Readington Township Public Schools

Grade 3 Math

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Approval Date: January 18, 2022

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I. OVERVIEW

Readington Township Public Schools' K-5 mathematics curriculum provides students with a strong foundation in mathematics content while promoting and instilling the skills of problem-solving, communication in mathematics, making mathematical connections, and reasoning. Throughout the delivery of the K-5 mathematics program, various tools and technology are employed, including manipulatives, calculators, software, apps, videos, websites, and computing devices (computers, tablets, smartphones, interactive whiteboards, etc.). A strong focus of the program in on promoting high levels of mathematical thought through experiences that extend beyond traditional computation.

In Grade 3, instructional time focuses on four critical areas: (1) developing an understanding of multiplication and division and the strategies for multiplication and division within 100; (2) developing an understanding of fractions, especially unit fractions (fractions with numerator 1); (3) developing an understanding of the structure of rectangular arrays and of area; and (4) describing, comparing, and analyzing two-dimensional shapes.

II. STUDENT OUTCOMES (Linked to New Jersey Student Learning Standards for Mathematics)

Operations And Algebraic Thinking (3.OA)

A. Represent and solve problems involving multiplication and division.

1. Interpret products of whole numbers, e.g., interpret 5 × 7 as the total number of objects in 5 groups of 7 objects each. For example, describe and/or represent a context in which a total number of objects can be expressed as 5 × 7.
2. Interpret whole-number quotients of whole numbers, e.g., interpret 56 ÷ 8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. For example, describe and/or represent a context in which a number of shares or a number of groups can be expressed as 56 ÷ 8.
3. Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
4. Determine the unknown whole number in a multiplication or division equation relating three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations 8 × ? = 48, 5 = ÷ 3, 6 × 6 = ?.

B. Understand properties of multiplication and the relationship between multiplication and division.

5. Apply properties of operations as strategies to multiply and divide. Examples: If 6 × 4 = 24 is known, then 4 × 6 = 24 is also known. (Commutative property of multiplication.) 3 × 5 × 2 can be found by 3 × 5 = 15, then 15 × 2 = 30, or by 5 × 2 = 10, then 3 × 10 = 30. (Associative property of multiplication.) Knowing that 8 × 5 = 40 and 8 × 2 = 16, one can find 8 × 7 as 8 × (5 + 2) = (8 × 5) + (8 × 2) = 40 + 16 = 56. (Distributive property.)
6. Understand division as an unknown-factor problem. For example, find 32 ÷ 8 by finding the number that makes 32 when multiplied by 8.

C. Multiply and divide within 100.

7. Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.

D. Solve problems involving the four operations, and identify and explain patterns in arithmetic.

8. Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

9. Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.

Number And Operations In Base Ten (3.NBT)

A. Use place value understanding and properties of operations to perform multi-digit arithmetic.

1. Use place value understanding to round whole numbers to the nearest 10 or 100.
2. Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.
3. Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g., 9 × 80, 5 × 60) using strategies based on place value and properties of operations.

Number And Operations-Fractions (3.NF)

A. Develop understanding of fractions as numbers.

1. Understand a fraction 1/b as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size 1/b.
2. Understand a fraction as a number on the number line; represent fractions on a number line diagram.
    a. Represent a fraction 1/b on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size 1/b and that the endpoint of the part based at 0 locates the number 1/b on the number line.
    b. Represent a fraction a/b on a number line diagram by marking off a lengths 1/b from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line.
3. Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.
    a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.
    b. Recognize and generate simple equivalent fractions, e.g., 1/2 = 2/4, 4/6 = 2/3). Explain why the fractions are equivalent, e.g., by using a visual fraction model.
    c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. Examples: Express 3 in the form 3 = 3/1; recognize that 6/1 = 6; locate 4/4 and 1 at the same point of a number line diagram.
    d. Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.

Measurement And Data (3.MD)

A. Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.

1. Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.
2. Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.

B. Represent and interpret data.

3. Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs. For example, draw a bar graph in which each square in the bar graph might represent 5 pets.
4. Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters.

C. Geometric measurement: understand concepts of area and relate area to multiplication and to addition.

5. Recognize area as an attribute of plane figures and understand concepts of area measurement.

a. A square with side length 1 unit, called “a unit square,” is said to have “one square unit” of area, and can be used to measure area.
b. A plane figure which can be covered without gaps or overlaps by n unit squares is said to have an area of n square units.

