MATHEMATICS

Grade 6: Unit 1
Use Integers and Rational Numbers
Course Philosophy/Description

In mathematics, students will learn to address a range of tasks focusing on the application of concepts, skills and understandings. Students will be asked to solve problems involving the key knowledge and skills for their grade level as identified by the NJSLS; express mathematical reasoning and construct a mathematical argument and apply concepts to solve model real world problems. The balanced math instructional model will be used as the basis for all mathematics instruction.

Sixth Grade Mathematics consists of the following domains: Ratios and Proportional Relationships (RP), The Number System (NS), Expressions and Equations (EE), Geometry (G), and Statistics and Probability (SP). In sixth grade, instructional time should focus on four critical areas: (1) connecting ratio and rate to whole number multiplication and division and using concepts of ratio and rate to solve problems; (2) completing understanding of division of fractions and extending the notion of number to the system of rational numbers, which includes negative numbers; (3) writing, interpreting, and using expressions and equations; and (4) developing understanding of statistical thinking.

1) Students use reasoning about multiplication and division to solve ratio and rate problems about quantities. By viewing equivalent ratios and rates as deriving from, and extending, pairs of rows (or columns) in the multiplication table, and by analyzing simple drawings that indicate the relative size of quantities, students connect their understanding of multiplication and division with ratios and rates. Thus, students expand the scope of problems for which they can use multiplication and division to solve problems, and they connect ratios and fractions. Students solve a wide variety of problems involving ratios and rates.

2) Students use the meaning of fractions, the meanings of multiplication and division, and the relationship between multiplication and division to understand and explain why the procedures for dividing fractions make sense. Students use these operations to solve problems. Students extend their previous understandings of number and the ordering of numbers to the full system of rational numbers, which includes negative rational numbers, and in particular negative integers. They reason about the order and absolute value of rational numbers and about the location of points in all four quadrants of the coordinate plane.

3) Students understand the use of variables in mathematical expressions. They write expressions and equations that correspond to given situations, evaluate expressions, and use expressions and formulas to solve problems. Students understand that expressions in different forms can be equivalent, and they use the properties of operations to rewrite expressions in equivalent forms. Students know that the solutions of an equation are the values of the variables that make the equation true. Students use properties of operations and the idea of maintaining the equality of both sides of an equation to solve simple one-step equations. Students construct and analyze tables, such as tables of quantities that are in equivalent ratios, and they use equations (such as $3x = y$) to describe relationships between quantities.

4) Building on and reinforcing their understanding of number, students begin to develop their ability to think statistically. Students recognize that a data distribution may not have a definite center and that different ways to measure center yield different values. The median measures center in the sense that it is roughly the middle value. The mean measures center in the sense that it is the value that each data point would take on if the total of the data values were redistributed equally, and also in the sense that it is a balance point. Students recognize that a
A measure of variability (interquartile range or mean absolute deviation) can also be useful for summarizing data because two very different sets of data can have the same mean and median yet be distinguished by their variability.

Students learn to describe and summarize numerical data sets, identifying clusters, peaks, gaps, and symmetry, considering the context in which the data were collected. Students in Grade 6 also build on their work with area in elementary school by reasoning about relationships among shapes to determine area, surface area, and volume. They find areas of right triangles, other triangles, and special quadrilaterals by decomposing these shapes, rearranging or removing pieces, and relating the shapes to rectangles. Using these methods, students discuss, develop, and justify formulas for areas of triangles and parallelograms. Students find areas of polygons and surface areas of prisms and pyramids by decomposing them into pieces whose area they can determine. They reason about right rectangular prisms with fractional side lengths to extend formulas for the volume of a right rectangular prism to fractional side lengths. They prepare for work on scale drawings and constructions in Grade 7 by drawing polygons in the coordinate plane.
This ESL framework was designed to be used by bilingual, dual language, ESL and general education teachers. Bilingual and dual language programs use the home language and a second language for instruction. ESL teachers and general education or bilingual teachers may use this document to collaborate on unit and lesson planning to decide who will address certain components of the SLO and language objective. ESL teachers may use the appropriate leveled language objective to build lessons for ELLs which reflects what is covered in the general education program. In this way, whether it is a pull-out or push-in model, all teachers are working on the same Student Learning Objective connected to the New Jersey Student Learning Standards. The design of language objectives are based on the alignment of the World-Class Instructional Design Assessment (WIDA) Consortium’s English Language Development (ELD) standards with the New Jersey Student Learning Standards (NJSLS). WIDA’s ELD standards advance academic language development across content areas ultimately leading to academic achievement for English learners. As English learners are progressing through the six developmental linguistic stages, this framework will assist all teachers who work with English learners to appropriately identify the language needed to meet the requirements of the content standard. At the same time, the language objectives recognize the cognitive demand required to complete educational tasks. Even though listening and reading (receptive) skills differ from speaking and writing (expressive) skills across proficiency levels the cognitive function should not be diminished. For example, an Entering Level One student only has the linguistic ability to respond in single words in English with significant support from their home language. However, they could complete a Venn diagram with single words which demonstrates that they understand how the elements compare and contrast with each other or they could respond with the support of their home language (L1) with assistance from a teacher, para-professional, peer or a technology program.

http://www.state.nj.us/education/modelcurriculum/ela/ELLOverview.pdf
<table>
<thead>
<tr>
<th>#</th>
<th>Student Learning Objective</th>
<th>NJSLS</th>
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<tbody>
<tr>
<td>1</td>
<td>Add and subtract decimals with precision.</td>
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<td></td>
<td>Multiply decimals.</td>
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<td></td>
<td>Add, subtract, and multiply decimals to solve real-world problems.</td>
<td>6.NS.B.3</td>
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<tr>
<td>2</td>
<td>Use place-value structure to divide whole numbers and decimals.</td>
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<td></td>
<td>Divide whole numbers and decimals to solve real-world problems.</td>
<td>6.NS.B.2, 6.NS.B.3</td>
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<tr>
<td>3</td>
<td>Use models to multiply fractions.</td>
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<td></td>
<td>Multiply the numerators and then the denominators to find the product of two fractions.</td>
<td>Preparés for 6.NS.A.1</td>
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<tr>
<td>4</td>
<td>Fluently perform operations with decimals and multiply fractions.</td>
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<td></td>
<td>Use mathematical modeling to represent a problem situation and to propose a solution.</td>
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<td></td>
<td>Test and verify the appropriateness of their math models.</td>
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<td></td>
<td>Explain why the results from their mathematical models may not align exactly to the problem situation.</td>
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<tr>
<td>5</td>
<td>Use models to divide with fractions.</td>
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<td></td>
<td>Use equations to divide with fractions.</td>
<td>6.NS.A.1</td>
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<td>6</td>
<td>Use models to divide fractions by fractions.</td>
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<td></td>
<td>Use an algorithm to divide fractions by fractions.</td>
<td>6.NS.A.1</td>
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<td>7</td>
<td>Divide with mixed numbers.</td>
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<td>Estimate the quotient of mixed numbers.</td>
<td>6.NS.A.1</td>
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<td>8</td>
<td>Solve multistep problems with fractions and decimals.</td>
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<tr>
<td>9</td>
<td>Identify opposites of integers.</td>
<td>6.NS.C.5</td>
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<tr>
<td>10</td>
<td>Compare and order integers.</td>
<td>6.NS.C.6a</td>
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<tr>
<td>Use integers to represent real-world quantities and explain the meaning of 0 in each context.</td>
<td>6.NS.C.6c</td>
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<tr>
<td>Plot rational numbers on a number line.</td>
<td>6.NS.C.6c</td>
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<tr>
<td>Compare and order rational numbers.</td>
<td>6.NS.C.7a</td>
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<tr>
<td>Use rational numbers to represent real-world quantities.</td>
<td>6.NS.C.7b</td>
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<tr>
<td>Use absolute value to represent a number’s distance from 0.</td>
<td>6.NS.C.7c</td>
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<tr>
<td>Interpret absolute value in real-world situations.</td>
<td>6.NS.C.7d</td>
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<tr>
<td>Identify and graph points with rational coordinates on the coordinate plane.</td>
<td>6.NS.C.6b</td>
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<td>Reflect points with rational coordinates across both axes.</td>
<td>6.NS.C.6c</td>
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<tr>
<td>Use properties of operations to generate equivalent algebraic expressions.</td>
<td>6.NS.C.5</td>
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<tr>
<td>Use mathematical modeling to represent a problem situation and to propose a situation.</td>
<td>6.NS.C.7d</td>
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<tr>
<td>Test and verify the appropriateness of their math models.</td>
<td>6.NS.C.8</td>
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<tr>
<td>Explain why the results from their mathematical models may not align exactly with the problem situation.</td>
<td>6.NS.C.8</td>
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<tr>
<td>Use absolute value to find the distance between two points that lie on the same horizontal or vertical line on a coordinate plane.</td>
<td>6.NS.C.8</td>
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<tr>
<td>Solve real-world and mathematical problems involving distances on the coordinate plane.</td>
<td>6.G.A.3</td>
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<tr>
<td>Find side lengths of polygons on the coordinate plane.</td>
<td>6.NS.C.8</td>
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<tr>
<td>Find the perimeter of polygons on the coordinate plane.</td>
<td>6.G.A.3</td>
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Research about Teaching and Learning Mathematics

Structure teaching of mathematical concepts and skills around problems to be solved (Checkly, 1997; Wood & Sellars, 1996; Wood & Sellars, 1997)

Encourage students to work cooperatively with others (Johnson & Johnson, 1975; Davidson, 1990)

Use group problem-solving to stimulate students to apply their mathematical thinking skills (Artzt & Armour-Thomas, 1992)

Students interact in ways that support and challenge one another’s strategic thinking (Artzt, Armour-Thomas, & Curcio, 2008)

Activities structured in ways allowing students to explore, explain, extend, and evaluate their progress (National Research Council, 1999)

There are three critical components to effective mathematics instruction (Shellard & Moyer, 2002):

- Teaching for conceptual understanding
- Developing children’s procedural literacy
- Promoting strategic competence through meaningful problem-solving investigations

