

**Marsh Valley School District**  
**Quick Reference Curriculum Guide – 8<sup>th</sup> Grade Mathematics**  
**June 2004**

**Algebraic Concepts**

- ❑ Understand /use variables in expressions, equations, and inequalities (P) 340.01.a
- ❑ Evaluate expressions using the correct order of operations (M) 340.02.a & 337.02.c
- ❑ Solve one-step and 2-step equations (whole numbers) (P) 340.03.a
- ❑ Translate word expressions into algebraic expressions and equations (P) 330.01.a,b
- ❑ Substitute and evaluate algebraic expressions (I-P) 330.02.a
- ❑ Extend patterns and identify a rule (function) that generates the pattern (I) 343.01.a
- ❑ Use function relationships to explain how a change in one quantity results in a change in another (I) 343.01.b
- ❑ Simplify algebraic expressions 340.02.c
- ❑ Compare number sentences that include negative and ordering symbols (<,>=) (P) 340.01.c
- ❑ Plot and label a sequence of coordinate points on a graph, and connect them with a straight line (P) 340.03.a

**Mathematics Processes**

- ❑ Use a variety of strategies including common mathematics formulas to solve problems involving real-world situations (P) 338.01.a
- ❑ Discuss mathematical ideas/make conjectures and convincing arguments (P) 338.02.c
- ❑ Use mathematical vocabulary, notations, symbols, definitions, models, etc. (P) 328.04.a-c
- ❑ Use estimation to predict computation and to check reasonableness of an answer (P) 327.03.a-d

**Real Numbers**

- ❑ Understand/use appropriate vocabulary for real numbers (natural/whole/integers/rational/irrational) (I-P) 337.01.b
- ❑ Consistently add/subtract/multiply/divide rational numbers – include integers, decimals, fractions (M) 337.02.a
- ❑ Compare and order fractions, decimals, and integers (R) 337.01.e
- ❑ Determine a remainder expressed as a decimal and a fraction (M)
- ❑ Estimate sums/differences/products/quotients of decimals (R)
- ❑ Round decimals (R)
- ❑ Express terminating decimals as fractions and fractions as decimals (P)
- ❑ Express a fraction in simplest form (M) 327.01.e
- ❑ Convert mixed numbers to improper fractions and vice versa (R) 327.01.a
- ❑ Use estimation with fractions and mixed numbers (R) 327.01.a

**Measurement**

- ❑ Convert units of measurement within each system (M) 339.01.e
- ❑ Measure indirectly (heights/distances) using proportions (M) 339.03.a
- ❑ Estimate/measure length, area, volume, angles, and mass in metric and standard units (M) 339.01.a,b
- ❑ Recognize differences and relationships between length, area, perimeter, and volume (P) 331.09.c,e
- ❑ Solve for perimeter, circumference, and area of triangles, quadrilaterals, and circles (P) 339.01.d & 341.01.e
- ❑ Find volume and surface area of three-dimensional figures (P) 341.01.f
- ❑ Solve story problems using measurement (P) 331.01.e
- ❑ Use rates to make indirect measurements (I) 329.02.a
- ❑ Use correct units in real-world applications (P) 339.04.a

**Geometry**

- ❑ Explore/model the effects of reflections/translations/rotations on various shapes (I-P) 341.01.g
- ❑ Apply the concepts/properties of congruence, similarity and symmetry (P-M) 341.01.d
- ❑ Construct/measure angles and shapes (P-M) 341.01.b
- ❑ Apply concepts/properties/relationships of points, lines, planes, angles, and shapes (P-M) 341.01.c
- ❑ Describe/classify one-, two-, and three-dimensional figures (P-M) 341.01.a
- ❑ Explore right triangle geometry using the Pythagorean Theorem (I-P) 341.02.a

### **Number Theory**

- ❑ Understand and use basic properties: associative, commutative, distributive, zero, and identity (P) 340.02.a
- ❑ Understand/use absolute value (I-P) 337.01.a
- ❑ Display real numbers in scientific notation (I-P) 337.01.c
- ❑ Determine the GCF and LCM (M) 337.01.d
- ❑ Find prime factors of composite numbers (M) 317.01.e
- ❑ Determine equivalent forms among fractions, decimals and percents (P) 317.01.b
- ❑ Apply ratio and proportion to obtain solutions to problems involving unit rates (P) 327.01.b
- ❑ Calculate square roots of perfect squares (P) 327.02.c
- ❑ Understand/use exponents (P) 337.02.d
- ❑ Set up and obtain solutions to proportion problems (P) 329.03.a

### **Data Interpretation**

- ❑ Construct a variety of graphs (scatter plots, line graphs, bar graphs, pie charts, and leaf plots) (P) 342.01.a
- ❑ Represent a set of data in a table, as a graph, and as a math relationship (I-P) 343.02.a.
- ❑ Interpret and make predictions from graphs (P) 342.01.a & 342.05.a
- ❑ Recognize when graphs and statistics are misleading (I-P) 342.01.a
- ❑ Collect/organize data using appropriate notation in tables, charts, and graphs. (P) 342.02.a

### **Probability/Statistics**

- ❑ Calculate mean, median, mode, and range (P) 342.03.a,b
- ❑ Use basic mathematical probability vocabulary (P) 342.04.b
- ❑ Describe event probability using fractions and decimals (P) 342.05.a
- ❑ Make predictions based on simple experiments (P) 342.05.a
- ❑ Explain events using basic sample spaces (I-P) 332.01.c
- ❑ Model situations of probability using simulations (P) 342.04.a

### **Technology**

- ❑ Determine the appropriate use of a calculator (P) 327.02.e,a
- ❑ Use computer applications to display/manipulate data (I-P) 338.03.b