

Independent School District of Boise City

Math 7

District Course #0801

Course Description

Open to: Grade 7 One Year Course

Prerequisite: None

Content: Students will focus on understanding fractions, decimals, ratios, proportions, metric and non-metric geometry, and the separation of a product into factors. Students will improve the operational skills of addition, subtraction, multiplication and division. Concepts will be referred to in math function terms to provide a foundation for the student's further study in math.

Title: Mathematics – Structure and Method, Course 1

Edition: 2001 Impression

Publisher: McDougal Littell

ISBN: 0-395-48098-1

Course Scope

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| Unit 1 | Whole Numbers, Variables and Decimals | 12 Weeks |
| Unit 2 | Integers and Graphing | 4 Weeks |
| Unit 3 | Geometric Figures | 4 Weeks |
| Unit 4 | Number Theory | 3 Weeks |
| Unit 5 | Fractions: Definitions and Relationships | 3 Weeks |
| Unit 6 | Operations with Fractions | 4 Weeks |
| Unit 7 | Solving Equations | 3 Weeks |
| Unit 8 | Percent | 2 Weeks |
| Unit 9 | Areas and Volumes | 3 Weeks |

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| Math 7 | | District Reference 0802 |
| Unit No. 1 | Whole Numbers, Variables and Decimals | 12 Weeks |

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| Instructional Objective | | Standard Reference | |
| 0802.01 Adding, Subtracting, Multiplying and Dividing Whole Numbers. | | 7.M.1.1.2,7.M.1.2.4, 7.M.1.1.7, 7.M.3.2.1, 7.M.1.1.8, 7.M.3.2.2 | |
| No. | Performance Objective | Resource Reference | Assessment Correlation |
| 01 | Basic properties | 1-1,1-2,1-3,1-4 | EOC , TMA |
| 02 | Using More Than One Operation | 1-5,1-6,1-7 | EOC, TMA |

| Instructional Objective | | Standard Reference | |
|--|------------------------------|---|-------------------------------|
| 0802.02 Using variables to write mathematical expressions, equations and inequalities. | | 7.M.1.1.8, 7.M.1.1.6, 7.M.3.1.1, 7.M.3.1.2, 7.M.3.1.3 | |
| No. | Performance Objective | Resource Reference | Assessment Correlation |
| 01 | Words Into Symbols | 2-1,2-2,2-3 | EOC, TMA, AB |
| 02 | Finding Solutions | 2-4,2-5,2-6 | EOC, TMA, AB |
| 03 | Using appropriate vocabulary | Throughout | |
| Instructional Objective | | Standard Reference | |
| 0802.03 Adding, Subtracting, Multiplying and Dividing in the Decimal System. | | 7.M.1.1.2, 7.M.1.1.4, 7.M.1.2.3 | |
| No. | Performance Objective | Resource Reference | Assessment Correlation |
| 01 | Understanding Decimals. | 3-1,3-2,3-3,3-4,3-5 | EOC, TMA, AB |
| 02 | Working with Decimals | 3-6,3-7,3-8,3-9,3-10 | TMA |
| 03 | Use appropriate vocabulary. | Throughout | TMA |

| Math 7 | | District Reference |
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| | | 0802 |
| Unit No. 2 | Integers and Graphing | 4 weeks |

| Instructional Objective | | Standard Reference | |
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| 0802.04 Adding, Subtracting, Multiplying and Dividing with Integers. | | 7.M.1.2.2 | |
| No. | Performance Objective | Resource Reference | Assessment Correlation |
| 01 | Negative Numbers | 11-1 | EOC, TMA |
| 02 | Adding and Subtracting Integers | 11-2,11-3 | EOC, TMA, AB |
| 03 | Products and Quotients with Integers | 11-4,11-5,11-6 | TMA |
| 04 | Use appropriate vocabulary. | Throughout | TMA |
| Instructional Objective | | Standard Reference | |
| 0802.05 Solving One-Step and Two-Step Equations and Graphing Ordered Pairs. | | 7.M.3.3.1 | |
| No. | Performance Objective | Resource Reference | Assessment Correlation |
| 01 | Solving Equations. | 11-7 | EOC, TMA, AB |

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| Math 7 | | District Reference 0802 |
| Unit No. 3 | Geometric Figures | 4 Weeks |

