MATHEMATICS
OUTCOMES
GRADE 7 CORE

Develop number and number relationships with integers, rational and irrational numbers

Use computation and estimation strategies with rational numbers and integers

Use strategies, to solve problems with numbers and variables

Develop Algebraic Concepts

Use Elementary Statistics and Probability to analyze Data

Explore Geometry and measurement in two and three dimensions GRADE 7

Mathematics

Grade 7

Develop number and number relationships with integers, rational and irrational numbers

Initial Understanding

- Order whole numbers, and decimals.
- Round whole numbers decimals.

Developing an Interpretation

- Identify alternative forms of expressing numbers expanded notation.
- Identify alternative forms of expressing numbers, using scientific notation
- Relate fractions, decimals, and percents to pictorial presentations & vice versa.
- Construct pictorial representations of fractions, decimals, and percents
- Rename equivalent fractions and mixed numbers as equivalent decimals and vice versa.
- Rename fractions and decimals as equivalent percents and vice versa or state rules for given pattern
- Order fractions mixed numbers
- Describe magnitude of whole numbers and decimal
- Describe magnitude of fractions or mixed number's
- Round whole numbers, fractions and decimals in context

Making Connections

- Describe magnitude whole numbers in context.
- Locate points on number lines/scales, including fractions, decimals, & integers.

Use computation and estimation strategies with rational numbers and integers

Initial Understanding

- Add and -Subtract 2, 3, 4-digit whole numbers, & decimals
- Multiply &. Divide whole numbers, decimal [10, 100 1000].
- Multiply & divide 2, 3-digit whole numbers, dollars, decimal. By 1 digit numbers & decimal
- Add & subtract fraction, mixed numbers, with reasonable and appropriate denominators.

Developing an Interpretation

- Identify best expression to find estimate
- Find percents of whole numbers, or
- Identify whether and why a particular strategy will result in over or underestimate
- Find percents of whole numbers, or the percent a given number is of another number

Making Connections

- Estimate a reasonable answer to a problem
- Multiply whole numbers and fractions by fractions and mixed numbers.
- Solve 1-step problems involving fractions and mixed numbers
- Solve multi-step problems: whole numbers, decimal fractions, and mixed numbers including averaging.
- Solve problems involving whole numbers, decimal, fractions, mixed numbers with extraneous. Information
- Solve multi-step problems; justify solutions.
- Solve problems involving ratios
- Solve problems involving proportions
- Solve problems involving percent

Critical Stance

- Explain and defend why estimate is or is not reasonable.
- Estimate to make or defend a decision.
- Use strategies, to solve problems with numbers and variables

Developing an Interpretation

- Identify appropriate operations or sentences to solve story problems.

Making Connections

Solve 1-step problem: whole numbers, decimals, dollars
Solve multi-step problems; justify solution.
Solve multi-step problems involving whole numbers
Solve problems involving: 0.1/0.01 .001 more/less.
Write story problems from equations involving rational numbers, integers and variables
Solve extend numerical problems

Develop Algebraic Concepts

Initial Understanding

Solve simple 1 -step equations.
Use order of operations
Evaluate expressions & use formulas.

Developing an Interpretation

Write expressions to represent a given situation.
Identify or extend patterns involving numbers and attributes
Identify or state rules for given patterns, write the formula
Identify points on grids.

Making Connections

Represent situations with algebra expression.

Use Elementary Statistics and Probability to analyze Data

Initial Understanding

Organize data.
Create graphs from data: tables and charts.

Developing an Interpretation

Identify correct information: graphs, tables, and charts.

Making Connections

Draw reasonable conclusions from graphs, tables, and charts.
Solve problems involving means and medians of sets of data.
Solve extend and statistical problems
Solve problems. Involving organization of data.
Solve problems involving elementary notions of probability, fairness, including justifying answers
Solve problems involving expected outcomes or predictions.

Critical Stance

Justify reasonable conclusions from graphs, tables, and charts.

Explore Geometry and Measurement in two and three dimensions

Initial Understanding

Draw geometry shapes and figures.
Describe, model, and classify shapes.
Measure and determine perimeter, area, and volume.

Developing an Interpretation

Estimate lengths, area, and angle measurement.
Identify or draw geometry transformations.
Identify draw and describe lines of symmetry.
Identify appropriate customary or metric measure for a given situation.
Relate 2-dimensional and 3-dimensional. Representations
Identify or describe congruent and similar figures.
Identify points on grids.

Making Connections

Solve problems involving conversions of units of measure, including time.
Solve extend spatial problems

Critical Stance

In Mathematics justifying, proving or explaining a conjecture or answer is connected to the learning environment. Students are encouraged and expected to question one an others' ideas and to explain and support their own ideas in the face of others' challenges. Each objective in mathematics can be framed to have students defend support, explain or prove their answer. Educational research offers compelling evidence that student learn mathematics well only when they construct their own mathematical understandings. To understand what they learn, students must enact for themselves verbs that permeate the mathematics curriculum: "examine", "represent", "transform", "solve", "apply", "prove".

