**Curriculum**

**7th Grade Mathematics**

**Course Overview**

Math 7 is an intermediate middle school math course building logically and progressively from the sixth-grade course material. Students are instructed in a broad range of topics in order to establish a solid foundation upon which future mathematical knowledge will build. Instruction is delivered using a variety of methods guided by current research and best practice in early adolescent education. Mathematical concepts from the sixth-grade course will be reinforced and studied in greater depth. What differentiates this course from the sixth-grade class, is the incorporation of more abstract concepts. For example, students will study square roots, irrational numbers, slope, and inequalities. There will be an increased emphasis on solving word problems and using deductive reasoning. Having practiced multiple problem-solving strategies, students will be expected to become proficient in choosing the most expeditious method. Learning is assessed through daily homework, class activities, quizzes, and tests.

**Department Standards**

Students will be able to comprehend mathematical concepts.

Students will apply mathematical procedures accurately, efficiently, and appropriately.

Students will be able to formulate, represent, and solve mathematical problems.

Students will develop logical mathematical thought and precise mathematical communication.

**Benchmarks**:

Students will be able to:

demonstrate an understanding of number sense;

review decimal operations;

review fraction operations;

demonstrate mastery of integers;

recognize real numbers and their properties;

demonstrate mastery of single step equations;

recognize and solve inequalities and functions;

demonstrate and apply statistics and data analysis through the creation and interpretation of graphs, charts and plots;

demonstrate use of ratios and proportions;

demonstrate use of percents;

demonstrate an understanding of geometric figures;

recognize and use square roots and Pythagorean theorem;

demonstrate an understanding area of figures;

demonstrate an understanding of area and volume of solids; and

recognize and use probability.

**Performance Indicators**

First Quarter

Students will be able to:

describe patterns using whole number operations;

evaluate variable expressions;

evaluate and write powers;

evaluate an expression with more than one operation;

plan, draw and solve a word problem;

compare, order, and round decimals;

add and subtract decimals;

multiply decimals;

divide decimals;

use estimation to determine is an answer is close;

read and write numbers using scientific notation;

write a number as a product of prime numbers;

find the GCF of two or more numbers;

find the LCM of two or more numbers;

create equivalent fractions; and

compare and order fractions.

Second Quarter

Students will be able to:

convert and order mixed and improper fractions;

write fractions as a decimal and decimals as fractions;

add and subtract fractions;

add and subtract mixed numbers;

multiply fractions and mixed numbers;

divide fractions and mixed numbers;

measure and convert metric units;

measure and convert metric units;

measure and convert customary units;

make and interpret bar and line graphs;

make and interpret circle graphs

conduct a survey and prevent bias;

calculate mean, median, mode and range for a set;

make and interpret Stem and Leaf Plots;

make and interpret Box and Whisker Plots; and

make and interpret Histograms.

compare and order integers;

add integers;

subtract integers;

multiply integers;

divide integers;

evaluate an expression with more than one operation and integers;

define, recognize and order rational numbers;

use the properties of rational numbers to justify a solution;

evaluate expression using the distributive property;

write a variable expression or equation given a verbal description;

simplify variable expressions;

solve an addition or subtraction equation;

solve a multiplication or division equation;

solve an equation with two operations;

write, solve and graph an inequality;

write and solve a function;

identify and plot points on a coordinate plan; and

graph a function on a coordinate plane.

Third Quarter

Students will be able to:

evaluate and estimate fraction operations;

write and compare ratios;

use rates to compare two quantities with different units;

find slope of a line and use slope to graph a line;

solve proportions using equivalent ratios and algebra;

use cross products to solve a proportion;

use proportions with a scale drawing or model;

use a fraction to find the percent of a number;

use proportions to solve a percent problem;

write percents as decimals and decimals as percents;

use the percent equation to solve a percent problem;

find the percent change for two numbers;

find the discount, mark-up, tax, and tip of items;

calculate simple interest or find the unknown variable;

classify angles and use angle relationships;

identify and use special pairs of angles;

classify angles by side and angle;

classify polygons;

use properties of similar and congruent polygons;

use proportions with similar polygons;

identify transformations and symmetry; and

graph transformations in a coordinate plane.