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| Instructional Objective | | Standard Reference | |
| 0802.06 Learning the fundamental concepts of plane geometry, its language and notation. | | 7.M.4.1.2,7.M.4.1.3 | |
| No. | Performance Objective | Resource Reference | Assessment Correlation |
| 01 | Points, Lines, Planes, Segments and Angles | 4-1,4-2,4-3 | EOC, TMA |
| Instructional Objective | | Standard Reference | |
| 0802.07 Identifying and Comparing Figures in the Plane and related formulas for perimeter and circumference. | | 7.M.2.1.4, 7.M.4.1.1, | |
| No. | Performance Objective | Resource Reference | Assessment Correlation |
| 01 | Triangles | 4-4 | EOC, TMA, AB |
| 02 | Polygons | 4-5 | EOC, TMA |
| 03 | Circles | 4-6 | EOC, TMA |
| 04 | Understand and use appropriate vocabulary. | Throughout | |

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| Math 7 | | District Reference 0802 |
| Unit No. 4 | Number Theory | 3 Weeks |

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| Instructional Objective | | Standard Reference | |
| 0802.08 Learning about Multiples and Factors of Whole Numbers. | | 7.M.1.1.5 | |
| No. | Performance Objective | Resource Reference | Assessment Correlation |
| 01 | Factors and Multiples | 5-1,5-2,5-3 | EOC, TMA |
| Instructional Objective | | Standard Reference | |
| 0802.09 Learning about Primes, Divisibility and other topics in Number Theory. | | 7.M.1.1.5 | |
| No. | Performance Objective | Resource Reference | Assessment Correlation |
| 01 | Prime Numbers and Composite Numbers. | 5-4 | EOC, TMA, AB |
| 02 | Greatest Common Factor. | 5-5 | TMA |
| 03 | Least Common Multiple | 5-6 | TMA |

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| Math 7 | | District Reference 0802 |
| Unit No. 5 | Fractions: Definitions and Relationships | 3 Weeks |

| Instructional Objective 0802.10 Developing the Understanding of Fractions. | | | Standard Reference 7.M.1.2.1,7.M.1.2.2, 7.M.1.1.1 |
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| No. | Performance Objective | Resource Reference | Assessment Correlation |
| 01 | Fractions as part of a whole | 6-1 | EOC, TMA, AB |
| 02 | Equivalent Fractions | 6-2 | EOC, TMA |
| 03 | Fractions and Mixed Numbers | 6-3 | EOC, TMA |
| 04 | Understand and use appropriate vocabulary. | Throughout | |
| Instructional Objective 0802.11 Learning how to convert Fractions to Decimals. | | | Standard Reference 7.M.1.1.2,7.M.1.2.2 |
| No. | Performance Objective | Resource Reference | Assessment Correlation |
| 01 | Comparing Fractions | 6-4 | EOC, TMA |
| 02 | Changing a Fractions to a Decimal | 6-5 | EOC, TMA |
| 03 | Changing a Decimal to a Fractions | 6-6 | EOC, TMA |

| Math 7 | | District Reference 0802 |
|-------------------|----------------------------------|-----------------------------------|
| Unit No. 6 | Operations with Fractions | 4 weeks |

| Instructional Objective 0802.12 Learning the Rules for Adding, Subtracting, Multiplying and Dividing Mixed Numbers. | | | Standard Reference 7.M.1.2.2, 7.M.1.3.3 |
|---|---|---------------------------|---|
| No. | Performance Objective | Resource Reference | Assessment Correlation |
| 01 | Addition and Subtraction of Fractions and Mixed Numbers | 7-1,7-2 | EOC, TMA |
| 02 | Multiplication and Division of Fractions | 7-3,7-4 | EOC, TMA |
| 03 | Multiplications and Division of Mixed Numbers | 7-5 | EOC, TMA |
| 048 | Use appropriate vocabulary. | Throughout | |
| Instructional Objective 0802.13 Learning the study of scales, such as those used in models and scale drawing. | | | Standard Reference 7.M.2.2.2 |
| No. | Performance Objective | Resource Reference | Assessment Correlation |
| 01 | Ratios, Proportions and Problem Solving | 7-6,7-7,7-8 | TMA |
| 02 | Use appropriate vocabulary. | Throughout | |

| Math 7 | | District Reference 0802 |
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| Unit No. 7 | Solving Equations | 3 Weeks |