Teachers should be:

- Demonstrating acceptance and recognition of students’ divergent ideas
- Challenging students to think deeply about the problems they are solving, extending thinking beyond the solutions and algorithms required to solve the problem
- Influencing learning by asking challenging and interesting questions to accelerate students’ innate inquisitiveness and foster them to examine concepts further
- Projecting a positive attitude about mathematics and about students’ ability to “do” mathematics

Students should be:

- Actively engaging in “doing” mathematics
- Solving challenging problems
- Investigating meaningful real-world problems
- Making interdisciplinary connections
- Developing an understanding of mathematical knowledge required to “do” mathematics and connect the language of mathematical ideas with numerical representations
- Sharing mathematical ideas, discussing mathematics with one another, refining and critiquing each other’s ideas and understandings
- Communicating in pairs, small group, or whole group presentations
- Using multiple representations to communicate mathematical ideas
- Using connections between pictures, oral language, written symbols, manipulative models, and real-world situations
- Using technological resources and other 21st century skills to support and enhance mathematical understanding
Mathematics is not a stagnant field of textbook problems; rather, it is a dynamic way of constructing meaning about the world around us, generating knowledge and understanding about the real world every day. Students should be metaphorically rolling up their sleeves and “doing mathematics” themselves, not watching others do mathematics for them or in front of them. (Protheroe, 2007)

Balanced Mathematics Instructional Model

Balanced math consists of three different learning opportunities; guided math, shared math, and independent math. Ensuring a balance of all three approaches will build conceptual understanding, problem solving, computational fluency, and procedural fluency. Building conceptual understanding is the focal point of developing mathematical proficiency. Students should frequently work on rigorous tasks, talk about the math, explain their thinking, justify their answer or process, build models with graphs or charts or manipulatives, and use technology.

When balanced math is used in the classroom it provides students opportunities to:

- solve problems
- make connections between math concepts and real-life situations
- communicate mathematical ideas (orally, visually and in writing)
- choose appropriate materials to solve problems
- reflect and monitor their own understanding of the math concepts
- practice strategies to build procedural and conceptual confidence

Teacher builds conceptual understanding by modeling through demonstration, explicit instruction, and think alouds, as well as guiding students as they practice math strategies and apply problem solving strategies. (whole group or small group instruction)

Teacher and students practice mathematics processes together through interactive activities, problem solving, and discussion. (whole group or small group instruction)

Students practice math strategies independently to build procedural and computational fluency. Teacher assesses learning and reteaches as necessary. (whole group instruction, small group instruction, or centers)
<table>
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<th>Effective Pedagogical Routines/Instructional Strategies</th>
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<td>Collaborative Problem Solving</td>
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<td>Connect Previous Knowledge to New Learning</td>
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<td>Making Thinking Visible</td>
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<td>Develop and Demonstrate Mathematical Practices</td>
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<td>Inquiry-Oriented and Exploratory Approach</td>
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<td>Multiple Solution Paths and Strategies</td>
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<td>Use of Multiple Representations</td>
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<td>Explain the Rationale of your Math Work</td>
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<td>Quick Writes</td>
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<td>Pair/Trio Sharing</td>
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<td>Small Group and Whole Class Discussions</td>
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<td>Student Modeling</td>
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<td>Analyze Student Work</td>
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<td>Identify Student’s Mathematical Understanding</td>
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<td>Identify Student’s Mathematical Misunderstandings</td>
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<td>Interviews</td>
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<td>Role Playing</td>
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<tr>
<td>Diagrams, Charts, Tables, and Graphs</td>
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<td>Anticipate Likely and Possible Student Responses</td>
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<td>Collect Different Student Approaches</td>
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<td>Multiple Response Strategies</td>
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<td>Asking Assessing and Advancing Questions</td>
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<td>Revoicing</td>
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<td>Marking</td>
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<td>Recapping</td>
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<td>Challenging</td>
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<td>Pressing for Accuracy and Reasoning</td>
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<td>Maintain the Cognitive Demand</td>
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## Educational Technology

### Standards

| 8.1.8.A.1, 8.1.8.A.3, 8.1.8.E.1, 8.2.8.C.8 |

- **Technology Operations and Concepts**
  - Demonstrate knowledge of a real world problem using digital tools
  
  **Example:** Students can use [https://www.mathplayground.com/tb_fractions/index.html](https://www.mathplayground.com/tb_fractions/index.html) to reinforce ratios.

  - Use and/or develop a simulation that provides an environment to solve a real world problem or theory.
  
  **Example:** Students can go to [http://www.mathplayground.com/thinkingblocks.html](http://www.mathplayground.com/thinkingblocks.html) to reinforce ratios.

- **Research and Information Fluency**
  - Effectively use a variety of search tools and filters in professional public databases to find information to solve a real world problem.
  
  **Example:** Students can search through Learnzillion, and other interactive sites for appropriate instructional videos and/or information pertaining to strategies and modeling.

- **Design**
  - Develop a proposal for a chosen solution that include models (physical, graphical or mathematical) to communicate the solution to peers.
  
  **Example:** Students can use GeoGebra [https://www.geogebra.org/m/KDxuVax6](https://www.geogebra.org/m/KDxuVax6) to create double number lines to model and explain how to find the percent of a number.
Career Ready Practices

Career Ready Practices describe the career-ready skills that all educators in all content areas should seek to develop in their students. They are practices that have been linked to increase college, career, and life success. Career Ready Practices should be taught and reinforced in all career exploration and preparation programs with increasingly higher levels of complexity and expectation as a student advances through a program of study.

<table>
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<tr>
<th>CRP2. Apply appropriate academic and technical skills.</th>
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<tr>
<td>Career-ready individuals readily access and use the knowledge and skills acquired through experience and education to be more productive. They make connections between abstract concepts with real-world applications, and they make correct insights about when it is appropriate to apply the use of an academic skill in a workplace situation.</td>
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**Example:** Students will apply prior knowledge when solving real world problems. Students will make sound judgements about the use of specific tools, such as creating tables and using the tools to explore and deepen the understanding of the concept of equivalent ratios.

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<tr>
<th>CRP4. Communicate clearly and effectively and with reason.</th>
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<tr>
<td>Career-ready individuals communicate thoughts, ideas, and action plans with clarity, whether using written, verbal, and/or visual methods. They communicate in the workplace with clarity and purpose to make maximum use of their own and others’ time. They are excellent writers; they master conventions, word choice, and organization, and use effective tone and presentation skills to articulate ideas. They are skilled at interacting with others; they are active listeners and speak clearly and with purpose. Career-ready individuals think about the audience for their communication and prepare accordingly to ensure the desired outcome.</td>
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</table>

**Example:** Students on a daily basis will communicate their reasoning behind their solution paths by making connections to the context and the quantities, using proper vocabulary, along with decontextualizing and/or contextualizing the problem. Students will create representations using objects, drawings, diagrams, and/or actions, such as the number line to compute quotients of fractions. They will also explain the meaning behind the quantities and units involved. Students will also ask probing questions to clarify and improve arguments.

<table>
<thead>
<tr>
<th>CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.</th>
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<tr>
<td>Career-ready individuals readily recognize problems in the workplace, understand the nature of the problem, and devise effective plans to solve the problem. They are aware of problems when they occur and take action quickly to address the problem; they thoughtfully investigate the root cause of the problem prior to introducing solutions. They carefully consider the options to solve the problem. Once a solution is agreed upon, they follow through to ensure the problem is solved, whether through their own actions or the actions of others.</td>
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Career Ready Practices

**Example:** Throughout their daily lessons, students will understand the meaning of a problem and look for entry points into solving their problems by analyzing the relationships of the quantities, constraints and goals of the task. Plans for solution paths will be made and have meaning. Students will self-monitor, evaluate and critique their process and progress as they are working and make changes as necessary.

- **CRP12. Work productively in teams while using cultural global competence.**
  Career-ready individuals positively contribute to every team, whether formal or informal. They apply an awareness of cultural difference to avoid barriers to productive and positive interaction. They find ways to increase the engagement and contribution of all team members. They plan and facilitate effective team meetings.

  **Example:** Students will work in collaborative and whole group settings to develop various solutions to math tasks that are presented to them. They will work together to understand the terms of the problem, ask clarifying and challenging questions among each other, and develop agreed upon solutions using a variety of strategies and models. Students will listen to, read and discuss arguments with each other with respect and courtesy at all times and will be willing to assist those that may need assistance. In this unit, students will demonstrate and explain to a peer or small group how to convert measurement units and to transform units appropriately when multiplying or dividing quantities.
## WIDA Proficiency Levels

At the given level of English language proficiency, English language learners will process, understand, produce or use:

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
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</table>
| 6- Reaching | - Specialized or technical language reflective of the content areas at grade level  
- A variety of sentence lengths of varying linguistic complexity in extended oral or written discourse as required by the specified grade level  
- Oral or written communication in English comparable to proficient English peers |
| 5- Bridging | - Specialized or technical language of the content areas  
- A variety of sentence lengths of varying linguistic complexity in extended oral or written discourse, including stories, essays or reports  
- Oral or written language approaching comparability to that of proficient English peers when presented with grade level material. |
| 4- Expanding | - Specific and some technical language of the content areas  
- A variety of sentence lengths of varying linguistic complexity in oral discourse or multiple, related sentences or paragraphs  
- Oral or written language with minimal phonological, syntactic or semantic errors that may impede the communication, but retain much of its meaning, when presented with oral or written, connected discourse, with sensory, graphic or interactive support |
| 3- Developing | - General and some specific language of the content areas  
- Expanded sentences in oral interaction or written paragraphs  
- Oral or written language with phonological, syntactic or semantic errors that may impede the communication, but retain much of its meaning, when presented with oral or written, narrative or expository descriptions with sensory, graphic or interactive support |
| 2- Beginning | - General language related to the content area  
- Phrases or short sentences  
- Oral or written language with phonological, syntactic, or semantic errors that often impede the communication when presented with one to multiple-step commands, directions, or a series of statements with sensory, graphic or interactive support |
| 1- Entering | - Pictorial or graphic representation of the language of the content areas  
- Words, phrases or chunks of language when presented with one-step commands directions, WH-, choice or yes/no questions, or statements with sensory, graphic or interactive support |
# Language Development Supports For English Language Learners

