

# **Readington Township Public Schools**

## **Grade 4 Honors Math**

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## Grade 4 Honors Mathematics

### Overview

Readington Township Public Schools' K-8 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-8 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 is promoting high levels of mathematical thought through experiences which extend beyond traditional computation. The program is directly correlated to the New Jersey Student Learning Standards for Mathematics which the State of New Jersey has adopted, and it is designed to prepare students for the New Jersey state assessments.

The Mathematics 4 Honors course is designed to teach students fifth grade & some 6th-grade mathematics while promoting higher order thinking skills. The course is directly correlated to the New Jersey Student Learning Standards and covers such topics as number sense, geometry, measurement, number operations in base ten and fractions, and algebraic thinking. The course also promotes and instills the skills of problem-solving, communication in mathematics, and making mathematical connections. Students will utilize various tools and technology in the process, including manipulatives, calculators, websites, and computers to better enhance a well-rounded understanding of course topics. A strong focus of the program is on promoting high levels of mathematical thought through experiences which extend beyond traditional computation. Students will utilize websites such as Reflex Math and IXL.

### STUDENT OUTCOMES

(Linked to [New Jersey Student Learning Standards for Mathematics 2016](#))

**Operations & Algebraic Thinking (5.OA)** All students will write and interpret numerical expressions and analyze patterns and relationships.

**Number and Operations in Base Ten (5.NBT)** All students will understand the place value system and perform operations with multi-digit whole numbers and with decimals to hundredths.

**Number and Operations-Fractions (5.NF)** All students will use equivalent fractions as a strategy to add and subtract fractions and apply and extend previous understandings of multiplication and division to multiply and divide fractions.

**Measurement and Data (5.MD)** All students will convert like measurement units within a given measurement system, represent and interpret data and understand concepts of volume and relate volume to multiplication and to addition.

**Geometry (5.G and 6.G)** All students will graph points on the coordinate plane to solve real-world and mathematical problems and classify two-dimensional figures. Students will solve real-world and mathematical problems involving area of polygons and surface area and volume of three-dimensional shapes.

**The Number System (6.NS)** Students will interpret and compute quotients and solve problems involving division of fractions and mixed numbers. Students will fluently add, subtract, multiply, and divide with multi-digit whole numbers and decimals. Students will solve problems using the greatest common factor and the least common multiple.

Students will:

**Write and interpret numerical expressions.**

1. Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols. (5.OA.A.1)
2. Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. For example, express the calculation "add 8 and 7, then multiply by 2" as  $2 \times (8 + 7)$ . Recognize that  $3 \times (18932 + 921)$  is three times as large as  $18932 + 921$ , without having to calculate the indicated sum or product. (5.OA.A.2)

#### **Analyze patterns and relationships.**

1. Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. For example, given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so. (5.OA.B.3)

#### **Understand the place value system.**

1. Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and  $1/10$  of what it represents in the place to its left. (5.NBT.A.1)
3. Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10. (5.NBT.A.2)
4. Read, write, and compare decimals to thousandths. (5.NBT.A.3)  
Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g.,  $347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (1/10) + 9 \times (1/100) + 2 \times (1/1000)$ . (5.NBT.A.3.A)
5. Compare two decimals to thousandths based on meanings of the digits in each place, using  $>$ ,  $=$ , and  $<$  symbols to record the results of comparisons. (5.NBT.A.3.B)
6. Use place value understanding to round decimals to any place. (5.NBT.A.4)

#### **Perform operations with multi-digit whole numbers and with decimals to hundredths.**

1. Fluently multiply multi-digit whole numbers using the standard algorithm. (5.NBT.B.5)
2. Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. (5.NBT.B.6)
3. Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. (5.NBT.B.7)
4. Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. (6.NS)
5. Fluently divide multi-digit numbers using the standard algorithm. (6.NS)
6. Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation. (6.NS)

#### **Use equivalent fractions as a strategy to add and subtract fractions.**

1. Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. For example,  $2/3 + 5/4 = 8/12 + 15/12 = 23/12$ . (In general,  $a/b + c/d = (ad + bc)/bd$ .) (5.NF.A.1)
2. Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. For example, recognize an incorrect result  $2/5 + 1/2 = 3/7$ , by observing that  $3/7 < 1/2$ . (5.NF.A.2)

