

## SIXTH GRADE

- ◆ Arrange in order a given set of numbers, decimals and fractions
- ◆ Add multi-digit numbers
- ◆ Multiply multi-digit numbers
- ◆ Divide by a two-digit divisor
- ◆ Add and subtract decimals
- ◆ Multiply and divide decimals
- ◆ Add, subtract, multiply, and divide simple fractions and mixed numbers
- ◆ Calculate the LCM/GCM (lowest/greatest common multiple) of two numbers
- ◆ Identify, base, exponent, power, squares and cubed
- ◆ Convert mixed numbers to fractions
- ◆ Convert decimals to percent
- ◆ Multiply and divide with exponents
- ◆ Demonstrate the inverse relationship of multiplication and division of fractions
- ◆ Use variables to represent unknown quantities in formulas, algebraic expressions, and equations.
- ◆ Find function rules
- ◆ Graph composite, linear, and nonlinear functions
- ◆ Calculate perimeter, area, volume and circumference of a given shape
- ◆ Understand the concepts of ratio and proportion, and solve problems using proportional reasoning
- ◆ Use a calculator
- ◆ Understand and use line and rotational symmetry
- ◆ Measure angles in degrees
- ◆ Construct with ruler and protractor
- ◆ Order, add, and subtract negative numbers
- ◆ Be familiar with consumer applications of mathematical concepts
- ◆ Use mathematics to play games
- ◆ Understand and use averages
- ◆ Make inferences from statistical data
- ◆ Use data to make predictions
- ◆ Determine the probability of a given event
- ◆ Distinguish useful from non-useful information

- ◆ Ask questions to obtain needed data
- ◆ Detect absurdities
- ◆ Recognize shortcuts
- ◆ Reason by estimation
- ◆ Analyze, organize and interpret data

## SEVENTH GRADE

- ◆ Read, write, order, and round numbers from the millions to the millionths place
- ◆ Order, add, subtract, multiply and divide decimals, like and unlike fractions, mixed numbers and positive and negative integers
- ◆ Compare decimals and fractions using =, >, <
- ◆ Be able to use a calculator and key sequences for operations, exponents and scientific notation
- ◆ Interchange decimals, fractions and percents
- ◆ Know by memory common decimals and fractions between 0 and 1
- ◆ Correctly use a raised bar symbol for repeating decimals ( $.3\bar{3}$ )
- ◆ Read a number line and plot decimal and fractional numbers on it
- ◆ Convert powers to decimals
- ◆ Multiply and divide by positive and negative powers of 10 (10, 100, 1000, .1, .01, .001 ...)
- ◆ Convert large and small numbers into scientific notation
- ◆ Measure lengths and standards
- ◆ Find area, perimeter, volume, surface area, and perimeter of various shapes
- ◆ Know standard (US) and Metric units of length, capacity and weight
- ◆ Measure in US (standard) and Metric units
- ◆ Convert within each system and between both systems of measurement
- ◆ Use order of operations and/or grouping symbols to evaluate numerical expressions
- ◆ Write and solve simple algebraic equations
- ◆ Graph inequalities such as  $x < a$  or  $a > x > b$
- ◆ Graph equations for line  $x + y = k$

- ◆ Calculate absolute value
- ◆ Solve problems by trial and error, using a table, finding a pattern, drawing a picture, using sets of equal ratios, making generalizations
- ◆ Know relationships among angles formed by intersecting or parallel lines and transversals
- ◆ Interpret and construct bar, line, coordinate, and circle graphs
- ◆ Identify and use properties of addition, subtraction, multiplication, and division
- ◆ Estimate square roots
- ◆ Estimate answers as a way of checking work
- ◆ Apply math skills to real-life situations
- ◆ Solve problems, communicate mathematically, reason and evaluate mathematical arguments, make connections among mathematical ideas and in other contexts, and represent mathematics in multiple ways

## EIGHTH GRADE

- ◆ Conduct research (locate, observe/gather, analyze, conclude)
- ◆ Use technology to assist in problem-solving
- ◆ Connect arithmetic and algebraic principles
- ◆ Translate life problems from mathematical to algebraic expressions
- ◆ Know the properties of arithmetic as they apply to algebra
- ◆ Translate from the concrete level thinking to the abstract level
- ◆ Simplify expressions using real numbers
- ◆ Identify terms, variables, and coefficients
- ◆ Perform four operations with real numbers
- ◆ Combine like terms
- ◆ Express fractional coefficients in lowest terms
- ◆ Apply order of operations
- ◆ Know and apply the associative, commutative, and distributive properties
- ◆ Determine, solve and graph linear equations with one or more variables

- ◆ Use basic operations to isolate a variable
- ◆ Translate words into algebraic symbols and equations
- ◆ Graph linear equations by plotting points
- ◆ Recognize and use the slope-intercept form of a line for graphing
- ◆ Identify, add, subtract, multiply and divide polynomials
- ◆ Identify and factor a common monomial
- ◆ Solve and graph linear inequalities
- ◆ Use number line symbolism
- ◆ Graph a line in a coordinate plane
- ◆ Know that multiplying or dividing by a negative reverses the direction of the inequality
- ◆ Solve equations which contain rational expressions
- ◆ Identify a rational expression
- ◆ Apply operations to rational expressions
- ◆ Identify and solve linear equations
- ◆ Identify/solve equations by substitution, factoring and graphing
- ◆ Determine the theoretical probability of simple events
- ◆ Translate life problems into mathematical language
- ◆ Solve quadratic equations by factoring
- ◆ Recognize quadratic equations
- ◆ Find the greatest monomial factor
- ◆ Apply the zero product property
- ◆ Make inferences from statistical data
- ◆ Solve problems, communicate mathematically, reason and evaluate mathematical arguments, make connections among mathematical ideas and in other contexts, and represent mathematics in multiple ways

**For the Commandment  
is the lamp  
and the Torah  
is the light... (Proverbs (6:23))**

# *Torah Day School of Atlanta*

## **Middle School Math Curriculum Overview**

... an affiliate of **Torah Umesorah  
National Society  
For Hebrew Day Schools**