6. Measure areas by counting unit squares (square cm, square m, square in, square ft, and non-standard units).
7. Relate area to the operations of multiplication and addition.
    a. Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.
    b. Multiply side lengths to find areas of rectangles with whole number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.
    c. Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and b + c is the sum of a × b and a × c. Use area models to represent the distributive property in mathematical reasoning.
    d. Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.

D. Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.

8. Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.

Geometry (3.G)

A. Reason with shapes and their attributes.

1. Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.
2. Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. For example, partition a shape into 4 parts with equal area, and describe the area of each part as 1/4 of the area of the shape.

Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning

III. ESSENTIAL QUESTIONS

Number And Operations In Base Ten

- What strategies help add and subtract larger numbers?
- When is rounding numbers useful?
- How can place value models help represent different numbers?
- How do place value models represent the procedures of a standard algorithm?
- How can I use what I know about number relationships to develop efficient strategies for adding/subtracting multi-digit numbers?

Operations And Algebraic Thinking

- What does it mean to multiply and divide?
- How does understanding equal groups help with multiplication and division?
- How can you use patterns to multiply?
- How can you convert words into equations?

Measurement And Data

- How do we measure the world around us?
- How can I use patterns to understand area and perimeter?
- How do I use weight and measurement in my life?
- What tools and units are used to measure?
- How are the units of measure within a standard system related?
- How do I decide which unit of measurement to use?

Number And Operations-Fractions

- What does it mean if I have a fraction of something?
- How do I name a fraction?
- Where do I find fractions in my life?
- What does whole mean?
- What are the parts of a fraction and what do they represent?
- What does it mean to have equivalent fractions?
- How can I know if one fraction has more value than another?

Geometry

- What are the properties of polygons with three and four vertices?
- How can shapes be categorized by their attributes?
- What is the difference between a point, ray, line, line segment?
- How are angles measured?

IV. STRATEGIES

- Teacher presentation
- Daily Routines
- Math Talk (solve, explain, question, and justify)
- Student Pairs
- Scenarios to act out
- Small Group instruction

V. ACCOMMODATIONS

- **Accommodations and Modification Addendum**

VI. ASSESSMENTS

- **Formative**
  - Independent student work
  - Exit cards
  - Lesson Quizzes
  - Teacher Observation
  - Class Participation
  - Homework
  - Anecdotal Notes

- **Summative**
  - Mid-Unit Test
  - Unit Test

- **Alternative**
  - Google slide presentations on unit vocabulary/content
  - Math Journal/interactive student notebook
  - Student-Designed Projects
  - Self Assessment

- **Benchmark**
  - I-Ready Diagnostic (given September, March, and June)
  - Reflex Math assessments (Fall, Winter, June)
  - Performance Tasks

VII. MATERIALS

- **Core**
  - Ready Classroom Mathematics, Curriculum Associates, LLC
    - Teacher Manual Volumes 1 & 2
    - Student Books Volumes 1 & 2
  - Ready Classroom Teacher Toolbox

- **Supplemental Resources**
  - **Technology**
    - Brain Pop
    - IXL
    - Learning Farm
    - mathisfun.com
    - mathplayground.com
    - funbrain.com
    - superteacherworksheets.com
    - commoncoresheets.com

VIII. CAREER READINESS, LIFE LITERACIES, AND KEY SKILLS AND COMPUTER SCIENCE

Number And Operations In Base Ten

- **Career Ready Practices**
  Attend to personal health and financial well-being.
  3. NBT A. Use place value understanding and properties of operations to perform multi-digit arithmetic.1**.** Use place value understanding to round whole numbers to the nearest 10 or 100. 2. Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.
  Activity: Students will be given one million dollars to spend on items such as college education/trade school, vacation, home purchase, car purchase, pet, charitable donations, clothing, etc. They are to subtract the researched costs of the items to determine who has the lowest total remaining in the class.
- **9.2 Career Awareness, Exploration, and Preparation**
  9.2.5.CAP.2: Identify how you might like to earn an income.
  3.NBT.A. Use place value understanding and properties of operations to perform multi-digit arithmetic. 1. Use place value understanding to round whole numbers to the nearest 10 or 100. 2. Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.
  Activity: Students will be given a monthly budget based on various salary bands. They will use rounding and computation skills to estimate the cost of food, housing, education expenses, and miscellaneous. The challenge will be to stay within the budget and estimate the cost of living. Budgets will be based on several factors, including career choices and their annual salaries.
- **9.4 Life Literacies and Key Skills**
  9.4.5.CT.4: Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global (e.g., 6.1.5.CivicsCM.3).
  3. NBT A. Use place value understanding and properties of operations to perform multi-digit arithmetic.1. Use place value understanding to round whole numbers to the nearest 10 or 100. 2**.** Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.
  Activity: Students will be given a weekly allowance. They will also be given a weekly bill. Students will spend money of their choice as well. . Students will discuss the implications of running out of money. What are the consequences?

