One Population Proportion
Confidence Interval, Sample Size & TI

1. **Final Answer:** $\cdots < P < \cdots$

2. **General Format:** $\hat{p} - E < P < \hat{p} + E$

3. **Formula for $\hat{p}$:** $\hat{p} = \frac{x}{n}$

4. **Formula for $\hat{q}$:** $\hat{q} = 1 - \hat{p}$

5. **Formula for x, if decimal, round up:** $x = n \cdot \hat{p}$

6. **Formula for margin of error E:** $E = z_{\alpha/2} \cdot \sqrt{\frac{\hat{p} \cdot \hat{q}}{n}}$

7. **Finding $z_{\alpha/2}$ Using TI:** **2ND > VARS > invNorm**

8. **Finding Confidence Interval Using TI:** **STAT > TESTS > 1-PropZInt**

9. **Margin of error from CI:** $E = \dfrac{\textbf{CI Upper Value} - \textbf{CI Lower Value}}{2}$

10. **Point estimate $\hat{p}$ from CI:** $\hat{p} = \dfrac{\textbf{CI Upper Value} + \textbf{CI Lower Value}}{2}$

11. **Minimum sample size by formula:**

    - $\hat{p}$ known $\qquad n = \hat{p} \cdot \hat{q} \left(\frac{z_{\alpha/2}}{E} \right)^2$

    - $\hat{p}$ unknown $\qquad n = 0.25 \left(\frac{z_{\alpha/2}}{E} \right)^2$

    - Always round up.