Fourth Quarter

Students will be able to:

evaluate expression involving square roots;

find a square root to the nearest tenth;

find the missing side of a right triangle;

use the area formula of a parallelogram to find missing values;

use the area formula of a triangles or trapezoid to find missing values;

use the area and circumference formulas of a circle to find missing values;

classify and sketch solids;

use the surface area of a rectangular prism formula to find missing values;

use the volume of a rectangular prism formula to find a missing value;

use the surface area of a cylinder formula to find missing values;

use the volume of a cylinder formula to find a missing value

find probabilities;

make tree diagrams;

use the counting principal;

find permutations and combinations;

find the probability of disjoint events; and

find the probability of independent events.

**Assessments**

Quarter 1

Daily Homework- based on daily lesson topics

Quizzes- given halfway through each chapter

Tests- one given for each chapter

Projects- Data Collection Display, Scale Model, Symmetry Picture, Tessellation

Chapter Packets- collection of notes, assignments, and daily work

Quarter 2

Daily Homework- based on daily lesson topics

Quizzes- given halfway through each chapter

Tests- one given for each chapter

Cumulative Test- given on material covered in Semester 1

Project- Scale Model

Chapter Packets- collection of notes, assignments, and daily work

Quarter 3

Daily Homework- based on daily lesson topics

Quizzes- given halfway through each chapter

Tests- one given for each chapter

Projects- Symmetry Picture, Tessellation

Chapter Packets- collection of notes, assignments, and daily work

Quarter 4

Daily Homework- based on daily lesson topics

Quizzes- given halfway through each chapter

Tests- one given for each chapter

Cumulative Test- given on material covered in Semester 2

Projects- Probability Game

Chapter Packets- collection of notes, assignments, and daily work

**Core Topics**

First Quarter

Number Sense, Patterns, and Algebraic Thinking

Decimal Operations

Data and Statistics

Second Quarter

Number Patterns and Fractions

Fraction Operations

Integers

Equations, Inequalities, and Functions

Third Quarter

Ratios and Proportions

Percents

Geometric Figures

Fourth Quarter

Measurement and Area

Surface Area and Volume

Probability

**Specific Content**

First Quarter

Patterns

Variables and Expressions

Powers and Exponents

Order of Operations

Problem Solving

Decimal Basics

Adding and Subtracting Decimals

Multiplying Decimals

Dividing Decimals

Decimal Estimation

Scientific Notation

Prime Factorization

Greatest Common Factor

Least Common Multiple

Equivalent Fractions

Fraction Basics

Second Quarter

Mixed and Improper Fractions

Convert Fractions and Decimals

Adding and Subtracting Fractions

Adding and Subtracting Mixed Numbers

Multiplying Fractions and Mixed Numbers

Dividing Fractions and Mixed Numbers

Metric Units

Customary Units

Bar and Line Graph

Circle Graphs

Surveys

Mean, Median, Mode and Range

Stem and Leaf Plots

Box and Whisker Plots

Histograms

Integer Basics

Adding Integers

Subtracting Integers

Multiplying Integers

Dividing Integers

Order of Operations Using Integers

Rational Numbers

Properties of Rational Numbers

Distributive Property

Writing Expressions and Equations

Simplifying Expressions

Solving Addition and Subtraction Equations

Solving Multiplication and Division Equations

Solving Two Step Equations

Solving Inequalities

Functions and Equations

The Coordinate Plane

Graphing Functions

Third Quarter

Ratios

Rates

Slope

Proportions

Cross Products

Scale Drawings and Models

Percents as Fractions

Percents as Proportions

Percents and Decimals

The Percent Equation

Percent Change

Discount, Mark-up, Tax and Tip

Simple Interest

Angles

Pairs of Angles

Triangles

Polygons

Similar and Congruent Polygons

Proportions and Similar Polygons

Transformations

Transformations in a Coordinate Plane

Fourth Quarter

Square Roots

Approximating Square Roots

Pythagorean Theorem

Area of a Parallelogram

Area of Triangle and Trapezoids

Area and Circumference of Circles

Solids

Surface Area of a Rectangular Prism

Volume of a Rectangular Prism

Surface Area of a Cylinder

Volume of a Cylinder

Probability

Tree Diagrams

The Counting Principal

Permutations and Combinations

Disjoint Events

Independent and Dependent Events

**Resources**

Textbook- McDougal Littell Middle School Math- Course 2

Web Applications (from publisher)

Section Specific Worksheets (from publisher)

Pizzazz WorksheetsSMARTBoard tools