

Mansfield ISD
MATHEMATICS DEPARTMENT
Entering Concepts

Skills/concepts students should have when they enter a grade or course:

Kindergarten

- Ability to listen and attend to a task
- Willingness to explore and investigate
- Use words to communicate solutions, ideas, and discoveries
- Exposure to numbers and the counting of objects
- Exposure to basic geometric shapes
- Awareness of the similarities and the differences of objects

Grade 1

- Recognize and write numbers to 10
- One-to-one correspondence counting objects to 20
- Recognize patterns and tell what they see
- Risk-taking in the problem solving process
- Knowledge of basic math vocabulary and symbols (+, -, =)
- Concepts of more or less

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Grade 2

- One-to-one correspondence of numbers to objects beyond 20
- Number awareness; instant recognition of objects in a group
- Read, write and compare numbers to 100
- Use basic number sense to compose and decompose numbers
- Ability to count in ways other than by one's
- Understanding the concepts of addition and subtraction as combining groups and taking away from group
- Recognize patterns in everyday life and extend the pattern
- Recognize parts of a whole when separated into two, three, or four equal parts
- Know the days of the week and months of the year
- Identify time to the hour and half hour
- Identify the name and value of pennies, nickels, dimes, and quarters
- Identify the names and attributes of basic geometric shapes and solids

Grade 3

- Addition and subtraction facts and strategies with re-grouping
- Ability to use correct operational vocabulary and terminology
- Place value through the hundreds
- Use basic number sense to compose and decompose numbers
- Skip count by two's, five's, and ten's starting at any number and extending past 100
- Basics concepts of money (the value of coins) and time (five minutes)
- Problem solving strategies - Show how you solved the problem and label the answers with complete sentences
- Justify answers and check for reasonableness, does the answer make sense

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Grade 4

- Multiplication facts (1-12)
- Number concepts - place value, multiplication and division fact families, 3-digit subtraction with re-grouping
- Problem solving with communication that includes explanation of the strategy used with complete sentences
- Measurement skills for length (reading rulers to the inch and half inch), elapsed time (to the hour and half hour), and temperature
- Understand mathematical terminology such as increasing and decreasing amounts

Grade 5

- Multiplication facts (1-12)
- Division concepts - two digit and three digit numbers divided by one digit divisors
- Measurement skills such as the ability to read a ruler to the inch, half inch, and quarter inch
- Ability to choose the best problem solving strategy for their own use and give the answer in complete sentences
- Place value from the hundredths to the millions with decimal placement
- Understand and use mathematical terminology
- Identify equivalent fractions from pictorial models

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Grade 6

- Addition, subtraction, multiplication, and division of whole numbers and the appropriate arithmetic vocabulary
- Knowledge of basic facts for all whole number operations
- Ability to simplify fractions and find other equivalent fractions
- Measurement skills such as the ability to read a ruler to the inch, half inch, and quarter inch
- Place value from the hundredths to the millions with correct decimal placement

Grade 7

- Ability to convert between fractions, decimals, and percents
- Knowledge of operations with decimals such as multiplications using decimals and a decimal divided by a whole number with fraction and decimal remainders
- Ability to add and subtract fractions and mixed numbers and the accompanying vocabulary like common denominator, least common multiple, and greatest common factor
- Ability to measure with a ruler to the eighth inch and ability to convert measures within each system
- Knowledge of order of operations with emphasis on multiply and divide followed by add and subtract, then extend to parenthesis

Grade 8

- Knowledge of integers and integer operations (addition, subtraction, multiplication, and division)
- Operations with positive rational numbers
- One-step equations with process and two-step equations with whole number answers
- Ability to use the order of operations (PEMDSA) to solve complex problems
- Ability to solve area and perimeter problems

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Algebra I

- Use order of operations to solve problems using integers and rational integers
- Solve multi-step equations
- Be familiar with the coordinate plane and graphing using tables
- Ability to evaluate expressions and geometric (area, surface area, volume, and Pythagorean Theorem) formulas
- Ability to problem solve and think critically
- Ability to solve problems that incorporate fractions using one or more of the operations
- Ability to solve application problems involving probability and statistics

Geometry

- Ability to perform operations with real numbers, especially fractions
- Solve any linear equation or proportion
- Ability to graph linear equations
- Ability to evaluate formulas and expressions
- Possess critical thinking skills
- Ability to distinguish between a linear and quadratic equations and solve
- Ability to simplify radicals including irrational radicals
- Ability to solve systems of equations

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Algebra II

- Solve any linear equation or inequality
- Multiply and factor polynomials
- Graph linear, quadratic, and linear inequalities from any form
- Solve systems of equations involving 2 variables
- Use laws of exponents to simplify expressions
- Identify domain and range from ordered pairs, tables, and simple graphs