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| Instructional Objective 0802.14 Solving One or Two Step Equations Involving Decimals and Fractions and Checking their Solution. | | | Standard Reference 7.M.3.3.1 |
| No. | Performance Objective | Resource Reference | Assessment Correlation |
| 01 | Equations and Variables. | 8-1 | EOC, TMA |
| 02 | Equations: Addition, Subtraction, Multiplication and Division | 8-2,8-3 | TMA |
| 03 | Equations: Decimals and Fractions | 8-4 | EOC, TMA |
| Instructional Objective 0802.15 Using the Five-Step Method to solving Word Problems using an Equation. | | | Standard Reference |
| No. | Performance Objective | Resource Reference | Assessment Correlation |
| 01 | Word Sentences and Equations | 8-6 | EOC, TMA |
| 02 | Problem Solving | 8-7,8-8 | EOC, TMA |
| 03 | Use appropriate vocabulary. | Throughout | EOC, TMA |

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| Math 7 | | District Reference 0802 |
| Unit No. 8 | Percent | 2 Weeks |

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| Instructional Objective 0802.16 Learning how to express Percents as Decimals and as Fractions and some useful applications using Percents. | | | Standard Reference 7.M.1.1.2 |
| No. | Performance Objective | Resource Reference | Assessment Correlation |
| 01 | Percents and Fractions and Decimals | 9-1,9-2 | EOC, TMA |
| 02 | Computing with Percents | 9-3 | TMA |
| 03 | Working with Simple Interest | 9-7 | EOC, TMA |
| 04 | Using appropriate vocabulary | Throughout | |

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| Math 7 | | District Reference 0802 |
| Unit No. 9 | Areas and Volumes | 3 Weeks |

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| Instructional Objective 0802.17 Learning the geometry of space figures such as prisms, pyramids, and cylinders, and learning how to calculate their surface area. | | | Standard Reference 7.M.1.2.6,7.M.2.1.4, 7.M.2.1.6,7.M.4.1.4, 7.M.4.1.5 |
| No. | Performance Objective | Resource Reference | Assessment Correlation |
| 01 | Areas of Rectangles, Parallelograms, Triangles Trapezoids and Circles | 10-1,10-2,10-3 | EOC, TMA |
| 02 | Using Symmetry to Find Areas | 10-4 | TMA |

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| 03 | Using appropriate vocabulary | Throughout | |
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**INDEPENDENT SCHOOL DISTRICT OF BOISE CITY
IDAHO ACHIEVEMENT STANDARDS
GRADE 7
MATHEMATICS**

Students are expected to know content and apply skills from previous grades.

Mathematical reasoning and problem solving processes should be incorporated throughout all mathematics standards. Students should use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models to communicate mathematical information and to explain mathematical reasoning and concepts.

Standard 1: Number and Operation

Students in Grade 7 read, write, compare, order, and place on a number line: rational numbers, including integers, fractions, and decimals, and absolute values. Students solve problems requiring the conversion between simple decimals, fractions, and percents. Students add, subtract, multiply, and divide whole numbers, fractions, and decimals and students evaluate numerical expressions using the order of operations with whole numbers and decimals. Students explain when estimation is appropriate and describe the usefulness of an estimate as opposed to an exact answer.

Goal 1.1: Understand and use numbers.

Objective(s): By the end of Grade 7, the student will be able to:

- 7.M.1.1.1 Compare magnitudes and relative magnitudes of rational numbers, including integers, fractions, and decimals
- 7.M.1.1.2 Solve problems requiring the conversion between simple decimals, fractions, ratios, and percents.
- 7.M.1.1.3 Locate the position of rational numbers on a number line.
- 7.M.1.1.4 Rewrite multiple factors using exponents.
- 7.M.1.1.5 Apply the number theory concepts of primes, composites, and prime factorization and find the Least Common Multiple (LCM) and the Greatest Common Factor (GCF).
- 7.M.1.1.6 Recognize pertinent information for problem solving.
- 7.M.1.1.7 Describe the use of integers in real-world situations.
- 7.M.1.1.8 Use appropriate vocabulary.

Goal 1.2: Perform computations accurately.

