Assignment 6 - Due Monday 23

1. (2 points) Liam is interested in making a one sample z-interval for the proportion of adults who claim they are good at math. In order to estimate p, the proportion of parents who claim to be 'math-heads', what is the smallest sample size possible to obtain a margin of error of ≤ 0.05?

2. (2 points) Members of an online gaming league play thousands of games over the course of a year. Suppose that scores of individual games have a known standard deviation of $\sigma = 30$ points. Raunak plans on taking a random sample of n games from this population to make a 95% confidence interval for the mean score. He wants the margin of error to be no more than 10 points. What is the smallest approximate sample size required?

3. (2 points) Peter works at a toy panda factory and would like to estimate the mean weight in grams of the factory's toy pandas. he'll sample n pandas to build a 90% confidence interval for the mean with a margin of error of no more than 15 g. Preliminary data suggests that $\sigma = 60$ is a reasonable estimate for the standard deviation of these weights.

4. (2 points) Anika wants to use a one-sample z-interval to estimate what proportion of voters in a country plan on voting for a certain candidate. She wants the margin of error to be no more than $\pm 3\%$ at 99% confidence. What is the smallest sample size required to obtain the estimate?

5. A simple random sample of 34 legendary Pokemon and 28 non-legendary Pokemon have attack means $\overline{x}_1 = 71.4$, $\overline{x_2} = 109$, with $s_1^2 = 935$, and $s_2^2 = 966$. Is there statistical evidence supporting a significant difference between the true mean of legendary and non-legendary Pokemon?