

Day 8

- A random sample of 45 students at WHS were asked if they would prefer a later start time for the school day. Twenty of the students said "yes."
 - What is the sample proportion of students answering "yes"? Report your answer as a decimal.
 - If a different random sample of 45 students were asked the same question, do you think you'd get the same sample proportion? Explain why or why not.
 - The margin of error for a 95% confidence interval for this survey is about 0.15. What is the 95% confidence interval for the true proportion of WHS students who wish to have a later school start time?
 - Explain what is meant by a 95% confidence interval.
 - The school paper reports that more than 50% of students want a later start time. Comment on the accuracy of this statement.
- A statistics student wants to know the true proportion of yellow candies in a bag of M&M's. She opens a bag of M&M's and finds that 14 of the 75 candies are yellow.
 - What is the sample proportion of M&M's that are yellow? Report your answer as a decimal.
 - Is the sample proportion likely to be the same as the true population proportion of yellow M&M's? Why or why not?
 - The student determines that the margin of error for a 95% confidence interval is about 0.09. Determine a 95% confidence interval for the true proportion of yellow M&M's.
 - Explain what is meant by a 95% confidence interval.
 - The M&M website reports that while there is a lot of variation in the color of M&M's in various bags, on average the proportion of yellows is 0.13. Comment on the accuracy of this statement.
- The girls' basketball coach is curious about the average (mean) height of WHS girls. She measures a random sample of 30 girls and measures a mean height of 55".
 - Is the mean height of a different random sample of 30 girls at WHS likely to be 55"? Explain.
 - The standard deviation of girls' heights is about 2". Use this value to find the Standard Error of repeated measurements of the mean height of 30 girls.
 - Use the Standard Error from (b) to find the Margin of Error for a 95% confidence interval.
 - Determine a 95% confidence interval for the mean height of WHS girls.
 - Explain what it means to be 95% confident.
- A teacher wonders if an on-line video is effective in improving student knowledge about histograms. In one class period, she gives a random sample of 12 students a pre-test, then shows them the video, and then gives the students a similar post-test. The difference in post-test scores minus pre-test scores is shown:

13	6	8	7	8	10	0	3	15	4	11	9
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- Draw a histogram of the differences in test scores and describe its shape. Use an interval width of 2.
- Calculate the mean increase in test score for this sample of 12 students. Do you think a different random sample would have given the same mean?
- The teacher estimates that the standard deviation of test scores is about 4. Use this value to find the Standard Error and the Margin of Error for a 95% confidence interval
- Determine a 95% confidence interval for the mean increase in test scores.
- Can the teacher conclude that watching the video will improve the average test scores of her students by at least 5 points?