- **Computer Science**

  8.1.5.DA.3: Organize and present collected data visually to communicate insights gained from different views of the data.

  3.NBT.A. Use place value understanding and properties of operations to perform multi-digit arithmetic. 1. Use place value understanding to round whole numbers to the nearest 10 or 100. 2. Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

  Activity: Utilize online computational resources to organize and represent the budget calculations based on monthly salaries, as stated in the activity above.

Operations And Algebraic Thinking

- **Career Ready Practices**

  Use technology to enhance productivity, increase collaboration and communicate effectively.

  3.OA.C.7 Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.

  Activity: Students will learn and practice multiplication and division facts by using district approved online programs and tools. Activities and games included in iReady and Reflex Math will be practiced daily to develop fact fluency and master memorization of facts.

- **9.2 Career Awareness, Exploration, and Preparation**

  9.2.5.CAP.1: Evaluate personal likes and dislikes and identify careers that might be suited to personal likes.

  3.OA.A.3 Represent and solve problems involving multiplication and division. 3. Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

  Activity: Students will brainstorm a list of jobs that require math skills.

- **9.4 Life Literacies and Key Skills**

  9.4.5.CT.3: Describe how digital tools and technology may be used to solve problems.

  3.OA.A.3 Represent and solve problems involving multiplication and division. 3. Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

  Activity: Students will digitally create new seating plans for a classroom using methods that show equal groups. Math drawings will be used to illustrate these groupings based on the different totals provided, up to 100. Coordinating equations will be written expressing the number of groups, number in each group, and the total.

- **Computer Science**

  8.1.5.DA.5: Propose cause and effect relationships, predict outcomes, or communicate ideas using data.

  3.OA.A.1-2 Represent and solve problems involving multiplication and division. 1. Interpret products of whole numbers, e.g., interpret 5 × 7 as the total number of objects in 5 groups of 7 objects each. For example, describe and/or represent a context in which a total number of objects can be expressed as 5 × 7. 2. Interpret whole-number quotients of whole numbers, e.g., interpret 56 ÷ 8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. For example, describe and/or represent a context in which a number of shares or a number of groups can be expressed as 56 ÷ 8.

  Activity: Students will create graphic representations of multiplication and division problems. Students will create a Google Doc or Slide to illustrate a related multiplication and division problem. These visual representations will demonstrate the process of each operation, and the thinking behind it, using either equal groups or an array.

Measurement And Data

- **Career Ready Practices**

  Utilize critical thinking to make sense of problems and persevere in solving them.

3.MD.B.3 Represent and interpret data. Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs. For example, draw a bar graph in which each square in the bar graph might represent 5 pets.

Activity: Students will take a survey of their peers. Topics may include "favorite food", or "best pet". Based on the information collected, students will create a picture graph and bar graph. Students will then create original, data-based questions to be answered by a classmate. Vocabulary should include, but not be limited to, "how many more" and "how many less". Questions should be solved based on the graphs created.

- **9.2 Career Awareness, Exploration, and Preparation**

  9.2.5.CAP.3: Identify qualifications needed to pursue traditional and non-traditional careers and occupations.

  3.MD C.5- Recognize area as an attribute of plane figures and understand concepts of area measurement. a. A square with side length 1 unit, called "a unit square," is said to have "one square unit" of area, and can be used to measure area.b. A plane figure which can be covered without gaps or overlaps by *n* unit squares is said to have an area of *n* square units.

  Activity: Have students design a dream home (architect, painter, carpenter, designer, engineer, homeowner, accountant) on graph paper, calculating the areas of each room in the house to find its total area. Calculate the areas of rooms to identify how much carpet, tile, wallpaper, paint is needed to decorate the rooms in the house.

- **9.4 Life Literacies and Key Skills**

  9.4.5.CT.1:Identify and gather relevant data that will aid in the problem-solving process.

  3.MD B.3 Represent and interpret data. 3. Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs. For example, draw a bar graph in which each square in the bar graph might represent 5 pets

  Activity: Have students create various types of graphs (horizontal/vertical bar graphs, pictographs, pie charts, and line plots), using google sheets to represent collection of data (Favorite Dr. Seuss book.)

