

Grade Five
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Correlations with Oklahoma
Instructional Mathematical Goals and Objectives

The following concepts and skills are required by all students completing fifth grade. The **Major Concepts** should be taught in depth using a variety of methods and applications so that all students have accessibility to and an understanding of these concepts. **Maintenance Concepts** have been taught previously and are a necessary foundation for success in mathematics at this level.

MAJOR CONCEPTS

Patterns-Algebraic Expressions

Number Sense-

**Common Percents,
Fraction-Decimal Comparisons**

Operations-

**Multiplication and Division
Algorithms, Decimals-Add,
Subtract, Multiply, Divide
Fractions-Compare and Order,
Estimation**

Geometry-

Classify Shapes, Simple Formulas

Measurement-Explore Volume

Data Analysis-Statistics and Probability

**Appropriate Tables and Graphs,
Mean and Probability**

MAINTENANCE CONCEPTS

Patterns-Extend Rules, Functions

Number Sense-

**Place Value-6 Digits, Estimation
Decimals to 100ths**

Operations-

**Multiplication, Division Facts
0-10, Fraction Concepts**

Geometry-

Lines, Angles

Measurement-Metric

Length, Weight, Area

Data Analysis-

**Probability, Concepts, Interpret
Graphs**

THINK STAR ★

Use the image of a star with **Content** at its center and **Problem Solving, Communications, Connections, Reasoning, and Representation** at its five points to design illuminating lessons (see page 77).

KEY TO SUCCESS!

When introducing new concepts **CONNECT** from Concrete -> Pictorial -> Abstract

I. Patterns

- A. Use variables (e.g., boxes, pawns, number cubes, or other symbols) to solve problems or to describe general rules in algebraic expression form. **Appetizers 2 B; Main Dish Objective 2 (Mathematical Relations) Lesson 2; Applications; Final Tests; Reasonableness Problems; Journal Topics**

- B. Simulate algebraic problem-solving techniques (e.g., use a balance to model an equation and show how subtracting a number from one side requires subtracting the same amount from the other side).
Appetizers 2 A; 12 A; Main Dish Objective 2 (Mathematical Relations) Lesson 1; Objective 12 (Mathematical Representation) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics

II. Number Sense

- A. Use the structure of fraction and decimal number systems through 1000ths to solve problems (e.g., technology, models, drawings).
Appetizers 1 B and C; Main Dish Objective 1 (Number Concepts) Lessons 2 and 3; Applications; Final Tests; Reasonableness Problems; Journal Topics
- B. Compare, convert, and order common fractions and decimals to 100ths place. **Appetizers 1 A and D; 6 D; Main Dish Objective 1 (Number Concepts) Lessons 1 and 4; Objective 6 (Addition) Lesson 4; Applications; Final Tests; Reasonableness Problems; Journal Topics**
- C. Represent with models the connection between fractions, decimals, and percents and be able to convert from one representation to another (e.g., use 10 x 10 grids, base-10 blocks, paper folding). **Appetizers 1 C and D; 6 D; Main Dish Objective 1 (Number Concepts) Lessons 3 and 4; Objective 6 (Addition) Lesson 4; Applications; Final Tests; Reasonableness Problems; Journal Topics**
- D. Explain verbally and with **manipulatives** and diagrams 25%, 50%, 75%; use these percents to solve problems and relate them to their corresponding fractions and decimals. **Appetizers 1 E; Main Dish Objective 1 (Number Concepts) Lesson 5; Applications; Final Tests; Reasonableness Problems; Journal Topics**
- E. Apply the basic **properties of arithmetic**: commutative, associative, distributive, identity, and inverse (e.g., use tiles to show $2(5+1) = (2 \times 5) + (2 \times 1)$ by building $(5+1) + (5+1)$ then regrouping to show this equals $(5+5) + (1+1)$ concluding with $(2 \times 5) + (2 \times 1)$). **Appetizers 2 A; Main Dish Objective 2 (Mathematical Relations) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics**
- F. Identify factors, **multiples**, odd, even, **prime**, and **composite** numbers (e.g., build rectangular **arrays** for numbers 1-100 and classify as **prime** or **composite**). **Appetizers 1 F; Main Dish Objective 1 (Number Concepts) Lesson 6; Applications; Final Tests; Reasonableness Problems; Journal Topics**

III. Number Operations and Computations

- A. Multiply and divide whole numbers and decimals with 2-digit multipliers or divisors. **Appetizers 8 A and D; 9 A; Main Dish Objective 8 (Multiplication) Lessons 1 and 4; Objective 9 (Division)**