#### **Use GCF and LCM to solve problems (6.NS)**

1. Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum

of two whole numbers 1-100 with a common factor as a multiple of a sum of two whole numbers with no common factor. *For example, express  $36 + 8$  as  $4(9 + 2)$ .*

**Apply and extend previous understandings of multiplication and division.**

1. Interpret a fraction as division of the numerator by the denominator ( $a/b = a \div b$ ). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. (5.NF.B.3)
2. Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. (5.NF.B.4)
  - a. Interpret the product  $(a/b) \times q$  as a parts of a partition of  $q$  into  $b$  equal parts; equivalently, as the result of a sequence of operations  $a \times q \div b$ . For example, use a visual fraction model to show  $(2/3) \times 4 = 8/3$ , and create a story context for this equation. Do the same with  $(2/3) \times (4/5) = 8/15$ . (In general,  $(a/b) \times (c/d) = ac/bd$ .) (5.NF.B.4.A)
  - b. Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas. (5.NF.B.4.B)
3. Interpret multiplication as scaling (resizing), by: (5.NF.B.5)
  - a. Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication. (5.NF.B.5.A)
  - b. Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number. (5.NF.B.5.B)
4. Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem. (5.NF.B.6)
5. Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.<sup>1</sup> (5.NF.B.7)
  - a. Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. Use the relationship between multiplication and division to explain that  $(1/3) \div 4 = 1/12$  because  $(1/12) \times 4 = 1/3$ . (5.NF.B.7.A)
  - b. Interpret division of a whole number by a unit fraction, and compute such quotients. Use the relationship between multiplication and division to explain that  $4 \div (1/5) = 20$  because  $20 \times (1/5) = 4$ . (5.NF.B.7.B)
  - c. Solve real-world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. (5.NF.B.7.C)

**Convert like measurement units within a given measurement system.**

1. Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real-world problems. (5.MD.A.1)

**Represent and interpret data.**

1. Make a line plot to display a data set of measurements in fractions of a unit ( $1/2, 1/4, 1/8$ ). Use operations on fractions for this grade to solve problems involving information presented in line plots. For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally. (5.MD.B.2)

**Geometric measurement: understand concepts of volume.**

1. Recognize volume as an attribute of solid figures and understand concepts of volume measurement. (5.MD.C.3)
2. A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume. (5.MD.C.3.A)
3. A solid figure which can be packed without gaps or overlaps using  $n$  unit cubes is said to have a volume of  $n$  cubic units. (5.MD.C.3.B)
4. Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and non-standard units. (5.MD.C.4)
6. Relate volume to the operations of multiplication and addition and solve real world and mathematical

problems involving volume. (5.MD.C.5)

7. Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes. (5.MD.C.5.A)
8. Apply the formulas  $V = l \times w \times h$  and  $V = B \times h$  for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real-world and mathematical problems. (5.MD.C.5.B)
9. Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real-world problems. (5.MD.C.5.C)

**Graph points on the coordinate plane to solve real-world and mathematical problems.**

1. Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate). (5.G.A.1)
2. Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation. (5.G.A.2)

**Classify two-dimensional figures into categories based on their properties.**

1. Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles. (5.G.B.3)
2. Classify two-dimensional figures in a hierarchy based on properties. (5.G.B.4)

**Geometry (6.G)**

1. Students will solve real-world and mathematical problems involving area of rectangles, parallelograms, triangles, and trapezoids.
2. Students will solve real-world and mathematical problems involving area of organic shapes.
3. Students will solve real-world and mathematical problems involving perimeter of two-dimensional shapes.
4. Students will solve problems involving the surface area of right rectangular prisms. 5. Students will find the volume of a right rectangular prism including applying the formulas  $V = lwh$  and  $V = Bh$  in the context of solving real-world and mathematical problems.

**PERSONAL FINANCIAL LITERACY (9.1)**

**Civic Responsibility**

9.1.5.CR.1: Compare various ways to give back and relate them to your strengths, interests, and other personal factors.

**Credit Profile**

9.1.5.CP.1: Identify the advantages of maintaining a positive credit history.

**Economic and Government Influences**

9.1.5.EG.1: Explain and give examples of what is meant by the term "tax."

