

Content Area: Math
Grade/Course: Statistics / ACCN: MXX1300

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| Strand | Numbers and Operations |
| Standard 1: Numbers and Operations: NUMBER SENSE: Understand numbers, ways of representing numbers, relationships among numbers, and number systems | |

There are no benchmarks for this standard for this Grade/Course.

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| Strand | Numbers and Operations |
| Standard 2: Numbers and Operations: OPERATION SENSE: Understand the meaning of operations and how they relate to each other | |

There are no benchmarks for this standard for this Grade/Course.

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| Strand | Numbers and Operations |
| Standard 3: Numbers and Operations: COMPUTATION STRATEGIES: Use computational tools and strategies fluently and, when appropriate, use estimation | |

There are no benchmarks for this standard for this Grade/Course.

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| Strand | Measurement |
| Standard 4: Measurement: FLUENCY WITH MEASUREMENT: Understand attributes, units, and systems of units in measurement; and develop and use techniques, tools, and formulas for measuring | |

There are no benchmarks for this standard for this Grade/Course.

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| Strand | Geometry and Spatial Sense |
| Standard 5: Geometry and Spatial Sense: PROPERTIES AND RELATIONSHIPS: Analyze properties of objects and relationships among the properties | |

There are no benchmarks for this standard for this Grade/Course.

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| Strand | Geometry and Spatial Sense |
| Standard 6: Geometry and Spatial Sense: TRANSFORMATIONS AND SYMMETRY: Use transformations and symmetry to analyze mathematical situations | |

There are no benchmarks for this standard for this Grade/Course.

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| Strand | Geometry and Spatial Sense |
| Standard 7: Geometry and Spatial Sense: VISUAL AND SPATIAL SENSE: Use visualization and spatial reasoning to solve problems both within and outside of mathematics | |

There are no benchmarks for this standard for this Grade/Course.

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| Strand | Geometry and Spatial Sense |
| Standard 8: Geometry and Spatial Sense: REPRESENTATIONAL SYSTEMS: Select and use different representational systems, including coordinate geometry | |

There are no benchmarks for this standard for this Grade/Course.

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| Strand | Patterns, Functions, and Algebra |
| Standard 9: Patterns, Functions, and Algebra: PATTERNS AND FUNCTIONAL RELATIONSHIPS: Understand various types of patterns and functional relationships | |

There are no benchmarks for this standard for this Grade/Course.

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| Strand | Patterns, Functions, and Algebra |
| Standard 10: Patterns, Functions, and Algebra: SYMBOLIC REPRESENTATION: Use symbolic forms to represent, model, and analyze mathematical situations | |

There are no benchmarks for this standard for this Grade/Course.

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| Strand | Data Analysis, Statistics, and Probability |
| Standard 11: Data Analysis, Statistics, and Probability: FLUENCY WITH DATA: Pose questions and collect, organize, and represent data to answer those questions | |

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| Topic | Data Collection and Display | | |
| Benchmark MA.S.11.1 | Develop a hypothesis for an investigation or experiment | | |
| Sample Performance Assessment (SPA) | The student: Develops and defends a hypothesis for an investigation. | | |
| Rubric | | | |
| Advanced | Proficient | Partially Proficient | Novice |
| Develop a reasonable hypothesis for an investigation or experiment, and provide convincing rationale to support the hypothesis | Develop a reasonable hypothesis for an investigation or experiment, and provide sufficient rationale to support the hypothesis | Develop a hypothesis for an investigation or experiment, and provide some (but not enough) rationale to support the hypothesis | Develop a hypothesis for an investigation or experiment, and provide insufficient rationale to support the hypothesis |

