

Mathematics

Unit 2: Data Analysis, Statistics, and Probability

<p>Essential Understandings</p>	<ul style="list-style-type: none"> ▪ Statistics can be used to describe phenomenon. The basic principles of probability can be used to make predictions about a variety of situations.
<p>Essential Questions</p>	<ul style="list-style-type: none"> ▪ How does one choose the appropriate display for a specific set of data? ▪ How does one draw conclusions about the data from the display? ▪ What type of data is best displayed using a scatter plot? ▪ How can predictions be made using scatter plots? ▪ If a change is made in a set of data, what resulting changes are made in the mean, median, and mode? ▪ How does one calculate the values for probability of simple events? ▪ What are the possible values for probability? ▪ What is the difference between theoretical and experimental probability?
<p>Essential Knowledge</p>	<ul style="list-style-type: none"> ▪ Data can be displayed in a variety of forms including pictograms, bar graphs, histograms, line graphs, circle charts, and box and whisker plots. ▪ The display for data varies depending upon the purpose of the display. ▪ A scatter plot can be used to show relationships and make predictions between two sets of data. ▪ Making changes to a set of data may lead to changes in the values of the mean, median and mode. ▪ Probability values can be written as ratios which compare positive outcomes to the total number of possible outcomes. ▪ Probability values are between zero and one inclusive. ▪ Probability values may be written in fraction, decimal, and percent form. ▪ Probability values can be found for actual events (experimental) and for predicted events (theoretical).
<p>Vocabulary</p>	<ul style="list-style-type: none"> ▪ <u>Terms:</u> <ul style="list-style-type: none"> ○ box and whisker plots, correlation, interquartile range, lower event, extreme, negative correlation, odds, positive correlation, quartiles, upper extreme,

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<p align="center">Essential Skills</p>	<ul style="list-style-type: none"> ▪ Create tables, pictograms, bar graphs, line graphs, pie/circle charts, stem and leaf plots, box and whisker plots, and histograms using pencil and paper and electronic technologies. (I, R, A) ▪ Draw conclusions based on tables, pictograms, bar graphs, line graphs, pie/circle charts, stem and leaf plots, box and whisker plots, and histograms using pencil and paper and electronic technologies. (I, R) ▪ Use scatter plots to analyze data and make predictions. (I, R) ▪ Determine the effect of changes in data on the mean, median and mode. (I, R) ▪ Write probabilities as ratios to describe positive outcomes compared to the total number of possible outcomes. (A) ▪ Understand that probability is a ratio describing positive outcomes compared to the total number of possible outcomes. (R, A) ▪ Write probability values as fractions, decimals and percents. (R, A) ▪ Write probability values for theoretical and experimental situations. (R, A) ▪ Interpret probabilities between and including zero and one and explain why zero and one are the upper and lower limits for probability values. (R/A)
<p align="center">Related Maine Learning Results</p>	<p>B. Data Data Analysis B1.Students use graphs and charts to represent, organize, interpret, and draw inferences from data.</p> <ol style="list-style-type: none"> a. Create tables, pictograms, bar graphs, line graphs, pie charts, stem and leaf plots, box and whisker plots, and histograms using pencil and paper and electronic technologies. b. Draw conclusions based on graphs and charts including tables, pictograms, bar graphs, line graphs, pie charts, stem and leaf plots, box and whiskers plots, and histograms. <p>Probability B2.Students understand and apply concepts of probability to simple events.</p> <ol style="list-style-type: none"> a. Describe events as likely or unlikely and discuss the concept of likelihood using such word phrases as “certain”, “equally likely”, and “impossible”. b. Predict the probability of outcomes of simple experiments and verify predictions using the understanding that the probability of an occurrence is the ratio of the number of actual occurrences to the number of possible occurrence. c. Interpret probabilities between and including zero and one and explain why zero and one are the upper and lower limits for probability values.

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<p>NECAP</p>	<p>NECAP Data Analysis, Statistics and Probability M (DSP) 7-1 ...interprets...scatter plots that represent discrete relationships... M (DSP) 7-2 Analyze patterns...to determine their effect on mean, median, mode; and evaluate the sample from which the statistics were developed (bias). M (DSP) 7-3 Identifies or describes representations...that best display a given set of data or situation.</p>
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