MAT 223, Discussion Questions 11.16

1. What conditions need to be satisfied to use the normal approximation for proportions?

and $np > 5$
$n(1-p) > 5$

2. Find a 95% confidence interval for $\hat{p} = 59\%$ and a sample size of 1100.

1 Prop Z Int

$X = .59 * 1100 = 649 \leftarrow$ must be a whole #
$n = 1100$
C-level: .95

$(.56094, .61906)$

3. How big a sample size is needed to estimate a true proportion within 1%? (The most conservative estimate for p, if it is not known, is to assume a value of 50%.)

$$n = \left(\frac{z_{\alpha/2}}{E}\right)^2 p(1-p) = \left(\frac{1.96}{.01}\right)^2 (.5)(.5) = 9604$$

4. The student newspaper at a college asks a simple random sample of 250 undergraduates, "Do you favor eliminating supplemental fees for lab courses?" In all, 150 of the 250 are in favor of eliminating such fees. Find a 95% confidence interval not using the quick method.

1 Prop Z Int

$X = 150$
$n = 250$

C-level: .95

$(.53927, .66073)$

5. A recent Gallup Poll interviewed a random sample of 1523 adults. Of these, 868 bought a lottery ticket in the past year. Construct a 99% confidence interval for these results.

1 Prop Z Int

$X = 868$
$n = 1523$
C-level: .99

$(.41759, .48327)$

6. A poll of 1234 adults found that 62% expect an increase in environmental pollution in the next decade. Take the poll's sample to be a simple random sample of all adults. What is an 98% confidence interval for these results?

1 Prop Z Int

$X = .62 * 1234 = 765.08 \Rightarrow 765$ (must be a whole #)
$n = 1234$
C-level: .98

$(.58779, .65208)$

7. Read and comment on the attached article about learning strategies.
https://www.newscientist.com/article/dn27187-know-it-all-10-secrets-of-successful-learning/?full=true&print=true#.VRbbVI7F-p0