

Quantitative Reasoning

Modeling MD

Problem Solving: Students use appropriate mathematical models to solve problems involving everyday life, workplace, and society.

- 1 Use mathematical models to: [QR.MD.1](#)
 - 1 Demonstrate understanding of the meaning of a solution in context. [QR.MD.1.1](#)
 - 2 Identify when insufficient information is given to solve a problem. [QR.MD.1.2](#)
 - 2 Analyze mathematical models, describe limitations, and suggest improvements. [QR.MD.2](#)
 - 3 Use mathematical models created with spreadsheets or other tools to: [QR.MD.3](#)
 - 1 Estimate solutions for contextual questions. [QR.MD.3.1](#)
 - 2 Identify patterns. [QR.MD.3.2](#)
 - 3 Identify how changing parameters affect results. [QR.MD.3.3](#)
 - 4 Use mathematical models to make decisions about purchases. [QR.MD.4](#)
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Bivariate Data Sets: Students use bivariate data sets to solve problems.

- 5 Select models for a given set of bivariate data sets; justify the choice. [QR.MD.5](#)
 - 6 Represent and use mathematical models for bivariate data sets to answer questions, draw conclusions, and make decisions. [QR.MD.6](#)
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Numerical Reasoning NR

Number, Ratio, & Probability: Students use number sense and proportional reasoning in real-world settings to make and communicate decisions in order to draw conclusions based on quantitative analysis.

- 1 Solve real-world problems and interpret results involving calculations with percentages, decimals, and fractions. [QR.NR.1](#)
 - 1 Problem types include: conversions, percent change (absolute vs relative), and percent of quantities [QR.NR.1.1](#)
- 2 Use estimation in real-world situations. [QR.NR.2](#)
- 3 Numeric and contextual benchmarks: [QR.NR.3](#)
 - 1 Identify appropriate numeric benchmarks for estimating calculations. [QR.NR.3.1](#)
 - 2 Identify appropriate contextual benchmarks to compare to other numbers. [QR.NR.3.2](#)
- 4 Compare magnitudes of numbers in context in different forms. [QR.NR.4](#)

- 5 Use dimensional analysis to solve problems involving multiple units of measurement. [QR.NR.5](#)
- 6 Solve real-world problems requiring interpretation and comparison of various representations of rates and ratios. [QR.NR.6](#)
- 7 Distinguish between proportional and non-proportional real-world situations; when appropriate, apply proportional reasoning. [QR.NR.7](#)

Statistics & Probability

Statistical: Students draw conclusions, make decisions, and communicate based on understanding using statistical information.

- 1 Create charts, tables, and graphs of real-world data with and without technology. [QR.SP.1](#)
- 2 Analyze and interpret charts, tables, and graphs using real-world data. [QR.SP.2](#)
- 3 Compare and contrast charts, tables, and graphs using real-world data. [QR.SP.3](#)
- 4 Analyze statistical information from studies, surveys, and polls to make informed judgements as to the validity of claims or conclusions. [QR.SP.4](#)
- 5 Make decisions about data summarized numerically using measures of center: [QR.SP.5](#)
 - 1 Compare measures of center of two or more data sets. [QR.SP.5.1](#)
 - 2 Interpret the differences in context. [QR.SP.5.2](#)
 - 3 Justify the use of a chosen measure. [QR.SP.5.3](#)

Probabilities: Students apply probabilistic reasoning to draw conclusions, to make decisions, and to evaluate outcomes of decisions.

- 6 Use probabilities to make and justify decisions about risks in everyday life. [QR.SP.6](#)
- 7 Evaluate the validity of claims based on experimental and theoretical probabilities. [QR.SP.7](#)
- 8 Apply rules of counting and probability to compute probabilities of compound real-world events: [QR.SP.8](#)
 - 1 Addition Rule of Probability [QR.SP.8.1](#)
 - 2 Multiplication Rule of Probability [QR.SP.8.2](#)
 - 3 Fundamental Counting Principle [QR.SP.8.3](#)
 - 4 Permutation and combinations [QR.SP.8.4](#)
 - 5 Visual representations [QR.SP.8.5](#)

Personal Financial Literacy [PF](#)

Employment & Income: Students apply mathematics to make informed employment and income decisions.

- 1 Represent and analyze mathematical models for various types of income. [QR.PF.1](#)
- 2 Represent and analyze various types of income deductions and employment forms. [QR.PF.2](#)

- 3 Analyze expenses to create a household budget utilizing food, shelter, transportation, utilities, insurance, savings, and other expenses. [QR.PF.3](#)
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Investment: Students apply mathematics to make informed investment decisions.

- 4 Analyze various investment instruments for: [QR.PF.4](#)
 - 1 Purposes [QR.PF.4.1](#)
 - 2 Advantages [QR.PF.4.2](#)
 - 3 Disadvantages [QR.PF.4.3](#)
 - 4 Risks [QR.PF.4.4](#)
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Credit & Debt: Students apply mathematics to make informed credit and debt decisions.

- 5 Analyze the characteristics of various types of loans. [QR.PF.5](#)
 - 6 Apply appropriate models to determine the impact of the relationship among loan rates, the term of a loan, the principal amount of a loan, and payments. [QR.PF.6](#)
 - 7 Examine consumer protection, bankruptcy, and credit and debt management services for ways in which they affect household budgeting. [QR.PF.7](#)
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**Business Financial
Literacy** [BF](#)

Business & Economics: Students understand the principles and mathematics in business as it applies to economics.

- 1 Use real-world data to determine how a product or service can be profitable in a community. [QR.BF.1](#)
- 2 Determine fixed and variable expenses of running a business. [QR.BF.2](#)
- 3 Calculate indices and solve problems using common indices: [QR.BF.3](#)
 - 1 Consumer price index [QR.BF.3.1](#)
 - 2 Cost of living index [QR.BF.3.2](#)
 - 3 Determine what constitutes an index [QR.BF.3.3](#)
- 4 Analyze how stock market averages and indices are calculated with technology. [QR.BF.4](#)
- 5 Research how inflation changes the value of the U.S. Dollar over time. [QR.BF.5](#)
- 6 Prepare for employment by analyzing job skills. [QR.BF.6](#)