

**Mathematics**

**Unit 2: Data Analysis, Statistics, and Probability**

<p><b>Essential Understandings</b></p>	<ul style="list-style-type: none"> <li>▪ Data can be collected and organized using graphs and tables.</li> <li>▪ Graphs and tables provide a concise way of displaying data, allowing for analysis.</li> <li>▪ Graphs and tables are used to draw conclusions and make predictions.</li> <li>▪ Both the theoretical and experimental probability of an event can be expressed using ratios.</li> </ul>
<p><b>Essential Questions</b></p>	<ul style="list-style-type: none"> <li>▪ What are the appropriate tables and/or graphs to use for a given data set?</li> <li>▪ How can data be organized and displayed using tables (T, stem and leaf, frequency) and graphs (single and double line and bar, picture, and pie/circle)?</li> <li>▪ What predictions can be made from a given data set?</li> <li>▪ What counting strategies can be used to solve problems?</li> <li>▪ What is the counting principle?</li> <li>▪ What is the median?</li> <li>▪ How is the median determined?</li> <li>▪ How can the mean, median, mode and range be used to interpret data?</li> <li>▪ What is the best central tendency to use with a given set of data?</li> <li>▪ What is a ratio?</li> <li>▪ How can ratios be used to indicate the theoretical and experimental probability of an event?</li> <li>▪ What is an outlier?</li> </ul>
<p><b>Essential Knowledge</b></p>	<ul style="list-style-type: none"> <li>▪ Data is collected, organized in a table and/or graph, and analyzed.</li> <li>▪ Collected data is used to make predictions.</li> <li>▪ Counting strategies are used to make problem solving efficient and accurate.</li> <li>▪ The counting principle is used to find the number of possible outcomes. If there are <math>m</math> possible outcomes for one event and <math>n</math> possible outcomes for another event, <math>m \times n =</math> the total number of possible outcomes.</li> <li>▪ The median represents the middle most value in a set of data arranged in numerical order.</li> <li>▪ A ratio is the comparison of 2 quantities using division. It is written as : <math>2/3</math>, 2 to 3, and 2:3</li> <li>▪ Ratios are used to show probability values.</li> <li>▪ An outlier is a value that is much greater or much less than the other values in a data set.</li> </ul>
<p><b>Vocabulary</b></p>	<ul style="list-style-type: none"> <li>▪ <u>Terms:</u> <ul style="list-style-type: none"> <li>▪ stem and leaf plot, outlier, frequency table, counting principle, tree diagram, prediction, x- and y-axis, certain (outcomes), fair vs. unfair</li> </ul> </li> </ul>

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<b>Essential Skills</b>	<ul style="list-style-type: none"> <li>▪ Read and interpret pie/circle graphs to make predictions and solve problems. (R, A)</li> <li>▪ Use graphs (line, bar, picture, and pie/circle) and tables (T, stem and leaf (I), and frequency) to analyze data, to formulate or justify (I) conclusions and to make predictions. (R, A)</li> <li>▪ Collect and organize own data using the above graphs and tables. R/A</li> <li>▪ Analyze the mean, median, mode and dispersion (range) for a set of data to solve problems. (I)</li> <li>▪ Write probabilities as ratios to describe positive outcomes compared to the total number of possible outcomes. (I, R)</li> <li>▪ Determine the probability of an event using experimental and theoretical probability. (I)</li> <li>▪ Use counting techniques (organized lists, tables, tree diagrams, and the counting principle) to solve problems. (I, R, A)</li> </ul>
<b>Related Maine Learning Results</b>	<p>B. Data            Data Analysis            B2.Students read and interpret pie graphs.            Data Analysis            B3.Students find and compare the mean, median, mode, and range for sets of data.</p>
<b>NECAP</b>	<p>NECAP            Data, Statistics, and Probability            M (DSP) 6-1            Interprets...line graphs or stem and leaf plots...to analyze the data to formulate or justify conclusions, to make predictions...            M (DSP) 6-2            M (DSP) 6-4            Use counting techniques to solve problems in context involving combinations or simple permutations using a variety of strategies (list, tables, tree diagrams, fundamental counting principle).            M (DSP) 6-5            For a probability event...determine the experimental or theoretical probability.</p>