**To Increase Comprehension and Communication Skills**

## Environment

- Welcoming and stress-free
- Respectful of linguistic and cultural diversity
- Honors students’ background knowledge
- Sets clear and high expectations
- Includes routines and norms
- Is thinking-focused vs. answer-seeking
- Offers multiple modalities to engage in content learning and to demonstrate understanding
- Includes explicit instruction of specific language targets
- Provides participation techniques to include all learners
- Integrates learning centers and games in a meaningful way
- Provides opportunities to practice and refine receptive and productive skills in English as a new language
- Integrates meaning and purposeful tasks/activities that:
  - Are accessible by all students through multiple entry points
  - Are relevant to students’ lives and cultural experiences
  - Build on prior mathematical learning
  - Demonstrate high cognitive demand
  - Offer multiple strategies for solutions
  - Allow for a language learning experience in addition to content

## Sensory Supports*

- Real-life objects (realia) or concrete objects
- Physical models
- Manipulatives
- Pictures & photographs
- Visual representations or models such as diagrams or drawings
- Videos & films
- Newspapers or magazines
- Gestures
- Physical movements
- Music & songs

## Graphic Supports*

- Graphs
- Charts
- Timelines
- Number lines
- Graphic organizers
- Graphing paper

## Interactive Supports*

- In a whole group
- In a small group
- With a partner such as **Turn-and-Talk**
- In pairs as a group (first, two pairs work independently, then they form a group of four)
- In triads
- Cooperative learning structures such as **Think-Pair-Share**
- Interactive websites or software
- With a mentor or coach

## Verbal and Textual Supports

- Labeling
- Students’ native language
- Modeling
- Repetitions
- Paraphrasing
- Summarizing
- Guiding questions
- Clarifying questions
- Probing questions
- Leveled questions such as **What? When? Where? How? Why?**
- Questioning prompts & cues
- Word Banks
- Sentence starters
- Sentence frames
- Discussion frames
- Talk moves, including **Wait Time**

# Building Equity in Your Teaching Practice

How do the essential questions highlight the connection between the big ideas of the unit and equity in your teaching practice?

## Content Integration
Teachers use examples and content from a variety of cultures & groups.

- This unit / lesson is connected to other topics explored with students.
- There are multiple viewpoints reflected in the content of this unit / lesson.
- The materials and resources are reflective of the diverse identities and experiences of students.
- The content affirms students, as well as exposes them to experiences other than their own.

## Knowledge Construction
Teachers help students understand how knowledge is created and influenced by cultural assumptions, perspectives & biases.

- This unit / lesson provides context to the history of privilege and oppression.
- This unit / lesson addresses power relationships.
- This unit / lesson helps students to develop research and critical thinking skills.
- This curriculum creates windows and mirrors* for students.

## Prejudice Reduction
Teachers implement lessons and activities to assert positive images of ethnic groups & improve intergroup relations.

- This unit / lesson helps students question and unpack biases & stereotypes.
- This unit / lesson helps students examine, research and question information and sources.
- The curriculum encourages discussion and understanding about the groups of people being represented.
- This unit / lesson challenges dominant perspectives.

## Equitable Pedagogy
Teachers modify techniques and methods to facilitate the academic achievement of students from diverse backgrounds.

- The instruction has been modified to meet the needs of each student.
- Students feel respected and their cultural identities are valued.
- Additional supports have been provided for students to become successful and independent learners.
- Opportunities are provided for students to reflect on their learning and provide feedback.

## Empowering School Culture
Using the other four dimensions to create a safe and healthy educational environment for all.

- There are opportunities for students to connect with the community.
- My classroom is welcoming and supportive for all students?
- I am aware of and sensitive to the needs of my students and their families.
- There are effective parent communication systems established. Parents can talk to me about issues as they arise in my classroom.

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Culturally Relevant Pedagogy Examples

- **Integrate Relevant Word Problems:** Contextualize equations using word problems that reference student interests and cultures.
  **Example:** Provide the students with the depths of the oceans and the elevations of various well-known mountains, including Garrett Mountain. Have students plot the elevations and depths on a number line. Show a map to the students as to where the location of the oceans and mountains are in the world. Also, have students research the average temperatures of various locations of their choice in different climate zones and then plot them on a number line.

- **Everyone has a Voice:** Create a classroom environment where students know that their contributions are expected and valued.
  **Example:** Establish norms for sharing that promote discourse and a growth mindset for mathematics. All students are capable of expressing mathematical thinking and contributing to the classroom community. Students learn new ways of looking at problem solving by working with and listening to each other.

- **Use Learning Stations:** Provide a range of material by setting up learning stations.
  **Example:** Reinforce understandings of concepts and skills by promoting learning through student interests, modalities, experiences and/or prior knowledge. Encourage the students to make content choices based upon their strengths, needs, values and experiences. Providing students with choice boards will give them a sense of ownership to their learning and understanding.

- **Present New Concepts Using Student Vocabulary:** Use student diction to capture attention and build understanding before using academic terms.
  **Example:** Teach math vocabulary in various modalities to increase students’ retention. Use multi-modal activities, analogies, realia, visual cues, graphic representations, gestures, pictures, practice and cognates. Inform students that some vocabulary words have multiple meanings. Have students create the Word Wall with their definitions and examples to foster ownership. Work with students to create a sorting and matching game using vocabulary words from within the unit. Students can work in teams or individually to play these games. This will allow students to familiarize themselves with the vocabulary words within the unit.
SOCIAL AND EMOTIONAL LEARNING (SEL) COMPETENCIES

SELF-AWARENESS

The ability to accurately recognize one’s own emotions, thoughts, and values and how they influence behavior. The ability to accurately assess one’s strengths and limitations, with a well-grounded sense of confidence, optimism, and a “growth mindset.”

- Identifying Emotions
- Accurate Self-Perception
- Recognizing Strengths
- Self-Confidence
- Self-Efficacy

SELF-MANAGEMENT

The ability to successfully regulate one’s emotions, thoughts, and behaviors in different situations — effectively managing stress, controlling impulses, and motivating oneself. The ability to set and work toward personal and academic goals.

- Impulse Control
- Stress Management
- Self-Discipline
- Self-Motivation
- Goal Setting
- Organizational Skills

SOCIAL AWARENESS

The ability to take the perspective of and empathize with others, including those from diverse backgrounds and cultures. The ability to understand social and ethical norms for behavior and to recognize family, school, and community resources and supports.

- Perspective-Taking
- Empathy
- Appreciating Diversity
- Respect for Others

RELATIONSHIP SKILLS

The ability to establish and maintain healthy and rewarding relationships with diverse individuals and groups. The ability to communicate clearly, listen well, cooperate with others, resist inappropriate social pressure, negotiate conflict constructively, and seek and offer help when needed.

- Communication
- Social Engagement
- Relationship Building
- Teamwork

RESPONSIBLE DECISION-MAKING

The ability to make constructive choices about personal behavior and social interactions based on ethical standards, safety concerns, and social norms. The realistic evaluation of consequences of various actions, and a consideration of the well-being of oneself and others.

- Identifying Problems
- Analyzing Situations
- Solving Problems
- Evaluating
- Reflecting
- Ethical Responsibility
<table>
<thead>
<tr>
<th>SEL Competency</th>
<th>Examples</th>
<th>Content Specific Activity &amp; Approach to SEL</th>
</tr>
</thead>
</table>
| ✓ Self-Awareness  
Self-Management  
Social-Awareness  
Relationship Skills  
Responsible Decision-Making | **Example practices that address Self-Awareness:**  
- Clearly state classroom rules  
- Provide students with specific feedback regarding academics and behavior  
- Offer different ways to demonstrate understanding  
- Create opportunities for students to self-advocate  
- Check for student understanding / feelings about performance  
- Check for emotional wellbeing  
- Facilitate understanding of student strengths and challenges | During the first week of school, establish shared classroom rules, expectations and consequences so that students can see the impact of their own actions and behaviors on outcomes.  
Ask students to identify their own personal interests, strengths, and weaknesses in math using a graphic organizer.  
Encourage students to use mathematical representations to elaborate their understanding of decimals and the four operations. *(For example: Students use a diagram or equation to determine the amount each person would pay if they went to a restaurant for lunch.)* |
| ✓ Self-Management  
Social-Awareness Skills  
Responsible Decision-Making | **Example practices that address Self-Management:**  
- Encourage students to take pride/ownership in work and behavior  
- Encourage students to reflect and adapt to classroom situations  
- Assist students with being ready in the classroom  
- Assist students with managing their own emotional states | Teach self-management techniques such as belly breathing, yoga positions, counting to ten, self-talk, relaxation exercises or mental rehearsal to help students develop concrete techniques for managing their own stress or anxiety.  
Students will create goals based off of their perceived math strengths and weaknesses. They can be taught to self-assess progress toward their learning goals, which is a powerful strategy that promotes academic growth. This should be an instructional routine within the Independent phase of the Balanced Instructional Math block. |
<table>
<thead>
<tr>
<th>Self-Awareness</th>
<th>Self-Management</th>
<th>Social-Awareness</th>
<th>Relationship Skills</th>
<th>Responsible Decision-Making</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ Social-Awareness</td>
<td></td>
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</tbody>
</table>

### Example practices that address Social-Awareness:
- Encourage students to reflect on the perspective of others
- Assign appropriate groups
- Help students to think about social strengths
- Provide specific feedback on social skills
- Model positive social awareness through metacognition activities

### Have students create a budget based on a weekly allowance. Students list all items, experiences that they will need in one week and determine if they have enough money for all their necessities.

### Routinely ask students to talk about the kinds of problems and puzzles they like to solve and why. This will allow the students to begin to see the ways in which other students have similar or different preferences and learn from each other about why other concepts and problem-solving approaches are interesting. Utilize games that require math skills and promote working together to solve them.