- **Computer Science**

  8.2.5.ED.6: Evaluate and test alternative solutions to a problem using the constraints and tradeoffs identified in the design process.

  3.MD C.5- Recognize area as an attribute of plane figures and understand concepts of area measurement. a. A square with side length 1 unit, called "a unit square," is said to have "one square unit" of area, and can be used to measure area.b. A plane figure which can be covered without gaps or overlaps by *n* unit squares is said to have an area of *n* square units.

  Activity: Have students design a dream home (architect, painter, carpenter, designer, engineer, homeowner, accountant) with various materials. , calculating the areas of each room in the house to find its total area. Calculate the areas of rooms to identify how much carpet, tile, wallpaper, paint is needed to decorate the rooms in the house.

Number And Operations-Fractions

- **Career Ready Practices**

  Utilize critical thinking to make sense of problems and persevere in solving them.

  3.NF.A.3 Develop understanding of fractions as numbers. Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size. a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line. b. Recognize and generate simple equivalent fractions, e.g., 1/2 = 2/4, 4/6 = 2/3). Explain why the fractions are equivalent, e.g., by using a visual fraction model.

  Activity: Using pattern blocks, create a visual representation and model of equivalent fractions. Show the equivalencies by stacking the different shapes of blocks that fill the same amount of space. For example, two red trapezoids fill the same amount of space as one yellow hexagon and three blue rhombuses. Write the coordinating fractions. Show and explain to a partner how the pattern blocks show various examples of equivalent fractions.

- **9.2 Career Awareness, Exploration, and Preparation**

  9.2.5.CAP.4: Explain the reasons why some jobs and careers require specific training, skills, and certification (e.g., life guards, child care, medicine, education) and examples of these requirements.

3.NF.A.2. Develop an understanding of fractions as numbers. 2. Understand a fraction as a number on the number line; represent fractions on a number line diagram. a. Represent a fraction 1/b on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size 1/b and that the endpoint of the part based at 0 locates the number 1/b on the number line.
Activity: Equate finding fractions on a number line to measuring using a ruler (inches). Practice measuring various line lengths and/or objects and expressing the lengths using the appropriate fractions. Discuss the need to make precise measurements in career fields such as carpentry.

- **9.4 Life Literacies and Key Skills**

  9.4.5.CT.3: Describe how digital tools and technology may be used to solve problems.

  3.NF.A.3.D. Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.

  Activity: Students will solve fraction problems using the symbols >, =, or <, and justify the conclusions.
- **Computer Science**

  8.1.5.IC.2: Identify possible ways to improve the accessibility and usability of computing technologies to address the diverse needs and wants of users.

  3.NF.A2. Develop understanding of fractions as numbers. 1. Understand a fraction 1/b as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a part of size 1/b.

  Activity: Students will choose a digital tool to create figures and partition them to show equal parts. Then write coordinating fractions. Show both "examples" and "nonexamples". Explain your reasoning to show understanding of equal parts of a whole.

Geometry

- **Career Ready Practices**

  Demonstrate creativity and innovation.

  3.G.A.2 Reason with shapes and their attributes. 2. Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. For example, partition a shape into 4 parts with equal area, and describe the area of each part as 1/4 of the area of the shape.

  Activity: Using grid paper and a straight edge, draw a rectangle. Decompose the shape, and find the area of each part. Then also find the total area. Next, shade parts of the rectangle and express the value as a fraction. Share findings with peers and explain your reasoning.
- **9.2 Career Awareness, Exploration, and Preparation**

  9.2.5.CAP.4: Explain the reasons why some jobs and careers require specific training, skills, and certification (e.g., life guards, child care, medicine, education) and examples of these requirements.

  3.G.A.1 Reason with shapes and their attributes. 1. Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

  Activity: Students will choose a career that relies, at least in part, on knowledge of shapes. For example, they may choose to be an architect or a baker. Using learned attributes of shapes, students will create a sketch or 3D project showcasing the importance of the attributes of various shapes. If choosing to be an architect, a student may build a model of a structure using pattern blocks. Afterward, identify what shapes worked well and made the structure stable, as well as what shapes did not and explore why this was the case.
- **9.4 Life Literacies and Key Skills**

  9.4.5.CT.4: Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global.

  3.G.A.12. Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. For example, partition a shape into 4 parts with equal area, and describe the area of each part as 1/4 of the area of the shape.