9.1.5.EG.2: Describe how tax monies are spent

9.1.5.EG.3: Explain the impact of the economic system on one's personal financial goals.

9.1.5. EG.4: Describe how an individual's financial decisions affect society and contribute to the overall economy.

9.1.5. EG.5: Identify sources of consumer protection and assistance.

**Financial Institutions**

9.1.5.FI.1: Identify various types of financial institutions and the services they offer including banks, credit unions, and credit card companies.

**Financial Psychology**

9.1.5.FP.1: Illustrate the impact of financial traits on financial decisions.

9.1.5.FP2: Identify the elements of being a good steward of money.

9.1.5.FP3: Analyze how spending choices and decision-making can result in positive or negative consequences.

9.1.5.FP4: Explain the role of spending money and how it affects wellbeing and happiness (e.g., "happy money," experiences over things, donating to causes, anticipation, etc.).

9.1.5.FP5: Illustrate how inaccurate information is disseminated through various external influencers including the media, advertisers/marketers, friends, educators, and family members.

### **Planning and Budgeting**

9.1.5.PB.1: Develop a personal budget and explain how it reflects spending, saving, and charitable contributions.

9.1.5.PB.2: Describe choices consumers have with money (e.g., save, spend, donate).

### **Risk Management and Insurance**

9.1.5.RMI.1: Identify risks that individuals and households face.

9.1.5.RMI.2: Justify reasons to have insurance.

## **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.

## **Strategies**

- Teacher presentation
- Teacher read-aloud
- Group discussion
- Small Group instruction
- Group presentations
- Interactive Smartboard Lessons
- Partner work
- Museum walks
- Math talk (students explain their thinking)
- Small Group Work
- Daily 5 Math
- Centers/ stations

## **Accommodations**

### [Accommodations and Modification Addendum](#)

## **Assessments**

### **Formative**

- Independent student work
- Ready Classroom Lesson Quizzes
- Teacher Observations
- Class Participation
- Class Discussions
- Class Assignments
- Homework Assignments
- Notebooks
- Anecdotal Records

### **Summative**

- Mid-Unit Test
- Unit Test

Benchmark	Alternative
<ul style="list-style-type: none"> <li>I-Ready Diagnostic</li> <li>Performance Assessments</li> </ul>	<ul style="list-style-type: none"> <li>Live Online Assessment Tools (Kahoot, Brainpop)</li> <li>Student Projects</li> <li>Student Presentations</li> <li>Self-Assessments</li> </ul>
Resources	
Required/Primary	Supplemental
<ul style="list-style-type: none"> <li><i>Big Ideas Math 6</i> textbook (Ron Larson and Laurie Boswell; published by Big Ideas Learning)</li> <li>Associated <i>Big Ideas Record and Practice Journal</i></li> </ul>	<ul style="list-style-type: none"> <li>Brain Pop</li> <li>IXL</li> <li>Reflex Math</li> <li>Online Tutorials (Learnzillion, Khan Academy, Math Antics)</li> <li>Online Math Games (Math is Fun, Funbrain, Cool Math Games, Math Playground)</li> <li>Illustrative Mathematics (<a href="http://www.illustrativemathematics.org">www.illustrativemathematics.org</a>)</li> <li>Explore Learning <a href="#">Gizmos</a></li> <li>Estimation 180</li> </ul>
Essential Questions And Content	
<p><b>Addition and Subtraction with Fractions &amp; Decimals</b></p> <ul style="list-style-type: none"> <li>What strategies can be used to compare fractions?</li> <li>How can I add or subtract fractions and mixed numbers?</li> <li>What is the correct way to read and write decimals and fractions?</li> <li>What is the procedure for adding and subtracting decimals?</li> <li>How do I use what I know about fractions and decimals to solve problems?</li> </ul> <p><b>Multiplication and Division with Fractions</b></p> <ul style="list-style-type: none"> <li>Can I multiply and divide fractions just like whole numbers?</li> <li>How can I use multiplication or division of fractions to solve real-world problems?</li> </ul> <p><b>Multiplication and Division with Whole Numbers and Decimals</b></p> <ul style="list-style-type: none"> <li>How is multiplying with decimals related to multiplying whole numbers?</li> <li>How is division with decimals related to dividing whole numbers?</li> </ul> <p><b>Operations and Word Problems</b></p> <ul style="list-style-type: none"> <li>How can I use what I know about estimation and mathematical operations to solve real-world problems?</li> </ul> <p><b>Algebra, Patterns and Coordinate Graphs</b></p> <ul style="list-style-type: none"> <li>How can expressions be written, read, and used in the real world?</li> <li>What is a coordinate plane, and how is one used?</li> </ul> <p><b>Measurement and Geometry</b></p> <ul style="list-style-type: none"> <li>What are the different types of measurement units, and when do I use them?</li> <li>How do I measure two and three-dimensional shapes?</li> </ul>	
Pacing and Interdisciplinary Connections	
<ul style="list-style-type: none"> <li><b>Addition and Subtraction with Fractions</b>  <b><u>Lessons 12-13 (20 days)</u></b> <ul style="list-style-type: none"> <li>Equivalent Fractions</li> <li>Addition and Subtraction with Fractions</li> </ul> </li> <li><b><i>Interdisciplinary Connections:</i></b>  <b><i>ELA NJSLA.W10.</i></b> Write routinely [...] for a range of tasks, purposes, and audiences  <b><u>Activity:</u></b> During the course of the unit, students engage in a variety of writing and editing as they explain their reasoning, show their work, and present their findings to others. They will contribute to a class newsletter which will be sent to parents. </li> </ul>	

