

## Grade Seven

### Grade 7

#### Cluster: Shapes & Sizes

E. Geometry

F. Measurement

**Purpose: Students will understand spatial concepts of geometric properties and patterns and apply their understanding to demonstrate visual representation of those concepts by creating 2 and 3 dimensional figures. Students will use measurements attributes (i.e. length, volume, minutes, units, and tools to enhance their ability to understand the world around them.)**

#### E. Geometry

*M.7.1 Given the properties and attributes of 3-dimensional shapes students will be able to identify, draw, and distinguish the particular shapes including, but not limited to prisms, cubes, and cylinders. They will locate a position using a coordinate system.*

M.7.1.1 Students will use properties/attributes limited to number of vertices, edges, and faces to distinguish 3-dimensional shapes.(E1)

M.7.1.2 Students will use shapes of faces, and types of angles to identify and distinguish among 3 dimensional shapes. (E2)

M.7.1.3 Students will use a coordinate system to define and locate position. (E3)

M.7.1.4 Students will draw 3-dimensional shapes using appropriate tools. (E4)

#### F. Measurement

*M.7.2 Students will convert given quantities within the U.S. and metric system of measurement, including units of time. They will apply formulas to calculate perimeter, area, and volume of 2-dimensional shapes.*

M.7.2.1 Students will perform conversions between pairs within the following groups: inches, feet, yards, and miles; millimeters, centimeters, meters, and kilometers; cups, pints, quarts, and gallons; milliliters and liters; ounces, pounds and tons; grams and kilograms; seconds, minutes, hours, days, weeks, months, and years. (F2)

M.7.2.2 Students will select and apply the proper formulas to find areas and perimeters of 2-D shapes (includes circles), and volumes of rectangular solids with rational numbers with correct units. (F3)

### Grade 7

#### Cluster: Numbers & Operations

A. Number & Number Sense

**B. Computation**

I. Discrete Mathematics

**Purpose: Students will understand our numeration system by relating, counting, grouping, and place-value concepts. They will understand and demonstrate computational skills. They will use multi-step problem solving skills**

to organize, compute and compare data within real-life situations.

### **A. Number & Number Sense**

*M.7.3 Students will compare, order use convert and represent fractions, decimals, percents.*

M.7.3.1 Students will compare, order, use, and represent fractions, decimals, and percents.(A1)

M.7.3.2 Student will convert among different numeral forms (limited to terminating decimals for decimal to fraction conversion). (A2)

M.7.3.3 Students will apply concepts of integers, absolute value and positive exponents in real life situations. (A1)

M.7.3.4 Students will apply concepts of ratios in practical and other mathematical situations. (A3)

### **B. Computation**

*M7.4 Students will use order of operations to solve multi-step real life problems including whole numbers, fractions, decimals, and percents.*

M.7.4.1 Students will compute and model all four operations with whole numbers, fractions (including mixed numerals), decimals, and percents applying the proper order of operations and do straight computation with these numbers and operations. (B1)

M.7.4.2 Students will create, solve, and justify the solution for multi-step, real-life problems with whole numbers, fractions (including mixed numerals), decimals, and percents (B2)

## **I. Discrete Mathematics**

*M7.5 Students will solve real-life problems by using graphs, diagrams, flowcharts, and models.*

Grade 7  
Cluster: Patterns  
G. Patterns, Relations & Functions  
H. Algebra Concepts

**Purpose: Students will solve real life problems by analyzing patterns in mathematics. They will demonstrate their understanding of mathematical ideas and relationships in their real world.**

### **G. Patterns, Relations & Function**

*M.7.6 Given data or sets of data, students will assess relationships and apply these concepts to real world situations.*

M.7.6.1 Students will translate real-life linear situations into equation (limited to one step). (G1)

M.7.6.2 Students will solve problems involving linear patterns in the form of tables, graphs, words, rules or equations using rational numbers (including signed values). (G3)

## H. Algebra Concepts

*M.7.7 Students will identify and use variables to solve two-step equations in real life situations.*

M.7.7.1 Students find solve two-step equations using integers and positive rational numbers. (H6)

M.7.7.2 Students will evaluate formulas with no more than two variables using the appropriate operation. (H4)

M.7.7.3 Students will graph inequality statements on a number line. (H4)

## K. Mathematical Communication

*M.7.8 Students will reflect upon the mathematical concepts and relations and use their understanding of mathematics to present and justify their solutions.*

M.7.8.1 Students will read and use statistics, tables, and graphs to communicate ideas and information in convincing presentations and analyze presentations of others for bias or deceptive presentation. (K2)

M.7.8.2 Students will read data in lists, tables, frequency distributions, line plots, bar graphs, stem and leaf plots or first quadrant scatter plots and line graphs and pie charts/circles graphs. (K2)

## Grade 7

### Cluster: Mathematical Decision Making

C. Data Analysis & Statistics

D. Probability

Purpose: Students will understand, analyze, and apply concepts of data analysis and probability.

### C. Data Analysis & Statistics

*M.7.9 Students will analyze and interpret data and sets of data to identify measures of central tendency.*

M.7.9.1. Students will organize data and analyze patterns and trends in data using modes, median, means, and ranges for sets of data (emphasis on comparing sets begins). (C1)

M.7.9.2 Students will analyze data in lists, tables, frequency distributions, line plots, bar graphs or stem and leaf plots. (C1)

### D. Probability

*M.7.10 Students will identify and explain the basic concepts of probability (expresses in fractions or percent) using limited factors and simple events.*

M.7.10.1 Students will find the probability of simple events and express the probability as a fraction or a percentage (percentages limited to multiples of 10% and 25%). (D1)

M.7.10.2 Students find all possible combinations and arrangements in a problem situation with 6 elements or fewer (e.g. how many ways can the four letters in the word “math” be arranged?). (D4)

## **J. Mathematical Reasoning**

*M.7.11 Students will support reasoning in a mathematical situation using prior knowledge, models and concepts.*