Objective(s): By the end of Grade 7, the student will be able to:

- 7.M.1.2.1 Recall the common equivalent fractions, decimals, and percents of halves, fourths, and tenths.
- 7.M.1.2.2 Add, subtract, multiply, and divide whole numbers, fractions and decimals; and add, multiply, and divide integers.
- 7.M.1.2.3 Evaluate whole numbers in exponential form.
- 7.M.1.2.4 Evaluate numerical expressions using the order of operations with whole numbers and decimals.
- 7.M.1.2.5 Select and use an appropriate method of computation from mental math, paper and pencil, calculator, or a combination of the three.
- 7.M.1.2.6 Use a variety of strategies including common mathematical formulas to compute problems drawn from real life situations.
- 7.M.1.2.7 Use appropriate vocabulary and notations.

Goal 1.3: Estimate and judge reasonableness of results.

Objective(s): By the end of Grade 7, the student will be able to:

- 7.M.1.3.1 Estimate to predict computation results.
- 7.M.1.3.2 Explain when estimation is appropriate and describe the usefulness of an estimate as opposed to an exact answer.
- 7.M.1.3.3 Identify whether a given estimate is an overestimate or underestimate.
- 7.M.1.3.4 Use a four-function calculator to solve complex grade-level problems.
- 7.M.1.3.5 Formulate conjectures and discuss why they must be or seem to be true.
- 7.M.1.3.6 Use appropriate vocabulary and notations.

Standard 2: Concepts and Principles of Measurement

Students in Grade 7 select and use appropriate units and tools to make formal measurements in both systems. Students apply given formulas for perimeter, circumference, or area of triangles, circles, and quadrilaterals. Students solve problems involving perimeter and area of rectangles and squares. Students compare units and explain their relationship to one another and to real world applications.

Goal 2.1: Understand and use U.S. customary and metric measurements.

Objective(s): By the end of Grade 7, the student will be able to:

- 7.M.2.1.1 Select and use appropriate units and tools to make formal measurements in both systems.
- 7.M.2.1.2 Apply estimation of measurement to real-world and content problems using standard measuring devices.
- 7.M.2.1.3 Explain the differences between perimeter, area, and volume (capacity) and their measures within both systems.
- 7.M.2.1.4 Given the formulas, find the perimeter, circumference, or area of triangles, circles, and quadrilaterals.
- 7.M.2.1.5 Convert units of measurement within each system.
- 7.M.2.1.6 Solve problems involving perimeter and area of rectangles and triangles.
- 7.M.2.1.7 Use appropriate vocabulary and notations.

Goal 2.2: Apply the concepts of rates, ratios, and proportions.

Objective(s): By the end of Grade 7, the student will be able to:

- 7.M.2.2.1 Explain rates and their relationship to ratios, and use proportions to solve problems represented with a diagram.
- 7.M.2.2.2 Reduce rates to unit rates.

Goal 2.3: Apply dimensional analysis.

Objective(s): By the end of Grade 7, the student will be able to:

- 7.M.2.3.1 Identify properly constructed dimensional analysis conversions.

Standard 3: Concepts and Language of Algebra and Functions

Students in Grade 7 use variables in simple expressions and equations and students use symbols “<,” “>,” “=,” “≠,” “≤,” and “≥” to express relationships. Students use the order of operations in evaluating simple algebraic expressions and students solve one-step equations. Students extend patterns involving rational numbers and describe the rule that generates the pattern.

Goal 3.1: Use algebraic symbolism as a tool to represent mathematical relationships.

Objective(s): By the end of Grade 7, the student will be able to:

- 7.M.3.1.1 Use variables in simple expressions and equations.
- 7.M.3.1.2 Translate simple word statements into algebraic expressions and equations.
- 7.M.3.1.3 Use symbols “<,” “>,” “=,” “≠,” “≤,” and “≥” to express relationships.

Goal 3.2: Evaluate algebraic expressions.

Objective(s): By the end of Grade 7, the student will be able to:

- 7.M.3.2.1 Evaluate simple numeric and algebraic expressions using commutative, associative, identity, zero, inverse, distributive, and substitution properties.
- 7.M.3.2.2 Use the order of operations in evaluating simple algebraic expressions.

Goal 3.3: Solve algebraic equations and inequalities.

Objective(s): By the end of Grade 7, the student will be able to:

- 7.M.3.3.1 Solve one-step equations.

Goal 3.4: Understand the concept of functions.