- **Addition and Subtraction with Decimals**

- **Lessons 6-11 (17 days)**

- Read and Write Whole Numbers and Decimals
    - Addition and subtraction of Whole and Decimal Numbers
    - Round and Estimate with Decimals

- ***Interdisciplinary Connections:***

- ***2.1.5.PGD.1:*** Identify effective personal health strategies and behaviors that reduce illness, prevent injuries, and maintain or enhance one's wellness (e.g., adequate sleep, balanced nutrition, ergonomics, regular physical activity).

- ***Activity:*** Students will use nutritional information found on food labels to make a full day's meal plan, meeting the nutritional guidelines for a child. They will use operations with decimals and whole numbers to determine the best combination of food to meet the guidelines, and their budget.

- **Multiplication and Division with Fractions & Mixed Numbers**

- **Lessons 15, 18-24 (23 days)**

- Multiplication with Fractions & Mixed Numbers
    - Multiplication Links
    - Division with Fractions & Mixed Numbers

- ***Interdisciplinary Connections:***

- ***ELA. RI.4.4.*** Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a grade 4 topic or subject area.

- ***W.4.2.*** Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

- ***Activity:*** Students will read Multiplying Menace by Pam Calvert, to get an understanding of multiplying whole numbers by fractions. Students will write a short story (1-3 paragraphs) using fraction multiplication.

- **Multiplication with Whole Numbers and Decimals**

- **Lessons 4, 16 (18 days)**

- Multiplication with Whole Numbers and Decimals
    - Multiplication with Decimal Numbers

- ***Interdisciplinary Connections:***

- ***Social Studies. 6.1.4.C.10*** Explain the role of money, savings, debt and investment in individuals' lives.

- ***Activity:*** Students will use decimals to determine total earnings spending and saving over time. Demonstrate understanding of debt vs investment and the benefits of each.

- **Division with Whole Numbers and Decimals**

- **Lessons 5, 17(16 days)**

- Division with Whole Numbers
    - Division with Decimal Numbers

- ***Interdisciplinary Connections:***

- ***5th Grade ELA/Math L.5.4.*** Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 5 reading and content, choosing flexibly from a range of strategies.

- ***5.NBT B.*** Find whole-number quotients of whole numbers with up to four-digit dividends and two digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

- ***Activity:*** Introduce new mathematics vocabulary for division by reading aloud Remainder of One by: Elinor J. Pinczes



- **Operations and Word Problems**

- **Lesson 14, 26, (18 days)**

- Equations and Problem Solving
    - Comparison Problems
    - Problems with More Than One Step

- ***Interdisciplinary Connections:***

- ***ELA NJSLSA.R7.*** Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.

- ***Activity:*** Students will read multi-step word problems and accompanying diagrams, pictures to identify key information needed to solve each problem.

