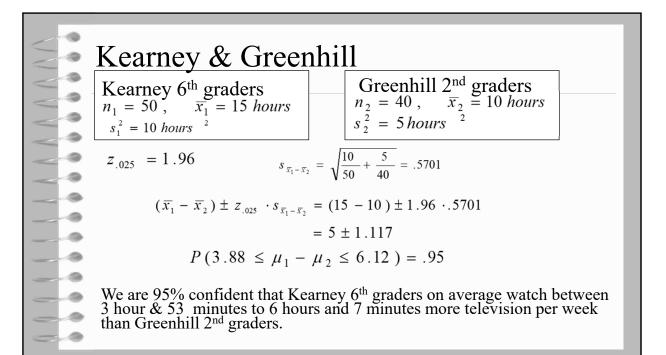
In class exercise

Each member of a random sample of 50 sixth-graders in Kearney kept a record for one week of the amount of time spent watching television. The sample mean and sample variance are 15 hours and 10 hours².

A second random sample of 40 second-graders in the Greenhill school district also kept records for one week of the amount of time spent watching television. The sample mean and sample variance are 10 hours and 5 hours².

Construct a 95% confidence interval for the mean difference between Kearney 6th graders and Greenhill 2nd graders.



In class exercise

A Gallup poll found that 16% of 505 men and 25% of 496 women surveyed favored a law forbidding the sale of all beer, wine, and liquor throughout the nation. Develop a 95% confidence interval for the difference between the proportion of women who favor such a ban and the proportion of men who favor such a ban.

$$\frac{\overline{p}_{1} = .25 (women)}{n_{1} = 496} \qquad \overline{p}_{2} = .16 (men) \\
n_{2} = 505$$

$$(\overline{p}_{1} - \overline{p}_{2}) \pm z_{\alpha/2} \cdot s_{\overline{p}_{1} - \overline{p}_{2}} \\
s_{\overline{p}_{1} - \overline{p}_{2}} = \sqrt{\frac{\overline{p}_{1}(1 - \overline{p}_{1})}{n_{1}} + \frac{\overline{p}_{2}(1 - \overline{p}_{2})}{n_{2}}} = \sqrt{\frac{.25 \times .75}{496} + \frac{.16 \times .84}{505}} =.025 \\
(.25 - .16) \pm 1.96 \times .025 \Rightarrow .09 \pm .05 \\
\overline{p(.04 \le p_{1} - p_{2} \le .14)} = .95$$
We are 95% confident that between 4% and 14% more women favor such a ban than men.