# ac / math scope 



## Math Activity Objects

## MIDDLE SCHOOL

NUMBERS AND OPERATIONS

## Whole Numbers and Integers

- Round Whole Numbers
- Puzzle It! Number Relationships
on Operation
- Subtraction of Integers
- Addition of Integers
- Special Numbers
- Prime Factorization
- Finding Least Common Multiples
- Greatest Common Factor of Numbers

Rational Numbers and Real Numbers

- Compare and Order Proper Fractions
- Compare and Order Mixed Numbers
- Adding and Subtracting

Fractions and Mixed Numbers

- Multiplication of Fractions
- Division of Fractions
- Equivalent Fractions
- Decimal Representations
- Compare and Order Decimals with Races
- Factorization of Decimals Using a Model
- Rounding Decimals
- Puzzle It! Operations on Numbers
in Scientific Notation
- Solving Problems Using Money
- Park Planning Using Rational Numbers
- Solving Problems Using Proportions
- Problem Solving Involving Ratio
and Proportion
- Scale Drawing
- Using a Percent Model
- Use Percent Proportion to Solve Problems
- Simple Interest
- Percentage of Mixtures
- Estimating the Square Root
of Non-Perfect Integers


## MIDDLE SCHOOL

ALGEBRA

## Patterns

- Problem Solving Involving Gauss' Patterns - The General Rule for Input/Output Tables


## Equation, Equality, Inequality,

Function and Graphs

- Different Forms of Representation
for a Relationship
- Translating Problems into

One-step Equations

- Solving One-Step Linear Equations
- Solving Two-Step Linear Equations
- Graphing Linear Inequalities in One Variable
- Solving One-Step Linear Inequalities
- Slope of a Line
- Graphs of One-step Linear Equations
- Graphs of Two-step Linear Equations
- Find the Equations of Linear Graphs
- Graphing Linear Inequalities in Two Variables


## Algebraic Expressions

- Factoring Algebraic Expressions
- Evaluation of Algebraic Expressions


## MIDDLE SCHOOL

GEOMETRY
Basic Concepts in Geometry

- Basic Elements of Geometry
- Points, Lines, Planes and Their Relationships
- Angles and Types of Angles

Transformational Geometry

- Application of Translation
- Drawing the Reflection of a Figure
- Symmetry of a Figure


## Triangles

- Interior and Exterior Angles of a Triangle
- Types of Triangles
- Let's Find Congruent Triangles
- Let's Find Similar Triangles
-Trigonometric Ratios in the Right Triangles - Trigonometric Ratios of Special Angles


## Polygons

-Sum of the Exterior Angles of Polygons

- Interior Angles of the Polygons
- Classification of Quadrilaterals
- Area of Composite Shapes
-The Relationship between
Perimeter and Area
- Proof of the Pythagorean Theorem
- Using the Pythagorean Theorem
to Solve Problems
- Area of Parallelogram
- Area of a Trapezoid


## Circle

- Arcs and Angles of a Circle
- Ratio of a Circle's Circumference
to Its Diameter
- Calculating the Circumference of a Circle
- Formula for the Area of a Circle


## 3D Geometry

- Drawing 2D Views of a 3D Object
- Completing the Missing 2D View
of a 3D Object
- Observing Changes in Volume
of Square Prisms
- Problem Solving Involving Volumes
of Prisms
- Observing Changes in Volume
of Quadrilateral Pyramids
- Observing Changes in Volume of Cylinders
- Formula for the Volume of a Sphere
- Formula for the Volume of a Cone
- Observing Changes in Surface

Area of Regular Prisms

- Observing Changes in Surface Area of Square Pyramids
- Observing Changes in Surface

Area of Cylinders

- Observing Changes in Surface Area of Cones

MIDDLE SCHOOL
MEASUREMENT

## Measurement

- Conversion of Length Measures
- Conversion of the Area Measures
- Conversion of Volume Measures
- Measuring Time

MIDDLE SCHOOL
DATA ANALYSIS AND PROBABILITY

## Counting Principles

- Fundamental Counting Principle
- Factorial Notation
- Permutations and Their Properties
- Combinations

Tables and Graphs

- Drawing Bar Graphs
- Interpreting Bar Graphs
- Bar Graphs and Line Graphs


## Math Activity Objects

## - Circle Graphs

- Find the Appropriate Graph
- Double Bar Graphs
- Tally Charts
- Pictograph
- Histogram
- Line Plot
- Box and Whisker Plots
- Stem and Leaf Plot


## Measurement of Central Tendency

- Mean, Median and Mode
- Calculate Mean, Median, Mode


## Probability

- The Concept of Probability
- Experimental and Theoretical Probabilities
- Probability Using Tree Diagrams
- Analyze Experimental Probability