- Lesson 1; Applications; Final Tests; Reasonableness Problems;**
- B. Develop **estimation** and computation skills in adding and subtracting decimals with different place values. **Appetizers 6 C; 7 B; 10 A and B; Main Dish Objective 6 (Addition) Lesson 3; Objective 7 (Subtraction) Lesson 2; Objective 10 (Estimation) Lessons 1 and 2; Applications; Final Tests; Reasonableness Problems; Journal Topics**
- C. Use whole number, fraction, decimal, or common percent **estimates** in practical, everyday situations (e.g., 50% off means $1/2$ off the cost). **Appetizers 1 F; Main Dish Objective 1 (Number Concepts) Lesson 6; Applications; Final Tests; Reasonableness Problems; Journal Topics**

IV. Geometry

- A. Identify, describe, compare, and classify geometric figures (e.g., polygons, circles, three-dimensional shapes) and their **attributes** using appropriate geometric terminology. **Appetizers 3 A and B; Main Dish Objective 3 (Geometry) Lessons 1 and 2; Applications; Final Tests; Reasonableness Problems; Journal Topics**
- B. Develop, understand, and use formulas to find the perimeter and area of a rectangle (e.g., use 1-inch tiles to build rectangles of different perimeters and areas). **Appetizers 4 D, E, and F; 11 B; Main Dish Objective 4 (Measurement) Lessons 4, 5, and 6; Objective 11 (Solution Strategies) Lesson 2; Applications; Final Tests; Reasonableness Problems; Journal Topics**
- C. Name angles (e.g., right, obtuse, acute) and compare measure extending to 180 degrees (e.g., using flexible straws, toothpicks, pattern blocks).

V. Measurement

- A. Use **nonstandard** units (beans, rice, candies) and standard units (centimeter cubes, 1-inch cubes) to find the volume of rectangular solids and **estimate** the volume of other solids. **Appetizers 4 E; Main Dish Objective 4 (Measurement) Lesson 5; Applications; Final Tests; Reasonableness Problems; Journal Topics**
- B. Measure an attribute (e.g., time, temperature, length, weight, angles, area, and volume) using the appropriate tool. **Appetizers 4 D and E; Main Dish Objective 4 (Measurement) Lessons 4 and 5; Applications; Final Tests; Reasonableness Problems; Journal Topics**
- C. Convert measurements within the same system (e.g., inches to feet, hours to minutes, centimeters to meters). **Appetizers 4 B and C; Main Dish Objective 4 (Measurement) Lessons 2 and 3; Applications; Final Tests; Reasonableness Problems; Journal Topics**
- D. Estimate, calculate, and/or compare perimeter, area, volume, and surface area of given objects. **Appetizers 4 D, E, and F; 11 B; Main Dish Objective 4 (Measurement) Lessons 4, 5, and 6; Objective 11 (Solution Strategies) Lesson 2; Applications; Final Tests; Reasonableness Problems; Journal Topics**

IV. Data Analysis

- A. Organize data using tables and graphs and justify the selection of the table or graph used (e.g., a line graph may be more appropriate than a bar graph when displaying the height of a person over time).
Appetizers 5 B; 12 B; Main Dish Objective 5 (Probability/Statistics) Lesson 2; Objective 12 (Mathematical Representation) Lesson 2; Applications; Final Tests; Reasonableness Problems; Journal Topics
- B. Compare and translate between complex displays of data (e.g., multiple sets of data on the same graph, Venn diagrams, a combination of diagrams, charts, tables, graphs). **Appetizers 5 B; 12 B; Main Dish Objective 5 (Probability/Statistics) Lesson 2; Objective 12 (Mathematical Representation) Lesson 2; Applications; Final Tests; Reasonableness Problems; Journal Topics**
- C. Formulate questions, design investigations, consider samples, and collect, organize, and analyze data using observation, measurement, surveys, or experiments (e.g., how far can 5th graders throw a softball based on where it first hits the ground?). **Appetizers 4 A, B, and C; 5 A, B, and C; 10 A; Main Dish Objective 4 (Measurement) Lessons 1, 2, and 3; Objective 5 (Probability/Statistics) Lessons 1, 2, and 3; Objective 10 (Estimation) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics**
- D. Determine the range (spread) and the **mean** (average or middle) of a set of data. **Appetizers 5 E; 10 E; Main Dish Objective 5 (Probability/Statistics) Lesson 5; Objective 10 (Estimation) Lesson 5; Applications; Final Tests; Reasonableness Problems; Journal Topics**
- E. Investigate the likelihood (**probability**) of events occurring in familiar contexts and in experiments (e.g., flip a coin 50 times and find the likelihood of getting heads, select which is most likely to occur given a biased spinner).
- F. Express **probabilities** as fractions.