### Model and routinely promote a rule or norm of treating others the way you would want to be treated.

### Build respect for diversity in the classroom by having students share their different perspectives on situations or solution strategies. (Teachers: They can engage students in purposeful sharing of mathematical ideas, reasoning and approaches using varied representations. Students: They can seek to understand the approaches used by peers by asking clarifying questions, trying out others’ strategies and describing the approaches used by others.)
<table>
<thead>
<tr>
<th>Self-Awareness</th>
<th>Example practices that address Relationship Skills:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Management</td>
<td>• Engage families and community members</td>
</tr>
<tr>
<td>Social-Awareness</td>
<td>• Model effective questioning and responding to students</td>
</tr>
<tr>
<td>✓ Relationship Skills</td>
<td>• Plan for project-based learning</td>
</tr>
<tr>
<td>Responsible Decision-Making</td>
<td>• Assist students with discovering individual strengths</td>
</tr>
<tr>
<td></td>
<td>• Model and promote respecting differences</td>
</tr>
<tr>
<td></td>
<td>• Model and promote active listening</td>
</tr>
<tr>
<td></td>
<td>• Help students develop communication skills</td>
</tr>
<tr>
<td></td>
<td>• Demonstrate value for a diversity of opinions</td>
</tr>
</tbody>
</table>

Teach lessons on how to ask a peer or teacher for help. Brainstorm with students the most effective ways to request help. Discuss and practice ways to say “thank you.” Also teach students how to apologize sincerely when frustrated, especially when students express frustration inappropriately.

Develop speaking and listening skills (e.g., how to ask questions, how to listen well, and how to effectively seek help when one doesn’t understand academic content) and the ability to collaborate to solve problems.

### Responsible Decision-Making

<table>
<thead>
<tr>
<th>Self-Awareness</th>
<th>Example practices that address Responsible Decision-Making:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Management</td>
<td>• Support collaborative decision making for academics and behavior</td>
</tr>
<tr>
<td>Social-Awareness</td>
<td>• Foster student-centered discipline</td>
</tr>
<tr>
<td>Relationship Skills</td>
<td>• Assist students in step-by-step conflict resolution process</td>
</tr>
<tr>
<td>✓ Responsible Decision-Making</td>
<td>• Foster student independence</td>
</tr>
<tr>
<td></td>
<td>• Model fair and appropriate decision making</td>
</tr>
<tr>
<td></td>
<td>• Teach good citizenship</td>
</tr>
</tbody>
</table>

Allow the students to select their own strategy and/or tool to solve the problem.

(For example: Students can use the standard algorithm, open array, rectangular array, or area model, and decomposing numbers using the distributive property, using base 10 blocks, place value, and multiplication to divide.)

Teacher models and sets the expectations for the students to consistently assume responsibility for following procedures for independent and/or cooperative group work and for the students to hold themselves accountable for contributing productively to their own learning.

Teacher models organization and homework study skills for the students to be able to independently make more positively
productive decisions. *(For example: Show students how to set up their binders, creation of interactive notebooks, and study skills)*
# Differentiated Instruction

Accommodate Based on Students Individual Needs: Strategies

<table>
<thead>
<tr>
<th>Time/General</th>
<th>Processing</th>
<th>Comprehension</th>
<th>Recall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extra time for assigned tasks</td>
<td>Extra Response time</td>
<td>Precise processes for balanced math instructional model</td>
<td>Teacher-made checklist</td>
</tr>
<tr>
<td>Adjust length of assignment</td>
<td>Have students verbalize steps</td>
<td>Short manageable tasks</td>
<td>Use visual graphic organizers</td>
</tr>
<tr>
<td>Timeline with due dates for reports and projects</td>
<td>Repeat, clarify or reword directions</td>
<td>Brief and concrete directions</td>
<td>Reference resources to promote independence</td>
</tr>
<tr>
<td>Communication system between home and school</td>
<td>Mini-breaks between tasks</td>
<td>Provide immediate feedback</td>
<td>Visual and verbal reminders</td>
</tr>
<tr>
<td>Provide lecture notes/outline</td>
<td>Provide a warning for transitions</td>
<td>Small group instruction</td>
<td>Graphic organizers</td>
</tr>
<tr>
<td></td>
<td>Partnering</td>
<td>Emphasize multi-sensory learning</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Assistive Technology</th>
<th>Tests/Quizzes/Grading</th>
<th>Behavior/Attention</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer/whiteboard</td>
<td>Extended time</td>
<td>Consistent daily structured routine</td>
<td>Individual daily planner</td>
</tr>
<tr>
<td>Tape recorder</td>
<td>Study guides</td>
<td>Simple and clear classroom rules</td>
<td>Display a written agenda</td>
</tr>
<tr>
<td>Video Tape</td>
<td>Shortened tests</td>
<td>Frequent feedback</td>
<td>Note-taking assistance</td>
</tr>
<tr>
<td></td>
<td>Read directions aloud</td>
<td></td>
<td>Color code materials</td>
</tr>
</tbody>
</table>

| Organization                          |                                     |                                                    |                                    |
|---------------------------------------|                                     |                                                    |                                    |
### Differentiated Instruction

#### Accommodate Based on Content Specific Needs: Strategies

- Anchor charts to model strategies and use of formulas
- Reference sheets that list formulas, step-by-step procedures and model strategies
- Conceptual word wall that contains definition, translation, pictures and/or examples
- Graphic organizers (Examples include: Venn diagram, Four Square, K-W-L)
- Translation dictionary
- Teacher modeling
- Four-function calculator to assist with computations
- Students can utilize math journals to write notes, copy solution steps, and translate terms and key vocabulary
- Highlight and label the solution steps for multi-step problems in different colors
- Utilize technological programs which provide verbal and visual instruction in native and/or second language
- Horizontal and vertical number line for finding the quotient of fractions, locating positive and negative numbers
- Fraction Bars to assist with division of fractions
- Place value chart to assist with division and multiplication and percent
- Divisibility rules to assist with division
- Tape model/Bar model for finding the quotient of fractions and ratios
- List of prime and composite numbers to assist with division
- Decimal Bar Chart
- Multiplication chart to assist with division, equivalent ratios and finding rate
- Horizontal and vertical number lines to assist with identifying integers, recognizing opposites and their relation to zero and understanding absolute zero
- Review use of area models for Distributive Property
- Coordinate grids to locate ordered pairs and draw polygons
- Cartesian Plane and graph paper to assist with graphing points and finding the distance between points
- Reflection mirror to assist with locating the opposite point on a coordinate grid
- Two dimensional figures to trace on a coordinate grid
Interdisciplinary Connections

_Model interdisciplinary thinking to expose students to other disciplines._

**Physical Education Connection:**

*Batting Average (2.1ABCDE & 2.2ABCDE)*

- Students will determine the batting average of the given player. The teacher can give them other data of current players for them to determine the batting averages. The students can then determine who has the best batting average and why.

**Home Economics Connection:**

*Baking Cookies (CRP1, CRP2, CRP3, CRP6, CRP8, CRP12)*

*Cups of Rice (CRP1, CRP2, CRP3, CRP6, CRP8, CRP12)*

- Students will look at recipes and determine how many servings the recipes will make. This will allow students to see the importance of following recipes and if they want to make changes to it, or determine how much the ingredients will make.

**Social Studies Connection:**

*Above and Below Sea Level: (6.1.8.B.4.a & 6.1.8.B.4.b)*

- Students will use positive and negative numbers to examine and compare the sea level of New Orleans, Denver, and Seattle.

**Physical Education:**

*Football Plays: (2.1ABCDE & 2.2ABCDE)*

- This task requires the knowledge of football plays and how the game is played. Students will be given plays will need to plot them on a number line.

**ELA Connection:**

*Various Tasks: (RL.6.1 & RI.6.1)*

- Students will be able to read, analyze, and cite informational text to solve problems and explain their reasoning of how the task was solved. Students will also focus on vocabulary, mechanics and grammar in effective writing.
Enrichment

What is the purpose of Enrichment?

- The purpose of enrichment is to provide extended learning opportunities and challenges to students who have already mastered, or can quickly master, the basic curriculum. Enrichment gives the student more time to study concepts with greater depth, breadth, and complexity.
- Enrichment also provides opportunities for students to pursue learning in their own areas of interest and strengths.
- Enrichment keeps advanced students engaged and supports their accelerated academic needs.
- Enrichment provides the most appropriate answer to the question, “What do you do when the student already knows it?”

Enrichment is…

- Planned and purposeful
- Different, or differentiated, work – not just *more* work
- Responsive to students’ needs and situations
- A promotion of high-level thinking skills and making connections within content
- The ability to apply different or multiple strategies to the content
- The ability to synthesize concepts and make real world and cross-curricular connections
- Elevated contextual complexity
- Sometimes independent activities, sometimes direct instruction
- Inquiry based or open ended assignments and projects
- Using supplementary materials in addition to the normal range of resources
- Choices for students
- Tiered/Multi-level activities with flexible groups (may change daily or weekly)

Enrichment is not…

- Just for gifted students (some gifted students may need intervention in some areas just as some other students may need frequent enrichment)
- Worksheets that are more of the same (busywork)
- Random assignments, games, or puzzles not connected to the content areas or areas of student interest
- Extra homework
- A package that is the same for everyone
- Thinking skills taught in isolation
- Unstructured free time
Assessments

Required District/State Assessments
Unit Assessments
NJSLA
SGO Assessments

Suggested Formative/Summative Classroom Assessments
Describe Learning Vertically
Identify Key Building Blocks
Make Connections (between and among key building blocks)
Short/Extended Constructed Response Items
Multiple-Choice Items (where multiple answer choices may be correct)
Drag and Drop Items
Use of Equation Editor
Quizzes
Journal Entries/Reflections/Quick-Writes
Accountable talk
Projects
Portfolio
Observation
Graphic Organizers/ Concept Mapping
Presentations
Role Playing
Teacher-Student and Student-Student Conferencing
Homework
New Jersey Student Learning Standards

| 6.NS.A.1 | 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. 
For example, create a story context for \((2/3) \div (3/4)\) and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that \((2/3) \div (3/4) = 8/9\) because 3/4 of 8/9 is 2/3. (In general, \((a/b) \div (c/d) = ad/bc\).) How much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 3/4-cup servings are in 2/3 of a cup of yogurt? How wide is a rectangular strip of land with length 3/4 mi and area 1/2 square mi? |
| 6.NS.B.2 | Fluently divide multi-digit numbers using the standard algorithm. |
| 6.NS.B.3 | Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation. |
| 6.NS.C.5 | Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation. |
| 6.NS.C.6 | Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates. 
 6.NS.C.6a. Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., \((-(-3)) = 3\), and that 0 is its own opposite. 
 6.NS.C.6b. Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes. 
 6.NS.C.6c. Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane. |
| 6.NS.C.7 | Understand ordering and absolute value of rational numbers. 
 6.NS.C.7a. Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. For example, interpret \(-3 > -7\) as a statement that \(-3\) is located to the right of \(-7\) on a number line oriented from left to right. |
6.NS.C.7b. Write, interpret, and explain statements of order for rational numbers in real-world contexts. For example, write \(-3 ^\circ C > -7 ^\circ C\) to express the fact that \(-3 ^\circ C\) is warmer than \(-7 ^\circ C\).