Using Graphs

- Playing with Probability
-Find the Given Probability
- Overlapping and Mutually Exclusive Events


## HIGH SCHOOL

## NUMBER AND OPERATIONS

## Numbers

- Prime Factorization
- Greatest Common Factor of Numbers
- Ratio and Rate
- Proportion and Its Properties
- Direct Variations and Their Graphs
- Properties and Rules of Exponents
- Properties and Rules of Radicals
- Absolute Values and Their Properties
- Multiplication and Division of Radicals - Properties of Rational \& Irrational Numbers

Sets

- The Basics and Properties of Sets


## - Subsets of a Set

- Union and Intersection of Sets
- Complement of a Set
- Difference of Two Sets
- Problems Involving Sets


## HIGH SCHOOL

ALGEBRA

## Algebraic Representation

- Factoring Advanced Algebraic Expressions
- Multiplying and Dividing Rational Expres-
sions
Linear Equations and Inequalities
- Solving One-Step Linear Equations
- Solving Two-Step Linear Equations
- Distance Problems: Two Travelers Starting at

The Same Time

- The Concept of Linearity
- The Concept of Slope
- Equation of a Line
- Two lines with respect to each other
- Solving Systems of Linear Equations by Elimination
Solving Systems of Linear Equations Graphically
- Graphing Linear Inequalities in One Variable - Solving One-Step Linear Inequalities - Graphing Linear Inequalities in Two Variables


## Relations and Functions

- Different Forms of Representation for a Relationship
- The Concept of Relation
- The Concept of Function
- Determining Whether a Relation Is also a Function
- The Domain and Range of a Function
- Fundamental Concepts of the

Inverses of Functions

Calculations Based on the Graph
of Functions

- Finding Solution Sets Based on

Graphs of Functions

## Quadratics

- Introducing the Quadratic Function and Its Graph
- Introducing the Quadratic Equations in One Variable
- A Quadratic Function

Given in General and Vertex Form

- Solving Quadratic Equations by Factoring
-Solving Quadratic Equations by Completing the Square
- Solving Quadratic Equations using Quadratic Formula and Discriminant
- Roots and Coefficients of
a Quadratic Equation
- Visualizing the Parabola
- Graphing a Quadratic Function: Vertex Form
- Graphing a Quadratic Function:

Intercept Form

- Graphing a Quadratic Function:

General Form

- Finding the Equation of a Parabola
- The Range of a Quadratic Function
- How Two Parabolas Intersect
- Solving Quadratic Inequalities by Graphing - Quadratics with Parameters


## Polynomials

- Characteristics of Polynomials
- Polynomial Long Division
- Polynomial Synthetic Division
- Remainder Theorem


## Trigonometry

- The Angle, and Angles in Standard Position
- Trigonometric Ratios in the Right Triangles
- Trigonometric Ratios on the Unit Circle
- Trigonometric Ratios of Special Angles
- Degree and Radian
- Arc Length in a Circle
- Area of a Sector
- Co-Terminal Angles
- The Reference Angle
-Finding the Period
of a Trigonometric Function
- Graphing Sine Function
- Graphing Cosine Function
- Graphing Tangent Functions
- Graphing Cotangent Functions


## HIGH SCHOOL

DATA ANALYSIS AND PROBABILITY

## Counting Principle

- Factorial Notation
- Fundamental Counting Principles
- Counting Principles: Digits

Circular Permutation Problems

- Permutations and Their Properties
- Permutations with Repetition
- Combinations and Their Properties
- Problems Involving the Number
of Subsets of a Set
Counting Problems: Number
of Parallelograms


## Probability

- The Concept of Probability

Experimental and Theoretical Probabilities

- Probability Using Tree Diagrams
- Analyze Experimental Probability

Using Graphs

- Playing with Probability
- Find the Given Probability
- Overlapping and Mutually Exclusive Events
- Conditional Probability and Dependent and Independent Events



## Awards

Best Online Instructional Solution
2009 CODiE Award
Software \& Information
Industry Association
Best Science Instructional Solution 2009 CODiE Award Finalist Software \& Information Industry Association

## Best Middle School Math and

 Science Website2009 BESSIE Award
ComputED Learning Center
Teachers' Choice Award
2009
Learning Magazine
Rookie of the Year
2008 EdNET Award
The Heller Reports and Quality
Education Data
Best Middle School Math
and Science Website
2008 EDDIE Award
ComputED Learning Center
Education Newcomer
of the Year
2008 CODiE Award
Software \& Information
Industry Association
Distinguished
Achievement Award
2008
The Association of
Educational Publishers

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