

**Perelman Jewish Day School**  
**FIFTH GRADE MATH CURRICULUM**

**OVERALL GOALS AND OBJECTIVES**

In Fifth Grade, we continue to review and build on the foundation of the experiences the children received the previous year. A new goal for fifth grade is to help students realize that problem solving and math experiences are an integral part of every topic and everyday situations. We move towards more sophisticated and abstract thinking, problem solving, computation, analyzing math strategies and assessment of math performance. We extend math experiences using hands on activities, manipulative and practice skills. The program continues to enrich and remediate when needed. Our continuing goal is for our children to feel comfortable and proficient with the skills they are acquiring. The goal is to teach for understanding and to have the language to explain math operations.

**CONCEPTS AND SKILLS**

***Whole Numbers/Notation/Relations***

- Read, write, and use numbers through billions
- Compare/order
- Use inequality signs
- Identify place value of digits
- Express and identify standard numeral in expanded notation form
- Read, write number words and match to standard numerals
- Estimate large quantities
- Interpolate number on graduated scale
- Skip count by any single digit, power of ten, from any number, ascending or descending order
- Informal exploration of non-decimal bases, place value system
- Extend and analyze numerical patterns
- Extend and analyze prime and composite numbers
- Review properties and operations of odd/even numbers
- Develop and use properties of operations

***Operations/Computation***

- Use mental math

***Addition***

- Maintenance of speed and accuracy
- Extend skill in finding unknown addend, both for equalities and inequalities (variable in any position)
- Use equations to solve problems
- Review and extend all computational algorithms for mastery

**Perelman Jewish Day School**  
**FIFTH GRADE MATH CURRICULUM-2008-2009**

***Subtraction***

Maintenance of speed and accuracy  
Extend skill in finding missing terms, both for equalities and inequalities (variable in any position)  
Use equations to solve problems  
Review and extend all computational algorithms for mastery  
Special attention to zeros in minuend  
Check subtraction by using addition

***Multiplication***

Maintenance of speed and accuracy  
Review arrays as models for multiplication  
Review and extend all computational algorithms for mastery  
Introduce three digit factors: stress internal zeros in factors  
Review multiplication by multiples of ten  
Identify factors/multiples

***Division***

Use measurement and partition contexts  
Maintenance of speed and accuracy  
Review symbols for division: computational and equation form, fraction form  
Find “missing” factor (quotient or divisor), equalities and inequalities  
Review and extend all computational algorithms, one, two, and three digit divisors  
Review multiples of ten as divisors and quotients  
Introduce two digit divisors, three digit quotients,  $r=0$  and  $r$  not equal to 0  
Stress quotients with internal and trailing zero  
Treatment of non-zero remainders:  $r=n$  and fractional form  
Check division by multiplication, interchanging of quotient/divisor

***Rational Numbers***

***Fractions***

Review symbols and terms – numerator/denominator  
Review multiple contexts of fractions: regions, sets, indicated division, measurement, ratio  
Review and extend concept of ratio  
Review equal ratios (proportions) and test for equality/ inequality  
Introduce scale as related to ratio-proportion  
Review equivalencies: generating sets of fractions  
Order/compare  
Review all computational algorithms, proper fractions, mixed numbers, like and unlike denominators, with or without need to simplify sum

**Perelman Jewish Day School**  
**FIFTH GRADE MATH CURRICULUM**

***Rational Numbers***

***Fractions(cont.)***

Practice two or more addends (column addition)  
Explore properties of addition of rational numbers  
Review proper fractions, mixed numbers, like and unlike denominators, with and without need to simplify differences  
Introduce whole number minus proper fraction  
Introduce mixed number minus proper fraction, like and unlike denominators, with and without regrouping  
Whole number times proper fraction  
Use of term “of”  
Proper fractions as factors (fraction times fraction) with and without need to simplify product  
Informal introduction of whole number divided by common fraction  
Quotients as mixed numbers: division, algorithms, non-zero remainders

***Decimals***

Read, write, and use decimals and mixed decimals through thousandths  
Recognize use of decimal notation in everyday life (library systems, money, FM dials, barometer readings, rainfall, sport competition, etc.)  
Relate decimal notation to common fraction form, stressing denominators with powers of ten  
Identify place value of digits  
Read number words and match to numerals  
Equivalencies: decimals- decimal, fraction – decimal  
Round, compare and order  
Interpolate decimals, mixed decimals on number line  
Review all computational algorithms, with and without regrouping (Review “ragged” decimals)  
Computational algorithms with and without regrouping  
Whole numbers times decimal, tenths, and hundredths  
Relate to fraction form for placement of decimal point  
Decimals and mixed decimals as factors  
Decimals and mixed decimals times 10, 100, and 1000  
Introduce division

