1. The Oregon Ducks football team has played and won 13 games this season.
In 7 home games, they scored 24, 37, 31, 32, 38, 39, and 49 points.
In 6 away games, they scored 49, 34, 35, 38, 16, and 45 points.
    a. Create a back-to-back stemplot to illustrate Home vs Away scoring.
    b. Find the mean and standard deviation for Home scoring.
    c. Find the mean and standard deviation for Away scoring.
    d. Did the Ducks score more points during Home or Away games?

2. In 2024, the average GMAT score was 553 with a standard deviation of 86. Assume GMAT scores are normally distributed.
    a. What percentage of scores are less than 400?
    b. What percentage of scores are higher than 600?
    c. What percentage of scores are higher than 700?
    d. What percentage of scores are between 600 and 700?
    e. What GMAT score do you need to be in the top 10%?

3. In a 2024 poll of 800 registered voters, 392 indicated they approve of the job Jared Polis is doing as Governor of Colorado. Produce a 95% confidence interval to estimate the proportion of Coloradoans who approve of Governor Polis.

4. Conduct the following hypothesis tests. Use α=0.05.
    a. Ho: μ = 57, Ha: $\mu \neq$ 57; x-bar = 55, s = 8, and n=100.
    b. Ho: μ = 25, Ha: μ < 25; x-bar = 23, s = 9, and n=40.
    c. Ho: μ = 45, Ha: μ > 45; x-bar = 48, s = 10, and n=64.

5. Construct a 95% confidence interval for each of the following.
    a. $\bar{x}$=50, s=4, n=25
    b. $\bar{x}$=2.8, s=1.2, n=40
    c. $\bar{x}$=75, s=12, n=36

6. According to the Singapore Energy Market Authority, the installed capacity of residential grid-connected solar photovoltaic (PV) systems grew from 5 to 32 MWp (2016-2022). Use regression analysis to estimate future residential solar capacity. Show your work!

Year	Installed Residential Solar Capacity (MWp)
1	5
2	7
3	9
4	12
5	16
6	20
7	32

    a. Draw a scatter plot to illustrate the trend in renewable energy use.
    b. Calculate Sum of Squares
        i.   SSxx
        ii.   SSyy
        iii.   SSxy
    c. Calculate the slope of the regression line.
    d. Calculate the y-intercept.
    e. Write the Equation of the Regression Line.
    f. Calculate the Pearson Correlation Coefficient.
    g. Calculate R-Squared.
    h. Forecast renewable energy use for years 8 and 9. [Yes, this is extrapolation and, as such, unreliable. But it may still may provide useful guidance.]

7. Answer the following questions in a few sentences.
    a. Why is it useful to know both the median and mean of a distribution?
    b. What is the purpose of conducting prospective and retrospective studies?
    c. What is a spurious correlation?