6.NS.C.7c. Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. For example, for an account balance of \(-30\) dollars, write \(|-30| = 30\) to describe the size of the debt in dollars.

6.NS.C.7d. Distinguish comparisons of absolute value from statements about order. For example, recognize that an account balance less than \(-30\) dollars represents a debt greater than 30 dollars.

6.NS.C.8. Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.

6.G.A.3. Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.
<table>
<thead>
<tr>
<th>Mathematical Practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Make sense of problems and persevere in solving them.</td>
</tr>
<tr>
<td>2. Reason abstractly and quantitatively.</td>
</tr>
<tr>
<td>3. Construct viable arguments and critique the reasoning of others.</td>
</tr>
<tr>
<td>4. Model with mathematics.</td>
</tr>
<tr>
<td>5. Use appropriate tools strategically.</td>
</tr>
<tr>
<td>6. Attend to precision.</td>
</tr>
<tr>
<td>7. Look for and make use of structure.</td>
</tr>
<tr>
<td>8. Look for and express regularity in repeated reasoning.</td>
</tr>
</tbody>
</table>
Unit Focus:
- Apply and extend previous understandings of multiplication and division to divide fractions by fractions.
- Compute fluently with multi-digit numbers and find common factors and multiples.
- Apply and extend previous understandings of numbers to the system of rational numbers.

New Jersey Student Learning Standard(s):
6.NS.B.3: Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.

Student Learning Objectives: Add and subtract decimals with precision.
Multiply decimals.
Add, subtract, and multiply decimals to solve real-world problems.

Modified Student Learning Objectives/Standards:
M.EE.6.NS.B.3: Solve two-factor multiplication problems with products up to 50 using concrete objects and/or a calculator.

<table>
<thead>
<tr>
<th>MPs</th>
<th>Evidence Statement Key/Clarifications</th>
<th>Skills, Strategies &amp; Concepts</th>
<th>Essential Understandings/Questions (Accountable Talk)</th>
<th>Tasks/Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP 5/6/7</td>
<td>6.NS.3-1</td>
<td>Procedural fluency is defined by the Common Core as “skill in carrying out procedures flexibly, accurately, efficiently and appropriately”. In 4th and 5th grades, students added and subtracted decimals. Multiplication and division of decimals were introduced in 5th grade (decimals to the hundredth place). At the elementary level, these operations were based on concrete models or drawings and strategies based on place value, properties</td>
<td>Algorithms can be used to add, subtract, and multiply decimals fluently. Which strategies are helpful when performing operations on multi-digit decimals? Which properties are being used to solve the problems?</td>
<td>Envision 1-1 1-2 3-Act Math Additional Tasks: Setting Goals Reasoning about Multiplication and</td>
</tr>
</tbody>
</table>

30 | Page
and less than or equal to 99.999.

6.NS.3-2
- Tasks do not have a context.
- Only the difference is required.
- The given subtrahend and minuend require an efficient/standard algorithm (e.g., 177.3 – 72.635).
- The subtrahend and minuend are each greater than or equal to 0.001 and less than or equal to 99.999. Positive differences only.

6.NS.3-3
- Tasks do not have a context.
- Only the product is required.
- The given factors require an efficient/standard algorithm (e.g., 72.3 x 4.8).
- For purposes of assessment, the possibilities are 1-digit x 2-digit, 1-digit x 3-digit, 2-digit x 3-digit, 2-digit x

| of operations, and/or the relationship between addition and subtraction. |
| In 6th grade, students become fluent in the use of the standard algorithms of each of these operations. |
| The use of estimation strategies supports student understanding of decimal operations. Students will add, subtract, multiply and divide multi-digit decimals with accuracy and efficiency. |
| **SPED Strategies:** Include multiplication chart. Use of a decimal bar chart. Provide a list of prime and composite numbers. Use of mnemonic devices (i.e. DMSCB/DMSB – Does McDonald’s sell Burgers? This stands for divide, multiply, subtract, compare (or check), bring down. Provide grid paper (i.e. lining digits up). Create a divisibility rules chart. Create and review place value chart. Create concrete models or drawings. |
| Do these answers look reasonable? How can you use estimation to determine if your answer is correct? How can place value assist you with division of decimals? Why is the quotient greater than the divided when dividing by a value less than one? Which strategies are helpful when dividing multi-digit numbers? |

| Division and Place Value 1 Reasoning about Multiplication and Division and Place Value 2 Selecting Steaks Swimming Relay Pricing Packages Juice Boxes Gifts from Grandma Batting Average Movie Tickets |

31 | P a g e
| 4-digit, or 2-digit x 5-digit | **6.NS.3-4**  
- Tasks do not have a context.  
- Only the quotient is required.  
- The given dividend and divisor require an efficient/standard algorithm (e.g., 177.3 ÷ 0.36).  
- Tasks are either 4-digit ÷ 2-digit or 3-digit ÷ 3-digit. (For example, 14.28 ÷ 0.68 or 2.39 ÷ 0.684).  
- Every quotient is a whole number or a decimal terminating at the tenths, hundredths, or thousandths place. | **Instructional Resources UDL - Visual and Auditory Learner(s):**  
- 6.NS.3 - Subtracting Decimals  
https://youtu.be/LpLy6GzkI8H8 | **ELL Strategies:**  
Pre-teach new vocabulary and meaning of symbols.  
Provide translations of all content and general vocabulary words.  
Use sentence frames which include relevant terms in text.  
Break down terms to familiar parts, suffixes or prefixes.  
Provide flash cards (digital and tactile).  
Use of translation dictionary or software.  
**Website:** Teachers First Adapt a Strategy. Adjusting Lessons for ESL/ELL students  
http://www.teachersfirst.com/content/esl/adjuststrat.cfm |
**New Jersey Student Learning Standard(s):**
6.NS.B.2: Fluently divide multi-digit numbers using the standard algorithm.

**Student Learning Objectives:** Use place-value structure to divide whole numbers and decimals.
Divide whole numbers and decimals to solve real-world problems.

**Modified Student Learning Objectives/Standards:**
M.EE.6.NS.B.2: Apply the concept of fair share and equal shares to divide.

<table>
<thead>
<tr>
<th>MPs</th>
<th>Evidence Statement Key/Clarifications</th>
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<th>Tasks/Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP 2</td>
<td>6.NS.2</td>
<td>In the elementary grades, students were introduced to division through concrete models and various strategies to develop an understanding of this mathematical operation (limited to 4-digit numbers divided by 2-digit numbers).</td>
<td>An algorithm can be used to divide whole numbers and decimals fluently. Which properties are being used to solve the problems? Do these answers look reasonable? How can you use estimation to determine if your answer is correct?</td>
<td>Envision 1-2 Additional Tasks: How Many Staples? Getting It Wrong Soccer Rosters Packing Beads</td>
</tr>
<tr>
<td>MP 3</td>
<td></td>
<td>In 6th grade, students become fluent in the use of the standard division algorithm to divide multi-digit numbers with speed and accuracy. They continue to use their understanding of place value to describe what they are doing. Place value has been a major emphasis in the elementary standards.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MP 4</td>
<td></td>
<td><strong>SPED Strategies:</strong> Provide a decimal bar chart to provide a visual reference for students.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MP 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Provide a list of prime and composite numbers.

Use of mnemonic devices (i.e. DMSCB/DMSB – Does McDonald’s sell Burgers? This stands for divide, multiply, subtract, compare (or check), bring down.

Use of grid paper (i.e. lining digits up).

Create a divisibility rules chart.

Create and review place value chart.

Create concrete models or drawings.

Create a Least Common Multiple (LCM) and Greatest Common Factor (GCF) graphic organizer & Anchor Chart

**Instructional Resources UDL - Visual and Auditory Learner(s):**

- 6.NS.B2 Dividing Multi-digit Numbers
  [https://youtu.be/iB-kFf5QfNM](https://youtu.be/iB-kFf5QfNM)

- 6.NS.2 Divide Multi-Digit Numbers

**ELL Strategies:**

Pre-teach new vocabulary and meaning of symbols.
Provide translations of all content and general vocabulary words.

Use sentence frames which include relevant terms in text.

Break down terms to familiar parts, suffixes or prefixes.

Provide flash cards (digital and tactile).

Use of translation dictionary or software.

**Website:** Teachers First: Adapt a Strategy. Adjusting Lessons for ESL/ELL students
http://www.teachersfirst.com/content/esl/adaptstrat.cfm

Break down terms to familiar parts, suffixes or prefixes.