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| Topic | Data Collection and Display | | |
| Benchmark MA.S.11.2 | Recognize the variables and controls in an experiment or investigation | | |
| Sample Performance Assessment (SPA) | The student: Identifies the variable in an investigation or experiment, sets a control, and explains the need for a control. | | |
| Rubric | | | |
| Advanced | Proficient | Partially Proficient | Novice |
| Design an experiment or investigation and identify the variables and controls | Recognize the variables and controls in an experiment or investigation | Recognize either the variables or the controls (but not both) in an experiment or investigation | Have difficulty recognizing the variables and controls in an experiment or investigation |

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| Topic | Data Collection and Display | | |
| Benchmark MA.S.11.3 | Select appropriate display for a data set (e.g., frequency table, histogram, line graph, bar graph, stem-and-leaf plot, box-and-whisker plot, scatter plot) | | |
| Sample Performance Assessment (SPA) | The student: Chooses an appropriate display for a data set and explains why it is an appropriate choice. | | |
| Rubric | | | |
| Advanced | Proficient | Partially Proficient | Novice |
| Select an appropriate display for a data set, and justify the choice of display | Select an appropriate display for a data set | Select a display for a data set that is functional, but not appropriate for the data | Have difficulty selecting an appropriate display for a data set |

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| Topic | Data Collection and Display | | |
| Benchmark MA.S.11.4 | Recognize features of representations of data that can produce misleading interpretations | | |
| Sample Performance Assessment (SPA) | The student: Explains how a data display was made to produce misleading interpretations. | | |
| Rubric | | | |
| Advanced | Proficient | Partially Proficient | Novice |
| Consistently recognize features of representations of data that can produce misleading interpretations, and explain how to produce misleading interpretation | Usually recognize features of representations of data that can produce misleading interpretations | Sometimes recognize features of representations of data that can produce misleading interpretations | Rarely recognize features of representations of data that can produce misleading interpretations |

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| Topic | Data Collection and Display | | |
| Benchmark MA.S.11.5 | Recognize sampling, randomness, bias, and sampling size in data collection and interpretation | | |
| Sample Performance Assessment (SPA) | The student: Considers possible biases or sampling errors when interpreting data, and proposes options to correct the errors. | | |
| Rubric | | | |
| Advanced | Proficient | Partially Proficient | Novice |
| Consistently recognize sampling, randomness, bias, and sampling size in data collection and interpretation, and use these ideas as part of justifying a conclusion | Usually recognize sampling, randomness, bias, and sampling size in data collection and interpretation | Sometimes recognize sampling, randomness, bias, and sampling size in data collection and interpretation | Rarely recognize sampling, randomness, bias, and sampling size in data collection and interpretation |

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| Topic | Data Collection and Display | | |
| Benchmark MA.S.11.6 | Describe the purpose and function of a variety of data collection methods (e.g., census, sample surveys, experiment, observation) | | |
| Sample Performance Assessment (SPA) | The student: Explains the differences between data collection methods. | | |
| Rubric | | | |
| Advanced | Proficient | Partially Proficient | Novice |
| Describe, in great detail, the purpose and function of a variety of data collection methods | Describe, in sufficient detail, the purpose and function of a variety of data collection methods | Describe, in some (but not enough) detail, the purpose and function of a variety of data collection methods | Describe, in insufficient detail, the purpose and function of a variety of data collection methods |

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| Strand | Data Analysis, Statistics, and Probability |
| Standard 12: Data Analysis, Statistics, and Probability: STATISTICS: Interpret data using methods of exploratory data analysis | |

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| Topic | Data Interpretation | | |
| Benchmark MA.S.12.1 | Use measures of central tendency and spread to interpret data | | |
| Sample Performance Assessment (SPA) | The student: Interprets a data set based on the mean and the standard deviation. | | |
| Rubric | | | |
| Advanced | Proficient | Partially Proficient | Novice |
| Use measures of central tendency and spread to interpret data, with accuracy | Use measures of central tendency and spread to interpret data, with no significant errors | Use measures of central tendency and spread to interpret data, with a few significant errors | Use measures of central tendency and spread to interpret data, with many significant errors |

