

Math

STRAND 1: QUANTITATIVE LITERACY AND LOGIC

STANDARD L1: REASONING ABOUT NUMBERS, SYSTEMS, AND QUANTITATIVE SITUATIONS

Based on their knowledge of the properties of arithmetic, students understand and reason about numbers, number systems, and the relationships between them. They represent quantitative relationships using mathematical symbols, and interpret relationships from those representations.

L1.2 Representations and Relationships

L1.2.4 Organize and summarize a data set in a table, plot, chart, or spreadsheet; find patterns in a display of data; understand and critique data displays in the media.

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Municipal Solid Waste:
3. Recycling and Economics

L1.3 Counting and Probabilistic Reasoning

L1.3.2 Define and interpret commonly used expressions of probability (e.g., chances of an event, likelihood, odds).

Project Learning Tree Activities
Focus On Risk:
3. Chances Are... Understanding Probability and Risk

STANDARD L2: CALCULATION, ALGORITHMS, AND ESTIMATION

Students calculate fluently, estimate proficiently, and describe and use algorithms in appropriate situations (e.g., approximating solutions to equations.) They understand the basic ideas of iteration and algorithms.

L2.1 Calculation Using Real and Complex Numbers

L2.1.1 Explain the meaning and uses of weighted averages (e.g., GNP, consumer price index, grade point average).

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L2.1.3 Explain the exponential relationship between a number and its base 10 logarithm, and use it to relate rules of logarithms to those of exponents in expressions involving numbers.

Project Learning Tree Activities
Focus On Risk:
5. Communicating Risk

STANDARD L3: MEASUREMENT AND PRECISION

Students apply measurement units and calculations, and understand the concept of error.

L3.1 Measurement Units, Calculations, and Scales

L3.1.1 Convert units of measurement within and between systems; explain how arithmetic operations on measurements affect units, and carry units through calculations correctly.

Project Learning Tree Activities

Municipal Solid Waste:

1. The Waste Stream
3. Recycling and Economics

STRAND 2: ALGEBRA AND FUNCTIONS

STANDARD A2: FUNCTIONS

Students understand functions, their representations, and their attributes. They perform transformations, combine and compose functions, and find inverses. Students classify functions and know the characteristics of each family. They work with functions with real coefficients fluently.

A2.1 Definitions, Representations, and Attributes of Functions

A2.1.1 Recognize whether a relationship (given in contextual, symbolic, tabular, or graphical form) is a function; and identify its domain and range.

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Municipal Solid Waste:

3. Recycling and Economics

A2.1.3 Represent functions in symbols, graphs, tables, diagrams, or words, and translate among representations.

Project Learning Tree Activities

Municipal Solid Waste:

3. Recycling and Economics

STRAND 4: STATISTICS AND PROBABILITY

STANDARD S1: UNIVARIATE DATA – EXAMINING DISTRIBUTIONS

Students plot and analyze univariate data by considering the shape of distributions and analyzing outliers; they find and interpret commonly-used measures of center and variation; and they explain and use properties of the normal distribution.

S1.1 Producing and Interpreting Plots

S1.1.1 Construct and interpret dot plots, histograms, relative frequency histograms, bar graphs, basic control charts, and box plots with appropriate labels and scales; determine which kinds of plots are appropriate for different types of data; compare data sets and interpret differences based on graphs and summary statistics.

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Municipal Solid Waste:

3. Recycling and Economics

Focus On Risk:

3. Chances Are... Understanding Probability and Risk

S1.3 The Normal Distribution

<p>S1.3.1 Explain the concept of distribution and the relationship between summary statistics for a data set and parameters of a distribution.</p>	<p>Project Learning Tree Activities Focus On Risk: 3. Chances Are... Understanding Probability and Risk</p>
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STANDARD S3: SAMPLES, SURVEYS, AND EXPERIMENTS

Students understand and apply sampling and various sampling methods, examine surveys and experiments, identify bias in methods of conducting surveys, and learn strategies to minimize bias. They understand basic principles of good experimental design.

S3.1 Data Collection and Analysis

<p>S3.1.1 Know the meanings of a sample from a population and a census of a population, and distinguish between sample statistics and population parameters.</p>	<p>Project Learning Tree Activities Focus On Risk: 3. Chances Are... Understanding Probability and Risk</p>
<p>S3.1.2 Identify possible sources of bias in data collection and sampling methods and simple experiments; describe how such bias can be reduced and controlled by random sampling; explain the impact of such bias on conclusions made from analysis of the data; and know the effect of replication on the precision of estimates.</p>	<p>Project Learning Tree Activities Municipal Solid Waste: 3. Recycling and Economics Focus On Risk: 3. Chances Are... Understanding Probability and Risk</p>

STANDARD S4: PROBABILITY MODELS AND PROBABILITY CALCULATION

Students understand probability and find probabilities in various situations, including those involving compound events, using diagrams, tables, geometric models and counting strategies; they apply the concepts of probability to make decisions.

S4.1 Probability

<p>S4.1.1 Understand and construct sample spaces in simple situations (e.g., tossing two coins, rolling two number cubes and summing the results).</p>	<p>Project Learning Tree Activities Focus On Risk: 3. Chances Are... Understanding Probability and Risk</p>
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S4.2 Application and Representation

S4.2.2 Apply probability concepts to practical situations, in such settings as finance, health, ecology, or epidemiology, to make informed decisions.

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3. Chances Are... Understanding Probability and Risk