Family Friendly Math

REASONING IN MATHEMATICS

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DATA, PROBABILITY, AND STATISTICAL REASONING

Reasoning in Mathematics students will explore sources of sampling methods like sampling size, sampling methods, errors in measurement, and potential biases that can be introduced by the sampling techniques. Students will analyze the data of a statistical experiment and apply statistical reasoning in an investigation using methods to collect, analyze, and interpret data to help draw meaningful conclusions and make informed decisions.

- Research a statistical question and develop a statistical method to address studies or questions through exploration.
- Write and identify a null hypothesis and a different hypothesis; determine whether a study is observational or experimental and learn about what makes up an experimental study.
- Within a research question, identify the population to be sampled and the variables associated with each. Students will also determine the sampling design, technique and analysis for each associated research question.
- Compare and contrast categorical and quantitative data. Identify the variable(s) of interest, interpret various graphs such as box plots and histograms and estimate the center, spread, shape, outliers, and odd features and limitations of the graphs.
- Analyze histograms observing the effect of changing bin size, the appropriateness and usefulness of a chosen measure.
- Analyze and identify possible types of biases in data sampling methods.

MEASUREMENT, GEOMETRIC, AND SPATIAL REASONING

Reasoning in Mathematics students will identify transformations using matrices and analyze truth tables to validate real-world situations.

- Use matrices to organize information and identify and look at ways of determining which matrices can be used in different situations.
- Use dynamic software, to represent figures using matrices and explore ways of determining different transformations such as translations, reflections, rotations, and dilations.
- Analyze truth tables made up of statements and arguments to determine and verify whether the arguments are true or false.
- Create arguments and statements to validate whether the statements are true or false.

NUMERICAL REASONING

Reasoning in Mathematics students will analyze numerical data through estimation and approximation in real-world situations. Students will also analyze real-world applications involving credit card debt, loans, and interest paid on present and future investments.

- Use real-world situations and various numerical techniques to estimate and calculate very large and small values.
- Apply proportional reasoning with the ratio of an image's width to its height.
- Use weighted averages and sums to make decisions such as the best grading system, averages in sports ratings, the cost indices for attending an event.
- Investigate and validate real-world situations using identification numbers including but not limited to check digits to prevent fraud, Universal Product Codes (UPC's), ID numbers, etc.
- Compare and contrast the nominal interest rate with the annual percentage rate (APR).
- Determine the future value of an investment given the present value.
- Determine the monthly payment needed to pay off a debt at a fixed rate.
- Compare and contrast different credit card offers using minimum payment.

PATTERNS, ALGEBRA, AND FUNCTIONAL REASONING

Reasoning in Mathematics students will analyze regression of linear functions. Using real-world situations students will analyze step and piecewise functions. Including data that follows an exponential pattern.

- Explore data that follows an exponential pattern using the idea of a common ration between consecutive data to determine the strength of the relationship.
- Use arithmetic sequences to analyze data that follows a linear pattern using defined rules.
- Explore using step and piecewise functions to make predictions about a variety of real-world and mathematical situations.
- Find recursive rules to model data and make connections between the recursive rule and the explicit function rule.

1205 Pendleton Street
Room 502 Brown Building
Columbia, SC 29201
www.eoc.sc.gov

SC EDUCATION OVERSIGHT COMMITTEE

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