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| Topic | Data Interpretation | | |
| Benchmark MA.S.12.2 | Interpret data based on the correlation coefficient of two variables | | |
| Sample Performance Assessment (SPA) | The student: Identifies a data set that has a positive correlation and makes an interpretation based on that trend. | | |
| Rubric | | | |
| Advanced | Proficient | Partially Proficient | Novice |
| Interpret data based on the correlation coefficient of two variables, with accuracy | Interpret data based on the correlation coefficient of two variables, with no significant errors | Interpret data based on the correlation coefficient of two variables, with a few significant errors | Interpret data based on the correlation coefficient of two variables, with many significant errors |

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| Topic | Data Interpretation | | |
| Benchmark MA.S.12.3 | Describe the effect of sample size and transformation on the shape, center, and spread of data | | |
| Sample Performance Assessment (SPA) | The student: Explains the effect on shape, center, and spread of data, if the unit of measure is changed. | | |
| Rubric | | | |
| Advanced | Proficient | Partially Proficient | Novice |
| Describe, in great detail, the effect of sample size and transformation on the shape, center, and spread of data | Describe, in sufficient detail, the effect of sample size and transformation on the shape, center, and spread of data | Describe, in some (but not enough) detail, the effect of sample size and transformation on the shape, center, and spread of data | Describe, in insufficient detail, the effect of sample size and transformation on the shape, center, and spread of data |

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| Topic | Data Interpretation | | |
| Benchmark MA.S.12.4 | Use the line or curve of best fit to interpret data | | |
| Sample Performance Assessment (SPA) | The student: Draws the line (or curve) of best fit on a graph and uses it to describe any trends that exist. | | |
| Rubric | | | |
| Advanced | Proficient | Partially Proficient | Novice |
| Use the line or curve of best fit to interpret data, with accuracy | Use the line or curve of best fit to interpret data, with no significant errors | Use the line or curve of best fit to interpret data, with a few significant errors | Use the line or curve of best fit to interpret data, with many significant errors |

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| Strand | Data Analysis, Statistics, and Probability |
| Standard 13: Data Analysis, Statistics, and Probability: DATA ANALYSIS: Develop and evaluate inferences, predictions, and arguments that are based on data | |

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| Topic | Predictions and Inferences | | |
| Benchmark MA.S.13.1 | Recognize that some data can be represented algebraically (e.g., linear, quadratic, exponential, sinusoidal) | | |
| Sample Performance Assessment (SPA) | The student: Identifies data that is linear (e.g., sales tax), quadratic (e.g., height of a bouncing ball), exponential (e.g., growth of certificate of deposit), or sinusoidal (e.g., number of daylight hours throughout the year). | | |
| Rubric | | | |
| Advanced | Proficient | Partially Proficient | Novice |
| Consistently recognize that some data can be represented algebraically | Usually recognize that some data can be represented algebraically | Sometimes recognize that some data can be represented algebraically | Rarely recognize that some data can be represented algebraically |

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| Topic | Predictions and Inferences | | |
| Benchmark MA.S.13.2 | Use interpolation and extrapolation to make predictions and inferences about data | | |
| Sample Performance Assessment (SPA) | The student: Analyzes the trend in a data set and make interpolations and extrapolations based on the trend. | | |
| Rubric | | | |
| Advanced | Proficient | Partially Proficient | Novice |
| Use interpolation and extrapolation to make predictions and inferences about data, with accuracy | Use interpolation and extrapolation to make predictions and inferences about data, with no significant errors | Use interpolation and extrapolation to make predictions and inferences about data, with a few significant errors | Use interpolation and extrapolation to make predictions and inferences about data, with many significant errors |

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| Strand | Data Analysis, Statistics, and Probability |
| Standard 14: Data Analysis, Statistics, and Probability: PROBABILITY: Understand and apply basic notions of chance and probability | |

There are no benchmarks for this standard for this Grade/Course.