

MATHEMATICS CURRICULUM PROJECT

GOAL 10: Collect, organize and analyze data using statistical methods; predict results; interpret uncertainty using concepts of probability.

Standard A: Organize, describe and make predictions from existing data.

Standard B: Formulate questions, design data collection methods, gather and analyze data and communicate findings.

As a result of their schooling students will be able to...

Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
<ol style="list-style-type: none"> 1. Organize data and put into pictographs, tallies, tables, and bar graphs. 2. Gather data and answer simple questions about the data collection. 	<ol style="list-style-type: none"> 1. Organize, describe, and label simple data displays such as pictographs, tallies, tables, and bar graphs. 2. Compare numerical information derived from tables and graphs. 3. Gather data to answer a simple question. 	<ol style="list-style-type: none"> 1. Organize and interpret simple data displays such as pictographs, tallies, tables, and bar graphs. 2. Make predictions from simple data. 3. Gather data by creating and using interview questions. 	<ol style="list-style-type: none"> 1. Read, organize, display and verbally explain data using pictures, objects, charts, tables and graphs. 2. Make simple predictions based on given data. 3. Ask and answer questions based on given data. 4. Develop a survey of questions, gather data and create display to communicate information. 5. Make simple interpretations of displays of tallies, charts, tables or graphs. 6. Complete missing parts of a graph, chart, or table for given data. 7. Introduce the term “mode” in relation to a given set of data. 8. Construct tally charts, pictographs and bar graphs. Construct circle graphs to show $\frac{1}{2}$ and $\frac{1}{4}$. 	<ol style="list-style-type: none"> 1. Interpret and represent data using tables and graphs such as bar graphs, pictographs, line plots and line graphs. 2. Recognize and predict trends of varying data sets. 3. Arrange given data in order, least to greatest or greatest to least, and determine minimum value, maximum value, range, mode, and median for an odd number of data points. 4. Compare different representations of the same data and evaluate how well each representation shows important aspects of the data. 5. Propose and justify conclusions and predictions that are based on data. 6. Collect data using observations and experiments. 7. Propose a further investigation to verify or refute a prediction.

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Grade 5	Grade 6	Grade 7	Grade8/Pre-Algebra/Algebra
<ol style="list-style-type: none"> 1. Represent given data using pictograph, line plot, Venn diagram, double bar graphs, double line graphs, and stem and leaf plots with and without technology. 2. Select an appropriate graph format to display given data. 3. Read, interpret, infer, predict, draw conclusions, and evaluate data from any graph. 4. Determine mean, median, mode, minimum value, maximum value, and range, and discuss what each does to help interpret a given set of data. 5. Design investigations to address a question and consider how data-collection methods affect the nature of a data set. 6. Propose and justify conclusions and predictions that are based on data, and design studies to further investigate the conclusions or predictions. 	<ol style="list-style-type: none"> 1. Construct, read, interpret, infer, predict, draw conclusions, and evaluate data from various displays, including circle graphs. 2. Recognize and explain misleading displays of data due to inappropriate intervals on a scale. 3. Gather data by conducting simple simulations. 4. Collect data over time with or without technology. 	<ol style="list-style-type: none"> 1. Construct, read, interpret, infer, predict, draw conclusions, and evaluate data from various displays. 2. Find, use, and interpret measures of central tendency. 3. Construct an equivalent data representation given data in a different form. 4. Recognize potential bias in data collection methods or data presentation. 5. Select and use appropriate data gathering techniques. 6. Formulate new questions using conjectures, and plan new studies to answer them. 	<ol style="list-style-type: none"> 1. Read, interpret (including possible misleading characteristics) and make predictions from data represented in a variety of graphs. 2. Compare and contrast the effectiveness of different representations of the same data. 3. Create a bar graph, chart/table, line graph, or circle graph and solve a problem using the data in the graph for a given set of data. 4. Identify or draw a reasonable approximation of the line of best fit from a set of data or a scatter plot and use the line to make predictions. 5. Analyze and apply measures of central tendency (mode, range, median and mean) in problem-solving situations.

MATHEMATICS CURRICULUM PROJECT

GOAL 10: Collect, organize and analyze data using statistical methods; predict results; interpret uncertainty using concepts of probability.
 Standard C: Determine, describe and apply the probabilities of events.

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Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
1. Make predictions based on given data.	1. Identify possible and impossible results of probability events using concrete materials. 2. Determine all possible outcomes of a given situation.	1. Identify and discuss likely, unlikely, and impossible probability events. 2. Communicate and display results of probability events in order to make predictions of future events.	1. Make predictions, estimate and guess the outcomes of an event in a controlled setting. 2. List all possible outcomes using terms “certain,” “most likely,” “least likely,” “equally likely,” “possible” and “impossible.” 3. Decide if predictions were reasonable.	1. List all possible outcomes of a single event and tell whether an outcome is certain, impossible, likely, or unlikely. 2. Describe the probability of an event using terminology such as “5 chances out of 8.”

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Grade 5	Grade 6	Grade 7	Grade8/Pre-Algebra/Algebra
<ol style="list-style-type: none"> 1. List all possible outcomes of compound, independent events (e.g., toss a coin and spin a spinner). 2. Assign a value of zero to probabilities that are impossible and a value of one to probabilities that are certain. 3. Express simple probabilities as a fraction between zero and one. 4. Predict the probability of outcomes of simple experiments and test the predictions. 	<ol style="list-style-type: none"> 1. Record probabilities as fractions, decimals, or percents. 2. Demonstrate that the sum of all probabilities equals one. 3. Determine empirical probabilities from a set of data provided. 4. Set up a simulation to model the probability of a single event. 5. Discuss the effect of sample size on the empirical probability compared to the theoretical probability. 6. List outcomes by a variety of methods (e.g., tree diagram). 7. Determine theoretical probabilities of simple events. 	<ol style="list-style-type: none"> 1. Discuss odds versus probability. 2. Predict and determine the probability and odds of events using proportionality and basic understanding of probability. 3. Compute probabilities for simple compound events using methods such as organized lists and tree diagrams. 	<ol style="list-style-type: none"> 1. Solve problems involving the probability of an event composed of repeated trials and compound events (including independent events). 2. Represent all possible outcomes for simple or compound events. 3. Solve simple problems involving the number of ways objects can be arranged.