TOPIC: CONFIDENCE INTERVALS & HYPOTHESIS TESTING

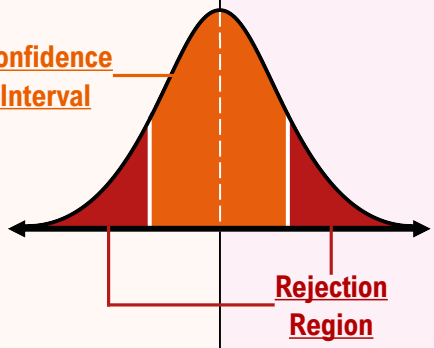
Confidence Intervals & Hypothesis Testing

◆ You can use a **confidence interval** to reach the same conclusion as a 2-tail **hypothesis test**:

► If the claimed value _____ in the confidence int., then the corresponding test stat. ___ in the **rejection region**.

EXAMPLE Use $\bar{x} = 10$, $\sigma = 2$, & $n = 36$ for the following.

Confidence Interval	Hypothesis Test
(A) Create a 95% confidence interval for μ.	(B) Use $\alpha = 5\%$ to test H_0: $\mu = 11$ vs H_a: $\mu \neq 11$.
Critical Value: $\alpha =$ _____	*Critical Value:* $\alpha = 0.05$
$z_{\alpha/2} =$ _____	$z_{\alpha/2} = 1.96$
Point Estimate: $\bar{x} =$ _____	*Test Statistic:* $\bar{x} = 10$
Margin of Error: $\sigma =$ _____	$\sigma = 2$
$n =$ _____	$n = 36$
$E = z_{\alpha/2} \cdot \frac{\sigma}{\sqrt{n}} =$	$z = \frac{(\bar{x} - \mu)}{\sigma/\sqrt{n}} =$
Because 11 is **[OUT | IN]**-side interval, we **[REJECT | FTR]** the claim that $\mu = 11$.	Because test stat. is **[IN | OUT]**-side rejection region, we **[REJECT | FTR]** the claim that $\mu = 11$.
There is **[ENOUGH | NOT ENOUGH]** evidence to suggest…	



◆ Note: These methods are equivalent for μ & σ, but not always for p.

PRACTICE

A teacher claims her students' average test score is 75. A researcher suspects it's different. A sample of 25 students has a mean score of 78 with a standard deviation of 6.

(A) Create a 90% confidence interval for the mean test score.

(B) At the 0.01 significance level, test the claim.