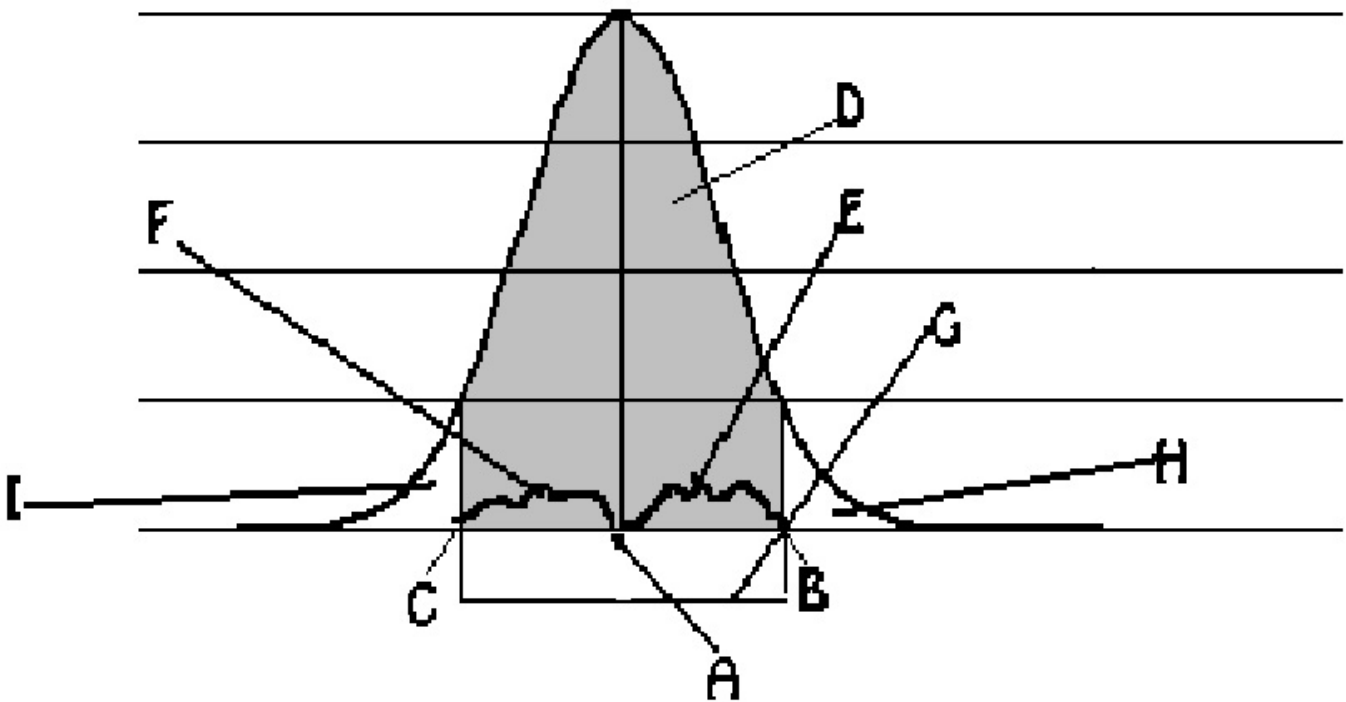


March 23, 2011
It is E370 Time!!!

☐ Announcements

- ✓ The Sunday CL session was rescheduled for this evening from 7:30 to 8:30 in BH006. Justin is on his way home from China, so Xiang Hui will be holding his session.
- ✓ Project part II is due in your lab this week.
- ✓ You have a lab exam next week, for which information will be distributed shortly.

☐ A question to get you thinking: Determine the letter associated with each part of a confidence interval.



Level of Confidence		Point Estimate	
Alpha		Margin of Error	
Critical Values		The Interval	

- What will we do today?
 - ✓ Look at the anatomy of a confidence interval.
 - ✓ Clarify the definitions and origins of the parts of confidence intervals.
 - ✓ Look quickly at two of the warm ups questions.
 - ✓ Look closely at the making of a confidence interval for a proportion.
 - ✓ Practice calculating some confidence intervals.
- Confidence Interval Parts: Where do they come from and how are they related?