Objective(s): By the end of Grade 7, the student will be able to:

- 7.M.3.4.1 Extend patterns involving rational numbers and describe the rule that generates the pattern.
- 7.M.3.4.2 Explain how a change in one quantity impacts a change in another quantity.
- 7.M.3.4.3 Use appropriate vocabulary and notations.

Goal 3.5: Represent equations, inequalities and functions in a variety of formats.

Objective(s): By the end of Grade 7, the student will be able to:

- 7.M.3.5.1 Represent a simple set of data in a table, as a graph, and as a mathematical relationship.

Goal 3.6: Apply functions to a variety of problems.

Objective(s): By the end of Grade 7, the student will be able to:

- 7.M.3.6.1 Use patterns and linear functions to represent and solve simple problems.

Standard 4: Concepts and Principles of Geometry

Students in Grade 7 describe and classify relationships among types of one-, two-, and three-dimensional geometric figures using their defining properties. Students draw and measure various angles and shapes using appropriate tools and students identify congruence, similarities, and line symmetry of shapes. Students identify and plot points on a coordinate plane.

Goal 4.1: Apply concepts of size, shape, and spatial relationships.

Objective(s): By the end of Grade 7, the student will be able to:

- 7.M.4.1.1 Classify relationships among types of one- and two-, dimensional geometric figures, using their defining properties.
- 7.M.4.1.2 Draw and measure various angles and shapes using appropriate tools.
- 7.M.4.1.3 Apply fundamental concepts, properties, and relationships among points, lines, rays, planes, and angles.
- 7.M.4.1.4 Explain and model the effects of reflections, translations, and rotations on various shapes.
- 7.M.4.1.5 Identify congruence, similarities, and line symmetry of shapes.
- 7.M.4.1.6 Describe the concept of surface area and volume (capacity).
- 7.M.4.1.7 Use appropriate vocabulary and symbols.

Goal 4.2: Apply the geometry of right triangles.

No objectives at this grade level.

Goal 4.3: Apply graphing in two dimensions.

Objective(s): By the end of Grade 7, the student will be able to:

- 7.M.4.3.1 Identify and plot points on a coordinate plane.

Standard 5: Data Analysis, Probability, and Statistics

Students in the Grade 7 read and interpret tables, charts, and graphs, including frequency tables, scatter plots, line graphs, line plots, bar graphs, histograms, circle graphs, and stem-and-leaf plots. Students collect, organize and display data with appropriate notation in tables, charts and graphs, including scatter plots, line graphs, line plots, bar graphs, and stem-and-leaf plots. Students determine the measures of central tendency – mean, median and mode – with sets of data and students predict, perform, and record results of simple probability experiments.

Goal 5.1: Understand data analysis.

Objective(s): By the end of Grade 7, the student will be able to:

- 7.M.5.1.1 Read and interpret tables, charts, and graphs, including frequency tables, scatter plots, broken line graphs, line plots, bar graphs, histograms, circle graphs, and stem-and-leaf plots.
- 7.M.5.1.2 Explain conclusions drawn from tables, charts, and graphs.
- 7.M.5.1.3 Use appropriate vocabulary and notations.

Goal 5.2: Collect, organize, and display data.

Objective(s): By the end of Grade 7, the student will be able to:

- 7.M.5.2.1 Collect, organize, and display data with appropriate notation in tables, charts and graphs, including scatter plots, broken line graphs, line plots, bar graphs, and stem-and-leaf plots.

Goal 5.3: Apply simple statistical measurements.

Objective(s): By the end of Grade 7, the student will be able to:

- 7.M.5.3.1 Determine the measures of central tendency – mean, median and mode – with sets of data.
- 7.M.5.3.2 Discuss distribution of data, including range, frequency, gaps, and clusters.

Goal 5.4: Understand basic concepts of probability.

Objective(s): By the end of Grade 7, the student will be able to:

- 7.M.5.4.1 Predict, perform, and record results of simple probability experiments.
- 7.M.5.4.2 Recognize equally likely outcomes.
- 7.M.5.4.3 Explain that probability ranges from impossible to certain (0% to 100%).
- 7.M.5.4.4 Use the language of probability.

Goal 5.5: Make predictions or decisions based on data.

Objective(s): By the end of Grade 7, the student will be able to:

- 7.M.5.5.1 Make predictions based on simple theoretical probabilities.
- 7.M.5.5.2 Use appropriate vocabulary and notations.