



THE רשי  
RASHI  
SCHOOL

# MATH

## KINDERGARTEN

*Students will be able to....*

- Count using one-to-one correspondence; understand the value of written numbers.
- Recognize, read, and write numbers 1 through 30.
- Read, interpret and write simple addition equations and add two sets together by counting on rather than starting at one every time.
- Compare whole versus part.
- Estimate the number of objects in a group of up to 30 and verify the results.
- Sort and classify objects by color, shape, size, number and other properties.
- Recognize, create, and extend visual patterns using pattern blocks, stamps, and other manipulatives.
- Recognize patterns in the calendar and on a hundreds chart.
- Recognize and name, describe, sort and draw simple shapes according to number of sides and corners.
- Compare and contrast three- and two-dimensional shapes.
- Use non-standard linear measurements to measure the height, length, and width of objects as well as the distance between them.
- Recognize and name pennies, nickels, dimes and quarters.
- Relate, compose, and decompose whole numbers up to 10.
- Recognize geometric shapes and structures in the environment and specify their location.
- Sort and classify objects according to their attributes and organize data about the objects.
- Identify bar graphs, line graphs, pictographs, and weather graphs to compare quantities using most, least, more, less and equal.
- Use Venn diagrams to show commonalities of attributes in different objects.

# GRADE 1

## *Students will be able to....*

- Read and write two-digit numbers and compare their values using terms and symbols such as less than, greater than, and equal.
- Recognize all of the equations in a fact family.
- Recognize and create patterns using tally marks, number lines, frames and arrows, and functions machines.
- Recognize geometric shapes and the number of sides.
- Recognize a penny, nickel, dime and quarter and know its value.
- Add coin combinations without quarters.
- Measure in inches and centimeters using rulers and tape measures.
- Read a thermometer in Fahrenheit.
- Identify lines of symmetry in two-dimensional figures.
- Read and interpret bar graphs (with axes provided), line graphs, pictographs, and glyphs.
- Represent one half of a quantity.
- Count by 2's, 5's, and 10's starting at 0 through 100.
- Recognize the hour and minute hand of a clock, telling time to the half hour.
- Name and write whole numbers to 500 using a number grid; identify the place values of digits and order the numbers.

## GRADE 2

### *Students will be able to....*

- Use multiple models to develop initial understanding of place values and the base ten number system.
- Solve two- and three-digit addition and subtraction problems with regrouping.
- Add three one-digit numbers mentally; solve addition and subtraction number stories; add and subtract by multiples of 10.
- Recognize fractions as names for equal parts of a region or set.
- Find and identify patterns in addition and subtraction, facts, and doubling numbers.
- Find and identify patterns in a function machine, and solve frames and arrows problems with two rules.
- Show that sums remain the same if order or grouping of addends change.
- Identify two- and three-dimensional shapes and find common attributes.
- Identify specific coin values and coin combinations.
- Tell time to minute intervals.
- Use appropriate units for measuring objects and perimeters accurately to the nearest half inch and centimeter using a ruler, tape measure, meter stick or yard stick, and recognize if measures are sensible.
- Read, interpret, and create bar (with axes provided) graphs, line graphs, and pictographs.
- Estimate costs and sums and make change for a dollar.
- Identify sides of polygons and edges of polyhedrons.

# GRADE 3

## *Students will be able to....*

*(Classes are split into three levels in grades 3-8. The content listed here is the middle level.)*

- Estimate and solve addition and subtraction problems involving three or more addends of three and four digits.
- Demonstrate mastery of multiplication and division facts through 12.
- Identify, read, and write numbers into the millions naming the place values and comparing them using more than, less than, and equal to.
- Estimate and solve multiplication problems using three-digit by two-digit factors.
- Estimate and solve division problems using a four-digit dividend and one digit divisor.
- Find patterns in addition, subtraction, multiplication, and division facts.
- Understand various meanings of multiplication and division.
- Identify lines of symmetry, as well as line segments, endpoints, lines, rays, intersecting and parallel lines and angles.
- Identify three-dimensional shapes as well as faces, edges, vertices, and bases of prisms and pyramids, using appropriate mathematical terminology.
- Identify metric and standard units of measure; choose the appropriate units of measure and measure to the nearest foot and half centimeter.
- Model problem situations with objects and use representations such as graphs, tables, and equations to draw conclusions.
- Apply terminology such as maximum, minimum, mode and range when finding statistical benchmarks.
- Read maps, tables, circle graphs and pictographs with greater than one-to-one correspondence using a key.
- Describe events as likely or unlikely and discuss the degree of likelihood using such words as *certain*, *equally likely*, and *impossible*.
- Predict the probability of outcomes of simple experiments and test the predictions.
- Identify fractional parts of a region and fractional parts of a set.
- Compare and order simple fractions.

# GRADE 4

## *Students will be able to....*

*(Classes are split into three levels in grades 3-8. The content listed here is the middle level.)*

- Read, write, identify, and make exchanges between place value from the thousandths place to the billionths place.
- Multiply and divide three- and four-digit numbers; express and simplify numbers using exponents.
- Divide two-digit divisor into three-digit dividend, denoting the remainder in three ways.
- Find, create, and extend visual and numeric patterns.
- Use models, benchmarks, and equivalent forms to judge the size of fractions.
- Recognize and generate equivalent forms of commonly used fractions, decimals, and percents.
- Develop fluency with basic number combinations for multiplication and division and use these combinations to mentally compute related problems, such as  $30 \times 50$ .
- Develop and use strategies to estimate computations involving fractions and decimals in situations relevant to students' experience.
- Use models, benchmarks, and equivalent forms to add and subtract commonly used fractions and decimals.
- Represent and analyze patterns and functions, using words, tables, and graphs.
- Find range, mode, and median value when summarizing and interpreting data with an odd number of data points.
- Predict and record probability using fractional notation.
- Understand that the measure of the likelihood of an event can be represented by a number from 0 to 1.
- Identify standard and metric units of weight, capacity, and volume.