Level of Confidence	
Alpha	
Critical Values	
Point Estimate	
Margin of Error	
The Interval	

- Confidence Interval "Formulas"

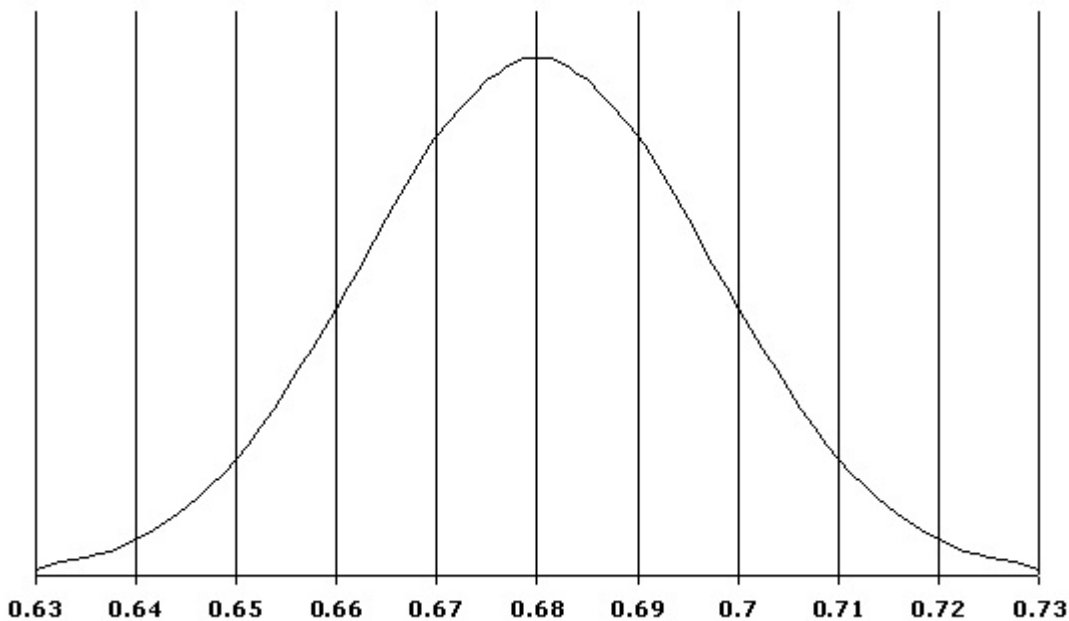
$$\bar{X} \pm z_{\frac{\alpha}{2}} \left(\frac{\sigma}{\sqrt{n}} \right)$$

$$\bar{X} \pm t_{\frac{\alpha}{2}} \left(\frac{s}{\sqrt{n}} \right)$$

$$p \pm Z_{\frac{\alpha}{2}} * \sqrt{\frac{p^*(1-p)}{n}}$$

- A study of 200 insomniacs paid for by the Serta Mattress Company resulted in a 97% confidence interval for the number of sheep counted by the average insomniac. An insomniac is a person who has difficulty falling asleep. The confidence interval was [332, 368].
 - ✓ What is the level of confidence?
 - ✓ What is alpha?
 - ✓ How would we determine the critical values?
 - ✓ What is the point estimate calculated by the study?
 - ✓ What is the value of the margin of error?

- Of all American adults, 18-29 year olds make up about 22%. A recent Pew Research study found, of 721 18-29 year olds, 68% were likely non-voters.
- ✓ Estimate a 97% confidence interval for the percentage of 18-29 year olds who are non-voters.
 - ◇ Random Variable
 - ◇ Distribution
 - ◇ Level of Confidence
 - ◇ Alpha
 - ◇ Critical Values
 - ◇ Point Estimate
 - ◇ Margin of Error
 - ◇ Interval



- A sample of 25 deliveries from an automobile parts supplier were timed and recorded. The sample revealed a mean of 57.79 minutes, and a standard deviation of 6.58 minutes. Delivery times are thought to be normally distributed.
 - ✓ Estimate a 96% confidence interval for the mean delivery time of all automobile parts from this supplier.

 - ✓ Re-estimate the 96% confidence interval for the mean delivery time of all automobile parts from this supplier, assuming $n=100$.

 - ✓ How do these confidence intervals differ? Why?

- In 1991 the Gallup Poll asked a random group of 723 Americans if they had ever been bitten by a dog. Forty-two percent indicated that they had been bitten.
 - ✓ Estimate a 98% confidence interval for the true proportion of Americans who have been bitten by a dog.

 - ✓ Estimate a 98% confidence interval for the true proportion of Americans who have been bitten by a dog assuming that the sample proportion was 10%.

 - ✓ How do these confidence intervals differ? Why?