**Website:** Teachers First: Adapt a Strategy. Adjusting Lessons for ESL/ELL students
http://www.teachersfirst.com/content/esl/adaptstrat.cfm
New Jersey Student Learning Standard(s):

6.NS.A.1: 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. For example, create a story context for \((2/3) ÷ (3/4)\) and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that \((2/3) ÷ (3/4) = 8/9\) because \(3/4\) of \(8/9\) is \(2/3\). (In general, \((a/b) ÷ (c/d) = ad/bc\).) How much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many \(3/4\)-cup servings are in \(2/3\) of a cup of yogurt? How wide is a rectangular strip of land with length \(3/4\) mi and area \(1/2\) square mi?

Student Learning Objectives:
- Use models to divide with fractions.
- Use equations to divide with fractions.
- Use an algorithm to divide fractions by fractions.
- Divide with mixed numbers.
- Estimate the quotient of mixed numbers.
- Solve multi-step problems with fractions and decimals.

Modified Student Learning Objectives/Standards:

M.EE.6.NS.A.1: Compare the relationships between two unit fractions.

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<tbody>
<tr>
<td>MP 1</td>
<td>6.C.2</td>
<td>In 5th grade students divided whole numbers by unit fractions and divided unit fractions by whole numbers.</td>
<td>Visual models, such as number lines and area models, and equations can be used to represent and solve problems that involve division of fractions.</td>
<td>Envision</td>
</tr>
<tr>
<td>MP 2</td>
<td>6.C.3</td>
<td>Students develop an understanding of the relationship between multiplication and division to explain division of fractions.</td>
<td>Dividing a whole number by a fraction is equivalent to multiplying the whole number by the reciprocal of the fraction.</td>
<td>1-3</td>
</tr>
<tr>
<td>MP 3</td>
<td>6.NS.1-2</td>
<td>Students continue to compute quotients of fractions by using visual models and equations to divide whole numbers by fractions and fractions by fractions.</td>
<td>How do visual fraction models explain the relationship between</td>
<td>1-4</td>
</tr>
<tr>
<td>MP 4</td>
<td>Only the answer is required. For the explanations and representations aspect of 6.NS.1-2, see 6.C.2 and 6.C.3.</td>
<td>Students need to know how to use the number line and tape diagram/bar model.</td>
<td>Traffic Jam</td>
<td></td>
</tr>
<tr>
<td>MP 5</td>
<td>Note that the italicized examples correspond to three meanings/uses of division: (1) equal sharing; (2) measurement; (3) unknown factor. These meanings/uses of division</td>
<td></td>
<td>Making Hot Chocolate 1</td>
<td></td>
</tr>
<tr>
<td>MP 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MP 7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MP 8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Additional Tasks:
- Traffic Jam
- Making Hot Chocolate 1
- Making Hot Chocolate 2
should be sampled equally.
- Tasks may involve fractions and mixed numbers but not decimals.

Students will interpret quotients of fractions in the context of the problem.

Students will write equations to solve word problems involving division of fraction by a fraction.

Divide a fraction by a fraction.

Represent division of fractions using visual models.

Write equations to solve word problems involving division of fraction by a fraction.

**SPED Strategies:**
- Use fraction bars to provide a visual and tactile model of fractions.
- Create a story context for division of fractions.
- Create a divisional fraction model to show the quotient.
- Create use various methods to compute quotients of fractions.
- Create pictures that represent problems making it easier to see and prove the solutions.
- Use vocabulary picture cards of fractional amounts.

multiplication and division of fractions?

How can you model on the number line?

How can the tape diagram help you with the number line?

How does division of fractions relate to multiplication of fractions?

Why does the division of fractions algorithm work (i.e., multiplying by the reciprocal)?

How can the fractional portion of a mixed number be interpreted?

What real life situations can be modeled by dividing a fraction by a fraction?

How is division of fractions used in the real world?

When I divide one number by another number, do I always get a quotient smaller than my original number?

<p>| How Many Containers in One Cup/Cups in One Container? |
| Cutting Bracelet String |
| How Many Servings? |
| How Many Cookies? |
| Share My Candy |
| How Many ___ Are In? |
| Dan's Division Strategy |
| Cup of Rice |
| Baking Cookies |
| Drinking Juice 2 |
| Drinking Juice 3 |
| Video Game Credits |
| Running to School 3 |
| Building Projects with Fractions |
| Making Sandwiches |
| Art Murals |</p>
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<tr>
<th>Resources UDL - Visual and Auditory Learner(s):</th>
<th>ELL Strategies:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Division of fractions by fractions using visual fraction models <a href="https://www.youtube.com/watch?v=pnSRT3ghEDU">https://www.youtube.com/watch?v=pnSRT3ghEDU</a></td>
<td>Provide interactive tools which demonstrate examples of fraction quotients.</td>
</tr>
<tr>
<td>• Interpreting and Computing Division of a Fraction by a Fraction—More Models - <a href="https://youtu.be/hX4xMD0GvNU">https://youtu.be/hX4xMD0GvNU</a></td>
<td>Provide word walls with translation side by side.</td>
</tr>
<tr>
<td>• Divide whole numbers by a fraction <a href="https://www.youtube.com/watch?v=eeKrcBPSAP8">https://www.youtube.com/watch?v=eeKrcBPSAP8</a></td>
<td>Provide list of sample equations, solved in multiple ways.</td>
</tr>
</tbody>
</table>

ELL Strategies:
- Provide interactive tools which demonstrate examples of fraction quotients.
- Provide word walls with translation side by side.
- Provide list of sample equations, solved in multiple ways.
- Use of Math word bank/translated/copied for students.
- Provide Math reference sheets.
- Provide vocabulary picture cards.

When I divide a fraction by a fraction what do the dividend, quotient and divisor represent?
- What is the relationship between multiplication and division of fractions?
- What does the quotient represent?
- What kind of models can I use to show solutions to word problems involving fractions?
Create visual equivalent of terms and sample problems.

Interactive tools which demonstrate examples of fraction quotients.

Small group work, pairs/triad.

**New Jersey Student Learning Standard(s):**

6.NS.C.5: Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.

**Student Learning Objective:** Use integers to represent real-world quantities and explain the meaning of 0 in each context.

**Modified Student Learning Objectives/Standards:**
M.EE.6.NS.C.5–8: Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero).

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</tr>
</thead>
<tbody>
<tr>
<td>MP 2</td>
<td>6.NS.5</td>
<td>Positive and negative numbers, used together, describe quantities having opposite directions or opposite values.</td>
<td>Integers are the counting numbers, their opposite, and 0.</td>
<td>Envision 2-1</td>
</tr>
<tr>
<td>MP 5</td>
<td>TASKS DO NOT REQUIRE STUDENTS TO PERFORM ANY COMPUTATIONS. STUDENTS MAY BE ASKED TO RECOGNIZE THE MEANING OF 0 IN THE SITUATION, BUT WILL NOT BE ASKED TO EXPLAIN.</td>
<td>Positive numbers represent values greater than 0 and negative numbers represent values less than 0. Many real-world situations can be modeled with both positive and negative values because it is possible to measure above and below a baseline value (often 0).</td>
<td>Integers can be compared, ordered, and used to describe real-world contexts.</td>
<td>IFL Task(s) – Set of Related Lessons named “Locating, Ordering, and Finding Distance Between Positive and Negative Numbers”</td>
</tr>
<tr>
<td></td>
<td>MP 5</td>
<td></td>
<td>Students use rational numbers (fractions, decimals, and integers) to represent real-world contexts.</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
- Tasks do not require students to perform any computations.
- Students may be asked to recognize the meaning of 0 in the situation, but will not be asked to explain.

**Integers are the counting numbers, their opposite, and 0.** Integers can be compared, ordered, and used to describe real-world contexts. When are negative numbers used and why are they important?
contexts and understand and explain the meaning of 0 in each situation.

**Examples:**
- Use an integer to represent 25 feet below sea level as (-25).
- Use an integer to represent 25 feet above sea level as (+25).
- What would 0 (zero) represent in the scenario above? (0 would represent sea level)

**SPED Strategies:**
Review and practice identifying the difference between a positive and negative number and how this is used to represent real life situations.

Review and practice placing positive and negative numbers on a number line. Identify how the placement relative to zero helps explain the meaning of situations presented.

Review and practice identifying zero pairs.

Practice using positive and negative integers to describe everyday situations (i.e. temperature, scuba diving, parachuting or planes etc.).

Practice identifying positive and negative integers in relation to zero on a standard number line; using a vertical number line (i.e. thermometer).

<table>
<thead>
<tr>
<th>Why is it useful for me to know the absolute value of a number?</th>
<th>How do I use positive and negative numbers to represent quantities in real-world contexts?</th>
<th>PBA: Savings Account</th>
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<td>PBA: Savings Account</td>
<td>Additional Tasks: Warmer in Miami</td>
<td>Mile High</td>
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<tr>
<td>Additional Tasks: Above and Below Sea Level</td>
<td></td>
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</table>
Practice finding the opposite of an integer (additive inverse) and develop anchor charts with illustrations and examples.

Practice applying integers to represent real-world situations (UDL).

Remind and demonstrate to students that number lines may run horizontally or vertically.

Create visual, verbal or tactile cues or reminders.

Link new learning to prior learning.

Connect to real-life experiences.

Pre-teach prerequisite skills and concepts.

Embed links to websites for additional knowledge.

Teach and model fundamental skills and procedures explicitly until they become automatic.

Present information through different modalities (i.e. visual, auditory, tactile, and kinesthetic).

Adjust color of text, graphs and visual content.

**Resources UDL - Visual and Auditory Learner(s):**

Negative Numbers (6.NS.C.5)

https://youtu.be/5zitKzzJ44w
**ELL Strategies:**
Create charts with mathematical concepts.

Clarify, compare, and make connections to math words in discussion, particularly during and after practice.

Provide translations of all content and general vocabulary words.

Know, use, and make the most of student cultural and home experiences.

Build on the student’s background knowledge.

Point to visuals while speaking, using your hands to clearly indicate the image that corresponds to your words.

Provide a variety of ways to respond: oral, choral, student boards, concrete models (e.g., fingers), pictorial models (e.g., ten-frame), pair share, and small group share.

Embed visual, non-linguistic supports for vocabulary clarification.