- **Algebra, Patterns and Coordinate Graphs**

- **Lessons 30-33 (12 days)**

- Algebraic Reasoning and Expressions
    - Patterns and graphs

- ***Interdisciplinary Connections:***

- *5th Grade Science/Math*

- ***5-ESS2-2.*** Describe and graph the amounts of saltwater and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.

- ***MP.4*** Model with mathematics. (5-ESS3-1)

- ***Activity:*** Students will research the amount of salt water vs.fresh water in various reservoirs in New Jersey and graph their findings.

- **Measurement and Geometry**

- **Lessons 1-3, 25-29 (26 days)**

- Measurement and Data
    - Area and Volume
    - Surface Area
    - Classify Geometric Figures

- ***Interdisciplinary Connections:***

- ***Science ETS1.A*** Defining and Delimiting Engineering Problems; ***ETS1.B,*** Developing possible solutions; ***ETS1.C*** Optimizing the Design Solution.

- ***Activity:*** The designing a bumper car track activity for this unit (described above) involves three Disciplinary Core Ideas from 4th Grade Science: ***ETS1.A,*** ***ETS1.B,*** ***ETS1.C,*** as students need to consider multiple variations and design successes and failures.

- **Personal Financial Literacy 9.1 (10 days)**

- **Civic Responsibility**

- You can give back in areas that matter to you.

- **Credit Profile**

- There are benefits to having a positive credit history.

- **Economic and Government Influences**

- Taxes are collected on a variety of goods and services at the local, state, and federal levels.
    - There is a broader economic system that influences your financial goals.
    - There are agencies, laws, and resources to protect individuals as consumers.

- **Financial Institutions**

- People can choose to save money in many places such as home in a piggy bank, bank, or credit union.

- **Financial Psychology**

- An individual's financial traits and habits affect his/her finances.

- Spending choices and their intended and unintended consequences impact financial outcomes and personal well-being.
- Not all financial information is accurate or truthful.

### **Planning and Budgeting**

- There are specific steps associated with creating a budget.
- Saving money can impact an individual's ability to address emergencies and accomplish their short-and long-term goals.

### **Risk Management and Insurance**

- Individuals can choose to accept inevitable risk or take steps to protect themselves by avoiding or reducing risk.

## **Career, Computer Science, and Key Skills**

### **The Number System (6.NS), Numbers and Operations in Base Ten (5.NBT)**

- **Career Ready Practices**

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

**Activity:** Students have a problem solving board from which they select a new problem, at least weekly. These problems require logical thinking and utilization of multiple strategies in order to reach a solution successfully. Students must describe their solution, in writing or video, to convince the reader they are correct.

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

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

**Activity:** Students, in small groups, will create a newsletter to be sent to families. They will include a short description of a career that frequently involves arithmetic. This will require collaboration, clear communication, and leadership abilities - to both lead, and follow, successfully.

- **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.

**9.4.5.DC.6:** Compare and contrast how digital tools have changed social interactions (e.g., 8.1.5.IC.1).

**9.4.5.IML.2:** Create a visual representation to organize information about a problem or issue.

**9.4.5.TL.5:** Collaborate digitally to produce an artifact.

**Activity:** Students have a problem solving board from which they select a new problem, at least weekly. These problems require logical thinking and the utilization of multiple strategies in order to reach a solution successfully. Students must describe their solution, in writing or video, to convince the reader they are correct.

- **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.

**Activity:** Students will compare mental math strategies to using a calculator to experience the impact of selecting the correct tool for the task. They will understand that while a calculator can be used for this purpose, when using properties of whole numbers, sometimes it is not a more effective tool. When adding long lists of numbers, they will be introduced to a spreadsheet formula and compare how this option is less error prone than a calculator.

### **Operations & Algebraic Thinking**

- **Career Ready Practices**

Act as a responsible and contributing community members and employee.

Attend to financial well-being.

**Activity:** Students will utilize numerical expressions to determine how much they will spend on vacation, given scenarios. When working together in class and online, students will show respect for each other, provide each other with necessary information and assistance through this challenging unit,

and work together cooperatively to develop and describe their expressions, and the life situations that are represented. They will choose a vacation destination, and determine under different circumstances, how much they would have to spend. Students will identify minimum wage and use it to calculate total hours needed to work, to pay for vacation.

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

**9.2.5.CAP.5:** Identify various employee benefits, including income, medical, vacation time, and lifestyle benefits provided by different types of jobs and careers.