# GRADE 5

## *Students will be able to....*

*(Classes are split into three levels in grades 3-8. The content listed here is the middle level.)*

- Read, write, compare and round numbers from the ten thousandths place to the billions place.
- Test divisibility, and use factor trees to write prime factorization of composite numbers.
- Multiply and divide powers of ten mentally.
- Understand, order, and compare fractions as parts of unit wholes, as parts of a collection, as locations on number lines, and as divisions of whole numbers.
- Apply problem solving skills to situations including multiple digit numbers.
- Manipulate between improper fractions and mixed numbers; simplify, order and compare fractions.
- Convert amongst fractions, decimals, and percents; solve word problems using ratios, rates proportions, and percent discounts.
- Compute accurately whole numbers using all four operations.
- Represent the idea of a variable as an unknown quantity using a letter or a symbol.
- Identify, compare, and analyze attributes of two-dimensional and three-dimensional shapes and develop vocabulary to describe the attributes.
- Use geometric tools such as a protractor to measure angles and a compass to draw circles and to find diameter, circumference and area.
- Measure to the nearest one eighth of an inch and millimeter.
- Find the mean, median, mode, and range for a set of data.
- Determine which measure of a central tendency to use; understand what each does and does not indicate about the data set.
- Collect data using observations, surveys, and experiments.
- Create bar and line graphs from data they have collected creating their own axes.

# GRADE 6

## *Students will be able to....*

*(Classes are split into three levels in grades 3-8. The content listed here is the middle level.)*

- Compare and order groups of large numbers, decimals, fractions, percents, and mixed numbers.
- Convert efficiently between fractions, decimals, and percent representations.
- Understand the meaning and effects of arithmetic operations with fractions, decimals, and percents.
- Define negative numbers and perform four arithmetic operations.
- Apply order of operations to simplify expressions with division, subtraction, multiplication, division, and grouping symbols.
- Solve problems involving scale factors, using ratio and proportion, staying in the same dimension.
- Develop an initial conceptual understanding of different uses of variables.
- Recognize, name, and categorize three-dimensional shapes (prisms, pyramids, cylinders, cones) and use nets of these shapes.
- Calculate perimeter, area, volume, and surface area; memorize the key formulas related to these calculations.
- Draw geometric objects with specified properties, such as side lengths or angle measurements.
- Use two-dimensional representations of three-dimensional objects to visualize and solve problems such as those involving surface area and volume.
- Convert between units within the metric system.
- Use common benchmarks to select appropriate methods for estimating measurements.
- Select, create, and use appropriate graphical representations of data, including histograms, box plots, line plots, and scatterplots.

# GRADE 7

## *Students will be able to....*

*(Classes are split into three levels in grades 3-8. The content listed here is the middle level.)*

- Understand and use ratios and proportions to represent qualitative relationships including problems with percents, similarity, and scale.
- Develop an understanding of large numbers and recognize and appropriately use exponential, scientific, and calculator notation.
- Use factors, multiples, prime factorization, and relatively prime numbers to solve problems.
- Develop meaning for integers; represent and compare quantities with them; perform four operations.
- Understand and apply the properties that govern real number systems (identity, inverse, commutative, associative).
- Define sets of numbers (natural, whole, integers, rational, irrational, and real).
- Apply the distributive property to expand expressions, factor out common factors, and combine like terms.
- Develop and use strategies to estimate the results of rational number computations and judge the reasonableness of the results.
- Represent, analyze, and generalize a variety of patterns with tables, graphs, words, and, when possible, symbolic rules.
- Graph linear equations in a coordinated plane.
- Solve linear equations including those with variables on both sides using the properties of equality.
- Solve simple problems involving rates and derived measurements for such attributes as velocity and density.
- Discuss and understand the correspondence between data sets and their graphical representations, especially histograms, stem-and-leaf plots, box plots, and scatterplots.
- Determine the theoretical and experimental probability of events.
- Describe probabilities quantitatively with decimals, fractions, and percentages.
- Model real world events with probability.

# GRADE 8

## *Students will be able to....*

*(Classes are split into three levels in grades 3-8. The content listed here is the middle level.)*

- Add/subtract polynomials.
- Create and critique inductive and deductive arguments concerning geometric ideas and relationships, such as congruence, similarity, and the Pythagorean relationship.
- Explore relationships between symbolic expressions and graphs of lines, paying particular attention to the meaning of intercept and slope.
- Factor polynomials.
- Make conjectures about possible relationships between two characteristics of a sample on the basis of scatterplots of the data and approximate lines of fit.
- Multiply/divide polynomials.
- Recognize and generate equivalent forms for simple algebraic expressions; solve linear equations.
- Recognize and solve inverse functions.
- Solve quadratic equations.
- Solve systems of equations and systems of inequalities.
- Translate between words and symbols.
- Understand absolute value as distance.
- Understand exponent rules, including negative and fractional (roots).
- Use coordinate geometry to represent and examine the properties of geometric shapes.
- Use graphs to analyze the nature of changes in quantities in linear relationships.
- Use symbolic algebra to represent situations and to solve problems, especially those that involve linear relationships.