***Graphing/Statistics/Probability***

Generate, record, analyze, and interpret graphs, charts, and tables  
Construct line graph, pictograph, bar and double bar graphs, circle graphs, plot line, frequency charts, and stem and leaf graphs  
Select appropriate graph to record information and appropriate scale  
Use ordered pairs to locate position on co-ordinate grid

**Perelman Jewish Day School**  
**FIFTH GRADE MATH CURRICULUM-2008-2009**

***Graphing/Statistics/Probability(cont.)***

Record occurrence of events, favorable outcomes in simple probability experiments  
Use fraction form to indicate probability of events  
Make predictions and inferences from data  
Compute average  
Differentiate between mean, mode, median and range

***Algebraic Thinking***

Extend function machines and record algebraically  
Extend balancing equations using variables  
Evaluate expressions with variables, parentheses, exponents  
Inequalities  
Solve problems using formulas  
Order of operations

***Geometry/Geometric Relations***

Introduce symbol for point, line, line segment  
Construct and name points, lines, line segments  
Review positions of lines: intersecting, parallel, perpendicular, horizontal, vertical, diagonal  
Introduce ray: concept and symbol  
Name by letters, measure, and construct angles  
Use symbol for angle  
Compare angles, any position  
Review names and properties of regular polygons and solids  
Review congruence: line segments and polygons  
Review and develop concept of similarity  
Explore lines of symmetry  
Explore geometric transformation  
Construct polyhedrons, solids, and circles  
Review identification of center, radius, and diameter  
Explore properties of circles  
Find perimeter of regular and irregular plane figures using customary and metric units  
Informally develop formula for perimeters  
Find volume, using customary and metric units  
Informally develop formula for volume of cube, cylinder, sphere, cone

***Measurement***

Include computation with units of measurement where appropriate

**Perelman Jewish Day School**  
**FIFTH GRADE MATH CURRICULUM**

***Time***

Review comparison and conversion of temporal units  
Review symbols and abbreviations  
Review AM, PM, decade, century, leap year, etc.  
Use standard and digital clocks to tell time and to compute elapsed time  
Read and use timetables

***Linear - Customary/Metric***

Review comparison and conversion of units  
Review symbols and abbreviations  
Use tools for measurement, measuring from any place of ruler or tape  
Review all units: km, m cm dm, and mm

***Volume/Capacity/Weight/Mass***

Review comparison and conversion of units  
Review symbols and abbreviations  
Review “parts” of units, such as half-pint, half gallon, etc  
Review milliliter and abbreviations  
Use tools of measurement

***Problem Solving***

Utilize and extend problem solving strategies such as acting out a problem, using objects, guessing and checking, writing an equation, finding patterns, and making tables, charts, graphs, working backwards, eliminating unnecessary information, using smaller numbers  
Extending the use of estimation to judge reasonableness of answers  
Working cooperatively to generate and solve traditional and non-traditional problems  
Using calculators to solve higher order thinking problems  
Discussing and writing about problem solving process  
Exploring alternative approaches to solutions  
Develop the ability to define a problem, generate and compare alternatives, arrive at a solution and evaluate the solution

***Calculators/Technology***

Reinforce skills  
Generate patterns  
Aid and explore possible solutions to problem solving  
Spreadsheet

**MATERIALS/RESOURCES**

*Scott Foresman-Addison Wesley Mathematics*  
*Everyday Math*  
*Problem-Solving Connections*  
Supplemental resources  
Stock Market Game

**Perelman Jewish Day School**  
**FIFTH GRADE MATH CURRICULUM-2008-2009**

Math Quest  
The Problem Solver

**TEACHING METHODS**

Whole class instruction  
Small group instruction  
Individual instruction  
Paired learning  
Self exploration/discovery  
Use of manipulatives  
    Multilinks  
    Geoboards  
    Decimal Factory  
    Pentominoes  
    Fraction Bars

**EVALUATION/ASSESSMENT**

Standardized tests  
Pre and post unit tests  
Homework  
Group projects  
Cumulative assessments  
Observation  
Daily warmups