

# THEMES Gr. 6 to 9: Numeracy, Fractions, Equations and Algebra, Functions and Graphing, Geometry, Trigonometry, Probability

## Grade 6

- whole number percents
- percentage discounts
- small to large numbers (thousandths to billions)

- factors and multiples
- improper fractions and mixed numbers
- multiplication and division of decimals

- order of operations
- one-step equations with whole-number coefficients and solutions

- line graphs
- describing functional relationships
- increasing and decreasing patterns using expressions, tables, and graphs
- combinations of transformations, including points in the first quadrant
- perimeter of complex shapes
- area of triangles, parallelograms, and trapezoids
- volume of rectangular prisms
- relation of capacity to volume
- measurement units and referents for volume and capacity
- angle measurement and classification
- triangles and pyramids

- single-outcome probability, both theoretical and experimental

## Grade 7

- financial percentage calculations (ex. Discounts, taxes, tips, )

- relationship between decimals, fractions, and percents

- ratio

- classification of numbers as prime and composite

- integers, including comparing

- *factors and multiples*

- *multiplication and division of fractions and of integers*

- addition and subtraction of fractions and of integers

- *order of operations*

- two-step equations with whole-number coefficients and solutions

- expressions & equations, writing & evaluating use substitution

- circle graphs

- discrete linear relations, represented by tables, graphs, and expressions

- combinations of transformations, including points in four quadrants

- circumference and area of circles

- angles in polygons

- cylinders, cones, and spheres

- properties of 2D shapes (ex. Diagonals)

- probability of two independent events using sample space

## Grade 8

- percents less than 1 and greater than 100

- decimal and fractional percents and best buys

- rates and proportional reasoning

- squares and cubes, square roots

- *factors and multiples*

- multiplication and division of fractions and of integers

- *addition and subtraction of fractions and of integers*

- polynomials, adding and subtracting

- one and two-step linear equations involving integers and fractions

- two-variable linear relations, graphing, interpolation, and extrapolation

- data collection, display, and analysis, including surveying and sampling

- central tendency

- surface area and volume of regular solids

- construction, views, and nets of 3D objects

- angles in parallel lines

- similarity and congruence

- probability of two independent events

- logic and patterns to solve games and puzzles

## Grade 9

- rational and irrational

- scale diagrams of 2D shapes

- exponents

- factors, prime factors, and numerical radicals

- multiplication and division of decimals, fractions, mixed numbers, integers

- *addition and subtraction of fractions and of integers*

- operations with polynomials, of degree less than or equal to two

- one- and two-step equations with rational coefficients and solutions

- equations involving distribution

- multi-step one-variable linear equations and inequalities

- two-variable linear relations, graphs, rates, functions, and relations

- data collection, display, and analysis, population and sample data

- surface area and volume of composite solids

- volume of prisms, pyramids, cones, and spheres

- primary trigonometric ratios

- Pythagorean theorem

- probability in society

- numerical/spatial reasoning, logic, and patterns to solve puzzles/games

- personal budgets

**NOTE: Topics in *italics* are add-ins; topics are listed in order of importance with topic lowest in columns being less critical (eg. Data collection, Statistics, Probability).**