**Activity:** The activity above will include communication, collaboration and leadership skills required in a career. It will also require students to research the minimum wage in NJ and other jobs to determine pay scale.

- **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.

**9.4.5.TL.2:** Sort and filter data in a spreadsheet to analyze findings.

**9.4.5.DC.5:** Identify the characteristics of a positive and negative online identity and the lasting implications of online activity.

**Activity:** The activity above will have students gathering the data for their vacation and the job they have chosen.

- **Computer Science**

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

**Activity:** The activity above will provide an opportunity to use digital tools to collect, organize and display their data of how much they will spend. Students will decide which vacation will be worth the cost.

## **Number and Operations-Fractions**

- **Career Ready Practices**

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

**5.NF.B.5** Interpret multiplication as scaling (resizing), by: a. Comparing the size of a product to the size of one factor on the basis of the size of the other factor, [...]. b. Explaining why multiplying [...] a given number by a fraction less than 1 results in a product smaller than the given number; [...].

**Activity:** Students will explain how multiplying by a fraction less than one creates a smaller product and provide examples using valid mathematical language and written expression.

- **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.

**Activity:** Students will brainstorm, whole class, skills that we use regularly in school. They will discuss with parents how/if their parents use these skills in their workplace. Students will write a paragraph summarizing their learning.

- **9.4 Life Literacies and Key Skills**

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

**9.4.5.IML.5:** Distinguish how media are used by individuals, groups, and organizations for varying purposes.

**9.4.5.TL.1:** Compare the common uses of at least two different digital tools and identify the advantages and disadvantages of using each.

**Activity:** Students will look at the list they came up with of skills that are needed in their parents' workplace. They will then discuss which skills would use digital tools and technology.

- **Computer Science**

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

**Activity:** Students will use a graphic organizer (Venn diagram) to chart the skills used in school vs. the workplace (parent) in activity above.

## Measurement and Data

- **Career Ready Practices**

Demonstrate creativity and innovation.

**Activity:** Students will use creativity and innovation to find different prisms with a given volume.

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

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

**5.MD.C.** Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.

**Activity:** Students will complete self-reflection form after a group activity where they find the volume of various objects around the classroom. Students will brainstorm different careers that work with measuring volume.

- **9.4 Life Literacies and Key Skills**

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

**9.4.5.DC.4:** Model safe, legal, and ethical behavior when using online or offline technology.

**9.4.5.IML.3:** Represent the same data in multiple visual formats in order to tell a story about the data.

**9.4.5.TL.2:** Sort and filter data in a spreadsheet to analyze findings.

**Activity:** Collect data from classmates and decide what technology resources would be best to use to display the information collected.

- **Computer Science**

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

**5.MD.B.** Represent and interpret data. 2. Make a line plot to display a data set of measurements in fractions of a unit ( $\frac{1}{2}$ ,  $\frac{1}{4}$ ,  $\frac{1}{8}$ ). Use operations on fractions for this grade to solve problems involving information presented in line plots.

**Activity:** Collect data from classmates and create a graph using google sheets or other digital graphing tools.

## Geometry

- **Career Ready Practices**

Consider the environmental, social and economic impacts of decisions.

Demonstrate creativity and innovation.

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

Work productively in teams while using cultural/global competence.

**Activity:** Students will make several models of a bumper car track, For each, students will analyze the impacts various designs have on cost, land usage and societal enjoyment of the resulting product. They will select the best product design based on their analysis and present it to the company design selection committee.

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

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

**Activity:** During the course of the project above, students will collaborate with each other and the "selection committee". They will identify different skills one may need to do different non-traditional careers such as this. They will also be able to work with their families as they finalize their design and presentation.

- **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.

**9.4.5.TL.5:** Collaborate digitally to produce an artifact.

**9.4.5.IML.1:** Evaluate digital sources for accuracy, perspective, credibility and relevance.

**Activity:** Students will make several models of a bumper car track, For each, students will analyze the impacts various designs have on cost, land usage and societal enjoyment of the resulting product. They will select the best product design based on their analysis and present it to the company design selection committee.

- **Computer Science**

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

**Activity:** During the project above, students will develop a presentation to use as they describe and present their project.