MATHEMATICS
OUTCOMES
GRADE 7 CORE EXPANDED

Develop number and number relationships with integers, rational and irrational numbers

Use computation and estimation strategies with rational numbers and integers

Demonstrate an understanding of simple Algebraic Concepts

Use Elementary Statistics and Probability to analyze Data

Explore Geometry and measurement in two and three dimensions

Mathematics

GRADE 7
EXPANDED CORE

Develop number and number relationships with integers, rational and irrational numbers

Initial Understanding

Rename equivalent fractions and mixed numbers as equivalent decimals and vice versa.
Rename fractions and decimals as equivalent percents & vice versa or state rules for given pattern
Write equivalent fractions and determine whether fractions are equivalent.
Find percent of a number
Order and Compare, whole numbers, fractions and decimals, integers and irrational numbers
Describe the absolute value of a numbers
Describe magnitude of fractions, mixed numbers and decimals
Round whole numbers, fractions and decimals in context

Developing an Interpretation

Write factors and multiples of a number
Decide whether a number is prime or composite.
Write the prime factorization of a number.
Find greatest common factor of a number
Find the least common multiple of numbers.
Identify alternative forms of expressing numbers using scientific notation .
Locate points on lines, scales, integers, rational, and irrational numbers.

Use computation and estimation strategies with rational numbers and integers

Initial Understanding

Write and interpret, numbers using exponential notation
Multiply and divide numbers using exponential notation
Add integers. subtract integers, multiply integers and find integer quotients.
Add and subtract rational numbers with like unlike denominators.
Multiply and divide rational numbers expressed as a fractions and a mixed #
Find the quotient of two numbers expressed with negative exponents.

Developing an Interpretation

Estimate whole number sums and differences by using rounding and front-end estimation.
Use strategies, to solve problems with numbers and variables

Developing an Interpretation

Use Make a Table, Look for a Pattern, to solve problems.

Making Connections

Solve problems involving: 0.1/0.01 more/less.
Solve word problems involving numbers
Solve non-routine problems using the strategies choose the operation of Guess, Check, Revise.
Solve problems using the strategy Draw a Diagram.
Solve problems, using metric units.
Solve problems, using the strategy make an Organized List.
Solve problems using Logical
Solve word problems by writing and solving equations
Estimate decimal sums, differences, products and quotients, by rounding.
Estimate a reasonable answer to a problem

Critical Stance

Estimate to make and defend a decision.

Develop Algebraic Concepts

Initial Understanding

- Evaluate numerical and algebraic expressions.
- Use order of operations to evaluate expressions.
- Write a rule that represents the relationship between two numbers
- Translate a verbal phrase to a numerical or algebraic expression.
- Use the basic properties of addition to write algebraic expression equivalent to another expression
- Use the basic properties of multiplication to write and algebraic expression equivalent to another expression.
- Use the Associative and Distributive properties to simplify expressions.
- Solve equations for a replacement set.
- Solve equations using the multiplicative inverse.
- Use mental math or Guess, Check, Revise to solve equation
- Use addition and subtraction to solve equation
- Use multiplication and division to solve equations
- Evaluate formulas
- Use addition subtraction, multiplication and division to solve equations with integers
- Translate verbal statements into equations
- Write and interpret, variables using exponential notation
- Multiply and divide variables using exponential notation
- Graph an ordered pair on the coordinate plane.
- Use divisibility rule

Developing an Interpretation

- Describe the relationship between two variables in words
- Describe the relationship between two variables graphically.
- Translate verbal statements into equations.
- Identify or extend patterns involving numbers and attributes

Making Connections

- Solve equations involving more than one operation
- Solve word problems by writing and solving equations
- Graph simple linear equations using slope intercept
- Write formula for given pattern

Use Elementary Statistics and Probability to analyze Data

Initial Understanding

- Identify correct information: graphs, tables, charts.
- Create graphs from data: tables and charts.

Developing an Interpretation

- Draw and justify reasonable conclusions from graphs, tables, charts.
- Make frequency tables for sets of data to find range and mode
- Solve problems involving means and medians of sets of data.
- Construct and interpret stem-and -leaf diagrams.
- Recognize positive and negative correlations in scatter plots.
- Analyze scatter plots.

Making Connections

- Find the probability of simple events and mutually exclusive events.
- Distinguish between and calculate the probability of independent dependent events.
- Use probability to decided if a game is fair
- Explore Geometry and measurement in two and three dimensions

Initial Understanding

- Classify polygons by name.
- Measure of vertical and corresponding angles
- Find the circumference, radius, or diameter of a circle.
- Find the area of rectangles and parallelograms.
- Find the area of triangles and trapezoids.

Find the area of circles.

Use the Pythagorean Theorem to find lengths of sides of a right triangle.

Determine volume of rectangular prisms

Developing an Interpretation

Estimate lengths, area, and angle measurement.

Critical Stance

In Mathematics justifying, proving or explaining a conjecture or answer is connected to the learning environment .Students are encouraged and expected to question one an others' ideas and to explain and support their own ideas in the face of others' challenges. Each objective in mathematics can be framed to have students defend support, explain or prove their answer. Educational research offers compelling evidence that student learn mathematics well only when they construct their own mathematical understandings. To understand what they learn, students must enact for themselves verbs that permeate the mathematics curriculum: "examine", "represent","transform", "solve", "apply", "prove".