u> an illicit drug other than marijuana. If a random sample of 40 Americans aged 19 to 28 finds 25 who claim to <u>have NOT used</u> such an illicit drug, would you be surprised? Explain.

**2.** According to the US Bureau of Labor Statistics, about 1/3 of women with children under the age of 6 do not participate in the labor force. Would it be plausible for a survey of 40 randomly chosen mothers of children under the age of 6 to find that 12 are not working? Explain.

**3.** According to the 1990 US Census about 22% of people aged 25 to 44 lived alone. In a random sample of 40 people aged 25 to 44, would it be plausible to get 14 who live alone? Show all your work.