**Website:**
Teachers First  
*Adapt a Strategy. Adjusting Lessons for ESL/ELL students*  
[http://www.teachersfirst.com/content/esl/adapt_strat.cfm](http://www.teachersfirst.com/content/esl/adapt_strat.cfm)
New Jersey Student Learning Standard(s):
6.NS.C.6: Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.

6.NS.C.6a: Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., \(-(-3) = 3\), and that 0 is its own opposite.

6.NS.C.6c: Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.

Student Learning Objectives: Identify opposites of integers.
Compare and order integers.
Plot rational numbers on a number line.

Modified Student Learning Objectives/Standards:
M.EE.6.NS.C.5–8: Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero).

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<td>MP 5</td>
<td>Evidence Statement Key/ Clarifications</td>
<td>Skills, Strategies &amp; Concepts</td>
<td>Essential Understandings/ Questions (Accountable Talk)</td>
<td>Tasks/Activities</td>
</tr>
<tr>
<td>MP 8</td>
<td>Evidence Statement Key/ Clarifications</td>
<td>Skills, Strategies &amp; Concepts</td>
<td>Essential Understandings/ Questions (Accountable Talk)</td>
<td>Tasks/Activities</td>
</tr>
</tbody>
</table>

- **6.NS.6a**: In elementary school, students worked with positive fractions, decimals and whole numbers on the number line and in quadrant 1 of the coordinate plane.
- **6.NS.6c-1**: In 6th grade, students extend the number line to represent all rational numbers and recognize that number lines may be either horizontal or vertical (i.e. thermometer) which facilitates the movement from number lines to coordinate grids.

A number to the right of another on the number line is the greater number.

When are negative numbers used and why are they important?
Students recognize that a number and its opposite are equidistance from zero (reflections about the zero). The opposite sign (–) shifts the number to the opposite side of 0.

**Example:**

– 4 could be read as “the opposite of 4” which would be negative 4. In the example, – (–6.4) would be read as “the opposite of the opposite of 6.4” which would be 6.4. Zero is its own opposite.

The opposite of the opposite of a number is the number itself (e.g. the opposite of three is -3. The opposite of the opposite of three, -(-3), is equal to the original number, 3).

Rational numbers can be located on a number line with opposite numbers on opposite sides of 0.

The distance between a positive and negative value on a number line is equal to the sum of their absolute values because they are located on opposite sides of zero.

Students position rational numbers on horizontal and vertical number lines and position pairs of rational numbers on a coordinate plane.

**SPED Strategies:**

Review and practice identifying the difference between a positive and negative number and how is this used to represent real life situations.

**Why is it useful for me to know the absolute value of a number?**

How do I use positive and negative numbers to represent quantities in real-world contexts?

What are opposites and how are they shown on a number line?

How are opposites and absolute value related?

**PBA:**

Savings Account

**Additional Tasks:**

Football Plays

Golfing with Number Line and Coordinate Planes

Alaska Temperatures

Sea Level Locations

Lemonade Business
Review and practice placing positive and negative numbers on a number line, and how does its placement relative to zero help explain the meaning of the situation represented.

Provide and practice using a number line to identify positive and negative integers.

Review and practice identifying zero pairs.

Practice using positive and negative integers to describe everyday situations (i.e. temperature, scuba diving, parachuting or planes etc.).

Practice identifying positive and negative integers in relation to zero on a standard number line; using a vertical number line (i.e. thermometer).

Practice finding the opposite of an integer (additive inverse) and develop anchor charts with illustrations and examples.

Create visual, verbal or tactile cues or reminders.

Link new learning to prior learning.

Connect to real-life experiences.

Pre-teach prerequisite skills and concepts.

Embed links to websites for additional knowledge.
Design web quests to search for background information.

Teach and model fundamental skills and procedures explicitly until they become automatic.

Present information through different modalities (i.e. visual, auditory, tactile, and kinesthetic).

Adjust color of text, graphs and visual content.

Visuals, anchor charts and desk decals.

**ELL Strategies:**
Utilize body cues and hand gestures to assist with expression identification.

Create charts with mathematical concepts.

Clarify, compare, and make connections to math words in discussion, particularly during and after practice.

Provide translations of all content and general vocabulary words.

Connect language (such as ‘tens’) with concrete and pictorial experiences (such as money and fingers).

Know, use, and make the most of student cultural and home experiences.

Build on the student’s background knowledge.
| Point to visuals while speaking, using your hands to clearly indicate the image that corresponds to your words. |
| Provide a variety of ways to respond: oral, choral, student boards, concrete models (e.g., fingers), pictorial models (e.g., ten-frame), pair share, small group share. |
| Support oral or written response with sentence frames, such as “______ is ___ hundreds, ___ tens, and ___. |
| Embed visual, non-linguistic supports for vocabulary clarification. |

**Website:**
**Teachers First Adapt a Strategy: Adjusting Lessons for ESL/ELL students**
[http://www.teachersfirst.com/content/esl/adapt strat.cfm](http://www.teachersfirst.com/content/esl/adapt strat.cfm)
New Jersey Student Learning Standard(s):
6.NS.C.7: Understand ordering and absolute value of rational numbers.

6.NS.C.7a: Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. For example, interpret $-3 > -7$ as a statement that $-3$ is located to the right of $-7$ on a number line oriented from left to right.

6.NS.C.7b: Write, interpret, and explain statements of order for rational numbers in real-world contexts. For example, write $-3 \, ^\circ C > -7 \, ^\circ C$ to express the fact that $-3 \, ^\circ C$ is warmer than $-7 \, ^\circ C$.

Student Learning Objectives: Compare and order rational numbers.
Use rational numbers to represent real-world situations.

Modified Student Learning Objectives/Standards:
M.EE.6.NS.C.5–8: Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero).

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<tbody>
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<td>MP 2</td>
<td>6.NS.7a</td>
<td>When students are given an inequality, they will determine the position of one rational number relative to another. They will write an inequality and explain statements of order for rational numbers in real world situations.</td>
<td>Each rational number can be associated with a unique point on the number line.</td>
<td>Envision 2-2</td>
</tr>
<tr>
<td>MP 3</td>
<td>6.NS.7b</td>
<td>Students recognize the distance from zero as the absolute value or magnitude of a rational number.</td>
<td>A number to the right of another on the number line is the greater number.</td>
<td>IFL Task(s) – Set of Related Lessons named “Locating, Ordering, and Finding Distance Between Positive and Negative Numbers”</td>
</tr>
<tr>
<td>MP 5</td>
<td></td>
<td>Students need multiple experiences to understand the relationships between numbers, absolute value, and statements about order.</td>
<td>Why is it useful for me to know the absolute value of a number?</td>
<td>PBA: Comparing on a Number Line</td>
</tr>
</tbody>
</table>

Additional Tasks:
The absolute value of a number is the number’s magnitude or distance from 0. If two rational numbers differ only by their signs, they have the same absolute value because they are the same distance from zero.

**SPED Strategies:**
Review and practice identifying the difference between a positive and negative number and how is this used to represent real life situations.

Review and practice placing positive and negative numbers on a number line, and how does its placement relative to zero help explain the meaning of the situation represented.

Provide and practice using a number line.

Review and practice identifying zero pairs.

Practice identifying positive and negative integers in relation to zero on a standard number line; using a vertical number line (i.e. thermometer).

Practice finding the opposite of an integer (additive inverse) and develop anchor charts with illustrations and examples. Practice applying integers to represent real-world situations (UDL).

Remind and demonstrate to students that number lines may run horizontally or vertically.

<table>
<thead>
<tr>
<th>How do statements of inequality help me place numbers on a number line?</th>
<th>How are opposites and absolute value related?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comparing Temperatures</td>
<td>Fractions on a Number Line</td>
</tr>
<tr>
<td>Integers on a Number line</td>
<td>The Highest Place</td>
</tr>
<tr>
<td>Who Ordered This Weather</td>
<td>Which Days are Coldest?</td>
</tr>
</tbody>
</table>
Create visual, verbal or tactile cues or reminders.

Link new learning to prior learning.

Connect to real-life experiences.

Pre-teach prerequisite skills and concepts.

Teach and model fundamental skills and procedures explicitly until they become automatic.

Present information through different modalities (i.e. visual, auditory, tactile, and kinesthetic).

Adjust color of text, graphs and visual content.

**Resources UDL - Visual and Auditory Learner(s):**
Absolute Value by Phinease, CCSS 6.NS.C.7
https://youtu.be/PtEpf7qPriY

**ELL Strategies:**
Clarify, compare, and make connections to math words in discussion, particularly during and after practice.

Provide translations of all content and general vocabulary words.

Know, use, and make the most of student cultural and home experiences.
Build on the student’s background knowledge.

Point to visuals while speaking, using your hands to clearly indicate the image that corresponds to your words.

Provide a variety of ways to respond: oral, choral, student boards, concrete models (e.g., fingers), pictorial models (e.g., ten-frame), pair share, and small group share.

Embed visual, non-linguistic supports for vocabulary clarification.

**Website:**
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[http://www.teachersfirst.com/content/esl/adaptstrat.cfm](http://www.teachersfirst.com/content/esl/adaptstrat.cfm)
**New Jersey Student Learning Standard(s):**

6.NS.C.7: Understand ordering and absolute value of rational numbers.

6.NS.C.7c: Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. *For example, for an account balance of –30 dollars, write |–30| = 30 to describe the size of the debt in dollars.*

6.NS.C.7d: Distinguish comparisons of absolute value from statements about order. *For example, recognize that an account balance less than –30 dollars represents a debt greater than 30 dollars.*

**Student Learning Objectives:** Use absolute value to represent a number’s distance from 0. Interpret absolute value in real-world situations.

**Modified Student Learning Objectives/Standards:**

M.EE.6.NS.C.5–8: Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero).

