Guided Notes -- 8.2 Estimating a Population Proportion

- 1. Give 2 examples of a *population proportion: p*?
- 2. How do you calculate a *sampling proportion: p*?
- 3. Describe the "sampling distribution of a sample proportion \hat{p} " "as learned in section 7.2. Use the correct variable notations.
 - Shape (and state conditions)
 - Center (mean of the sampling distribution of \hat{p})
 - Spread (standard deviation of the sampling distribution of \hat{p})
 - What condition is requred to calculate the standard deviation?

General form to calculate a confidence interval is on the **<u>Green Sheet</u>**:

statistic ± (critical value) • (standard deviation of the statistic)

- 4. What <u>statistic</u> will be used to calculate the cofidence interval for proportions?
- 5. How does the standard deviation differ to to standard error for the sampling distribution of \hat{p} ?

Formula for standard deviation of sampling distribution of \hat{p} :	Formula for standard error of sample proporttion \hat{p} to calculate CI :	
$\boldsymbol{\mu}_{\hat{p}} =$	SE (p̂)=	

a) Define *standard error* of a statistic

b)	(in context)	The SE (ĵ)		_ describes how close the	
			(\hat{p}) will be, on	, to the	
			(p) in repeated	of size	

- How do you get the <u>critical value (z*)</u>? <u>Hint</u>: follow steps outlined on pages 487-488. Use the graphing calculator. Do <u>not</u> use Table A. Use invNorm.
 - a) What is the value of z^* for a 95% confidence interval? Include a sketch (see figure 8.8).

- b) What is the value of z^* for a 90% confidence interval? Include a sketch.
- c) What is the value of z^* for a 99% confidence interval? Include a sketch.

- 7. What is the formula for a *one-sample z interval for a population proportion*?
 - a) Describe z*
 - b) What part of this formula is the margin of error (ME)?
 - c) What conditions are required?
- 8. The 4 step process (simplified) to contruct and interpret a confidence interval.

	Example "Teens Say Sex Can Wait"
Follow these required steps:	Complete these steps to construct the 95% CI for p.
1) Define population parameter	p=
2) State the inference method	1-Sample Z-Interval for a proportion
3) Check conditions	Random
	Normal
	Independent
4) Sketch graph (label CL and p)	
5) Show calculations with numbers <u>and</u> state SE(p̂)	
Check with [1-PropZInt]	
6) Answer in contex	

9. What formula is used to determine the sample size necessary for a given margin of error?

10. Refer to thr <u>Example</u> "Customer Satisfaction," to complete the table below. Clearly show the steps to determine the sample sizes.

a) Use the p to produce the largest sample size in this example.	b) Now, find the sample size if you are told use $\hat{p} = .31$	
\$12e in this example. $\hat{p} = \$	<i>use p</i> = .31 <i>p</i> = .31 <i>ME</i> =.03	CL=95% z*=

11. What is the rounding rule for determining sample sizes?