  Activity: Students will answer word problems that address personal, academic, and global problems that ask them to divide shapes appropriately.

- **Computer Science**
  8.1.5.DA.1: Collect, organize, and display data in order to highlight relationships or support a claim.

  3.G.A.1 Reason with shapes and their attributes. 1. Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

  Activity: Students will sort shape cards into categories according to their attributes. Possible extensions will include a challenge to explain why several shapes fit into multiple categories. Identify patterns and similarities discovered while sorting. Create a graphic organizer that shows the categories, similarities, and differences.

IX. PACING

Number And Operations In Base Ten

Three-Digit Numbers

Lessons 1-3, 9 (16 days)

- Understand Place Value and Rounding
- Addition and Subtraction with Three-Digit Numbers

Interdisciplinary Connections:

- **RI.3.1.** Ask and answer questions, and make relevant connections to demonstrate understanding of a text, referring explicitly to the text as the basis or the answers.
  3.NBT.A.1. Use place value understanding to round whole numbers to the nearest 10 or 100.
  Activity: Read, *Sir Cumference and All the King's Tens* by Cindy Neuschwander to introduce the concept of rounding using the understanding of place value. Have the students use dominoes to place on a place value chart. Add the dots on the dominoes to create a digit in each place value on the chart; hundreds, tens and ones. The students will then round the number they created to the nearest hundred and ten.

Operations And Algebraic Thinking

Multiplication and Division

Lessons 4-8, 10-13, 17-18 (42 days)

- Meanings of Multiplication and Division
- Use Place Value to Multiply
- Understand Connection Between Multiplication and Division
- Solve One and Two-Step Word Problems

Interdisciplinary Connections:

- ***ELA/Math***

  RI.3.1. Ask and answer questions, and make relevant connections to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.

  3.OA A.1. Interpret products of whole numbers

  Activity: Read, Amanda Bean's Amazing Dream by Cindy Neuschwander to introduce the concept of multiplication. Have the students begin a multiplication flipbook to model the different ways to visually show multiplication.

Measurement And Data

Area and Scaled Graphs

Lessons 14-16, 19(30 days)

- Understand Area
- Multiply to Find Area
- Read and Create Scaled Graphs
- Measure Length and Plot Data

Interdisciplinary Connections:

- ***Science/Math***
  3-PS2-2. Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.

3.MD.B.4 Represent and interpret data. 4. Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters.
Activity: Students will measure force of motion using magnets. They will look for patterns in data to predict how far the magnetic field extends around two magnets. Students collect data for one and three magnets, measuring the distance at which paper clips are attracted. They use those data to predict how far the magnetic field extends around two magnets. Students use and discuss science practices in the context of investigating magnetic fields.

Measurement
Lessons 26-29 (16 days)

- Time
- Liquid Volume
- Mass

Interdisciplinary Connections:

- ***Science/Math***
  3-PS2-2. Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.
  3 MDB4. Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters.
  Activity: Students will design and test carts to see which type of cart rolls farther down a ramp. Students will use tape measures to measure the distance of each roll. Students will make modifications to their carts to improve on the cart's ability to travel.

Number And Operations-Fractions

Explore Fractions
Lessons 20-25 (28 days)

- Fraction Concepts
- Equivalent Fractions
- Comparing Fraction
- Use Symbols to Compare

Interdisciplinary Connections:
Science/Math
3-LS1-1. Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.
3.NF.A.2. Develop understanding of fractions as numbers.
Activity: Students examine germinated seeds to determine similarities and differences in the way the organisms grow. They set up a hydroponic garden to observe the life cycle of a bean plant. Students go outdoors to investigate the roots and shoots of various plants. They use tools to dig up plants and compare the structures above ground to those below ground. Growth should be measured and recorded in lengths to the nearest quarter inch.

Geometry

Shapes, Perimeter, and Area
Lessons 30-33 (18 days)

- Categories of Shapes
- Classify Quadrilaterals
- Find Area and Perimeter

Interdisciplinary Connections:
ELA/Math
R1. Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.
3.G.A.1 Reason with shapes and their attributes. 1. Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

Activity: Read **The Greedy Triangle** by Marilyn Burns. Create a worksheet that uses the shapes encountered in the story and incorporates perimeter. You may add a bonus section for the area of a quadrilateral. On the back, students will draw their own Greedy Triangle, give it side lengths, and find its perimeter based on the side lengths they decided upon. They will then draw a picture of their triangle doing its favorite activity and write a short description of what they have drawn.