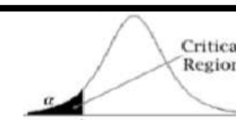
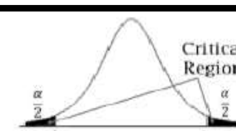
Crafton Hills College Tutoring Center

Chapter 7 Hypothesis Tests With <u>One</u> Sample

		Pop. Proportion, p 7.4		Mean, μ (σ Known) 7.2		Mean, μ (σ Unknown) 7.3		Standard Deviation, σ 7.5	
		Null	Alternative	Null	Alternative	Null	Alternative	Null	Alternative
Claims	**Left Tailed:**	$H_o: p \geq p_o$	$H_a: p < p_o$	$H_o: \mu \geq \mu_o$	$H_a: \mu < \mu_o$	$H_o: \mu \geq \mu_o$	$H_a: \mu < \mu_o$	$H_o: \sigma \geq \sigma_o$	$H_a: \sigma < \sigma_o$
	Right Tailed:	$H_o: p \leq p_o$	$H_a: p > p_o$	$H_o: \mu \leq \mu_o$	$H_a: \mu > \mu_o$	$H_o: \mu \leq \mu_o$	$H_a: \mu > \mu_o$	$H_o: \sigma \leq \sigma_o$	$H_a: \sigma > \sigma_o$
	Two Tailed:	$H_o: p = p_o$	$H_a: p \neq p_o$	$H_o: \mu = \mu_o$	$H_a: \mu \neq \mu_o$	$H_o: \mu = \mu_o$	$H_a: \mu \neq \mu_o$	$H_o: \sigma = \sigma_o$	$H_a: \sigma \neq \sigma_o$
<u>Test Statistics</u> *ALWAYS USE A POSITIVE TEST STAT for <u>P-VALUE Calculations in Excel</u>!!!		$Z = \frac{(\hat{p} - p)}{\sqrt{\frac{pq}{n}}}$ Where: $\hat{p} = \frac{x}{n}$		$Z = \frac{(\bar{x} - \mu)}{\left(\sigma/\sqrt{n}\right)}$		$t = \frac{(\bar{x} - \mu)}{\left(s/\sqrt{n}\right)}$		$\chi^2 = \frac{(n-1)s^2}{\sigma^2}$	
P-Value	**Left Tailed:**	=NORM.S.DIST($\boldsymbol{z}$,True)		=NORM.S.DIST($\boldsymbol{z}$,True)		=T.DIST(t, df,True)		=CHISQ.DIST(X^2, df,True)	
	Right Tailed:	=1 − NORM.S.DIST($\boldsymbol{z}$,True)		=1 − NORM.S.DIST($\boldsymbol{z}$,True)		=T.DIST.RT(t, df)		=CHISQ.DIST.RT(X^2, df)	
	Two Tailed:	=2*(1-NORM.S.DIST($\boldsymbol{z}$,True))		=2*(1-NORM.S.DIST($\boldsymbol{z}$,True))		= T.DIST.2T(t, df		=2*(CHISQ.DIST.RT(X^2,df))	

Reject H₀ When:	*(P-Value is Less than Alpha): P-Value* $< \alpha$	**<u>Fail</u> to Reject H₀ When:**	*(P-Value is Greater than Alpha): P-Value* $> \alpha$
Reject H₀ (H₀ Claim):	*There is sufficient evidence to **reject** the claim.*	**Reject H₀ (Hₐ Claim):**	*There is sufficient evidence to **support** the claim.*
Fail to Reject H₀ (H₀ Claim):	*There is **not** sufficient evidence to **reject** the claim.*	**Fail to Reject H₀ (Hₐ Claim):**	*There is **not** sufficient evidence **support** the claim.*

Critical Values:	z_o	z_o	t_o	X_L^2 and X_R^2
Left Tailed:	=NORM.S.INV(α)	=NORM.S.INV(α)	=T.INV(α, df)	=CHISQ.INV(α, df)
Right Tailed:	=NORM.S.INV($1-\alpha$)	=NORM.S.INV($1-\alpha$)	=T.INV($(1-\alpha), df$)	=CHISQ.INV.RT(α, df)
Two Tailed:	=NORM.S.INV($\alpha/2$)	=NORM.S.INV($\alpha/2$)	=T.INV.2T(α, df)	USE BOTH ABOVE BUT WITH $\alpha/2$

Right Tailed	**Reject H₀:**	***Test stat** falls within the rejection region: Critical Value* $\leq$ *Test Statistic*	
	Fail To Reject H₀:	***Test stat** does **NOT** fall within the rejection region: Test Statistic* $<$ *Critical Value*	
Left Tailed	**Reject H₀:**	***Test stat** falls within the rejection region: Test Statistic* $\leq$ *Critical Value*	
	Fail To Reject H₀:	***Test stat** does **NOT** fall within the rejection region:: Critical ValueTest Statistic*	
Two Tailed	**Reject H₀:**	***Test stat** falls within both rejection regions: |Test Statistic|* $\geq$ *|Critical Value|*	
	Fail to Reject H₀:	***Test stat** does **NOT** fall within either rejection region: |Test Statistic|* $<$ *|Critical Value|*	