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<tbody>
<tr>
<td>MP 2</td>
<td>6.NS.7c-1</td>
<td>When students are given an inequality, they will determine the position of one rational number relative to another. They will write an inequality and explain statements of order for rational numbers in real world situations.</td>
<td>The absolute value of a number can be described as the number’s distance from 0 on the number line.</td>
<td>Envision 2-3 3 Act Math</td>
</tr>
<tr>
<td>MP 3</td>
<td>6.NS.7c-2</td>
<td>Students recognize the distance from zero as the absolute value or magnitude of a rational number. Students need multiple experiences to understand the relationships between numbers, absolute value, and statements about order.</td>
<td>Absolute value can be interpreted as the magnitude of a positive or negative quantity in a real-world situation.</td>
<td>IFL Task(s) – Set of Related Lessons named “Locating, Ordering, and Finding Distance Between Positive and Negative Numbers”</td>
</tr>
<tr>
<td>MP 5</td>
<td>6.NS.7d</td>
<td>Why is it useful for me to know the absolute value of a number?</td>
<td></td>
<td>PBA: Comparing on a Number Line</td>
</tr>
<tr>
<td>Tasks may or may not contain context.</td>
<td>The absolute value of a number is the number’s magnitude or distance from 0. If two rational numbers differ only by their signs, they have the same absolute value because they are the same distance from zero.</td>
<td>How do statements of inequality help me place numbers on a number line?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tasks are not limited to integers.</td>
<td><strong>SPED Strategies:</strong> Review and practice placing positive and negative numbers on a number line, and how does its placement relative to zero help explain the meaning of the situation represented.</td>
<td>How do I use positive and negative numbers to represent quantities in the real-world contexts?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prompts do not present students with a number line diagram, but students may draw a number line diagram as a strategy.</td>
<td>Provide and practice using a number line.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Practice and demonstrate identifying positive and negative integers.</td>
<td>Practice and demonstrate identifying positive and negative integers.</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Review and practice identifying zero pairs.</td>
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<td>Practice using positive and negative integers to describe everyday situations (i.e. temperature, scuba diving, parachuting or planes etc.).</td>
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<tr>
<td>Practice identifying positive and negative integers in relation to zero on a standard number line; using a vertical number line (i.e. thermometer).</td>
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<tr>
<td>Practice finding the opposite of an integer (additive inverse) and develop anchor charts with illustrations and examples.</td>
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**Additional Tasks:**

- President’s Approval Ratings
- Stock Market Investments
| Practice applying integers to represent real-world situations (UDL).

Remind and demonstrate to students that number lines may run horizontally or vertically.

Create visual, verbal or tactile cues or reminders.

Pre-teach prerequisite skills and concepts.

Present information through different modalities (i.e. visual, auditory, tactile, and kinesthetic).

**Resources UDL - Visual and Auditory Learner(s):**
Absolute Value by Phinease, CCSS 6.NS.C.7
https://youtu.be/PtEp7qPriY

**ELL Strategies:**
Utilize body cues and hand gestures to assist with expression identification.

Create charts with mathematical concepts.

Clarify, compare, and make connections to math words in discussion, particularly during and after practice.

Provide translations of all content and general vocabulary words.
<table>
<thead>
<tr>
<th>Know, use, and make the most of student cultural and home experiences.</th>
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<td>Build on the student’s background knowledge.</td>
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<td>Point to visuals while speaking, using your hands to clearly indicate the image that corresponds to your words.</td>
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<td>Provide a variety of ways to respond: oral, choral, student boards, concrete models (e.g., fingers), pictorial models (e.g., ten-frame), pair share, and small group share.</td>
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<tr>
<td>Embed visual, non-linguistic supports for vocabulary clarification</td>
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**Website:**

**Teachers First**  
*Adapt a Strategy. Adjusting Lessons for ESL/ELL students*  
[http://www.teachersfirst.com/content/esl/adaptstrat.cfm](http://www.teachersfirst.com/content/esl/adaptstrat.cfm)
New Jersey Student Learning Standard(s):
6.NS.C.6: Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.

6.NS.C.6b: Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.

Student Learning Objectives: Identify and graph points with rational coordinates on the coordinate plane.
Reflect points with rational numbers across both axes.

Modified Student Learning Objectives/Standards:
M.EE.6.NS.C.5–8: Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero).

<table>
<thead>
<tr>
<th>MPs</th>
<th>Evidence Statement Key/Clarifications</th>
<th>Skills, Strategies &amp; Concepts</th>
<th>Essential Understandings/Questions (Accountable Talk)</th>
<th>Tasks/Activities</th>
</tr>
</thead>
</table>
| MP 5 MP 8 | **6.NS.6b-1**
- Tasks have “thin context” or no context.
- Students need not recognize or use traditional notation for quadrants (such as I, II, III, IV).
- Coordinates are not limited to integers.

**6.NS.6b-2**
- Tasks have “thin context” or no context.
- Students need not recognize or use traditional notation for quadrants.

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<td></td>
<td><strong>Signs of numbers in ordered pairs indicate their locations in quadrants of the coordinate plane.</strong></td>
<td><strong>Students will be able to explain the conditions for which pairs of points are reflections across an axes in the coordinate plane. They will locate numbers and their opposites on the number line and explain their relation to 0.</strong></td>
<td><strong>A coordinate plane is formed by a horizontal number line, the x-axis, and a vertical number line, the y-axis, that intersect at a point called the origin.</strong></td>
<td><strong>Envision 2–4</strong></td>
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<td><strong>When two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.</strong></td>
<td><strong>An ordered pair (x, y) locates a point on the coordinate plane.</strong></td>
<td><strong>When are negative numbers used and why are they important?</strong></td>
<td><strong>IFL Task(s) – Set of Related Lessons named “Locating, Ordering, and Finding Distance Between Positive and Negative Numbers”</strong></td>
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<td><strong>Additional Tasks: Triangles Across Axes</strong></td>
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<td>Quadrants (such as I, II, III, IV).</td>
<td>Students recognize that a number and its opposite are equidistance from zero (reflections about the zero). The opposite sign (−) shifts the number to the opposite side of 0. Rational numbers can be located on a number line with opposite numbers on opposite sides of 0. The distance between a positive and negative value on a number line is equal to the sum of their absolute values because they are located on opposite sides of zero. <strong>SPED Strategies:</strong> Review and practice identifying the difference between a positive and negative number and how is this used to represent real life situations. Review and practice placing positive and negative numbers on a number line, and how does its placement relative to zero help explain the meaning of the situation represented. Provide and practice using a number line. Review and practice identifying zero pairs. Practice identifying positive and negative integers in relation to zero on a standard number line; using a vertical number line (i.e. thermometer).</td>
<td>Why is it useful for me to know the absolute value of a number? How do I use positive and negative numbers to represent quantities in real-world contexts? What are opposites and how are they shown on a number line?</td>
<td>Parallelograms Across Axes</td>
<td></td>
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</tbody>
</table>
Practice finding the opposite of an integer (additive inverse) and develop anchor charts with illustrations and examples.

Review and practice plotting ordered pairs on coordinate planes that are positive, negative, or one of each.

Remind and demonstrate to students that number lines may run horizontally or vertically.

Create visual, verbal or tactile cues or reminders.

Link new learning to prior learning.

Connect to real-life experiences.

Pre-teach prerequisite skills and concepts.

Design web quests to search for background information.

Teach and model fundamental skills and procedures explicitly until they become automatic.

Present information through different modalities (i.e. visual, auditory, tactile, and kinesthetic).

Adjust color of text, graphs and visual content.
| Visuals, anchor charts and desk decals. |
| Resources UDL - Visual and Auditory Learner(s): |
| Integers and the Coordinate Plane  |
| (6.NS.C.6b) |
| [https://youtu.be/xXU8SS1BQUs](https://youtu.be/xXU8SS1BQUs) |

**ELL Strategies:**
- Utilize body cues and hand gestures to assist with expression identification.
- Create charts with mathematical concepts.
- Clarify, compare, and make connections to math words in discussion, particularly during and after practice.
- Provide translations of all content and general vocabulary words.
- Connect language (such as ‘tens’) with concrete and pictorial experiences (such as money and fingers).
- Know, use, and make the most of student cultural and home experiences.
- Build on the student’s background knowledge.
- Point to visuals while speaking, using your hands to clearly indicate the image that corresponds to your words.
- Provide a variety of ways to respond: oral, choral, student boards, concrete models (e.g.,
New Jersey Student Learning Standard(s):
6.NS.C.8: Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.

6.G.A.3: Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.

Student Learning Objectives:
- Use absolute value to find the distance between two points that lie on the same horizontal or vertical line on a coordinate plane.
- Solve real-world and mathematical problems involving distances on the coordinate plane.
- Find side lengths of polygons on the coordinate plane.
- Find perimeter of polygons on the coordinate plane.

Modified Student Learning Objectives/Standards:
M.EE.6.NS.C.5–8: Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero).

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<td>MP 2</td>
<td>MP 4</td>
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<td>6.NS.8</td>
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<td></td>
<td>Tasks may or may not contain context.</td>
<td>Finding distances is limited to points with integer coordinates.</td>
<td>Students find the distance between points when ordered pairs have the same x-coordinate or same y-coordinate. They will use absolute value to find distances between points with the same first coordinate or the same second coordinate.</td>
<td>The distance between two points on the coordinate plane with the same first coordinate or the same second coordinate can be found by adding or subtracting the absolute values of the coordinates that differ.</td>
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<td></td>
<td>Example: What is the distance between (–5, 2) and (–9, 2)?</td>
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<td>Solution: The distance would be 4 units. This would be a horizontal line since the y-coordinates are the same.</td>
<td>When are negative numbers used and why are they important?</td>
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<td></td>
<td>In this scenario, both coordinates are in the same quadrant. The distance can be found by using a number line to find the distance between –5 and –9. Students could also recognize that –5 is 5 units from 0 (absolute value) and that –9 is 9 units from 0 (absolute value). Since both of these are in the same quadrant, the distance can be found by finding the difference between the distances 9 and 5. (</td>
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<td>Students will be graphing in all four quadrants of the coordinate plane in order to solve real-world and mathematical problems.</td>
<td>6.G.A.3</td>
<td>Sounds of the Band</td>
<td>2-6</td>
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<tr>
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<td>Students are given the coordinates of polygons to draw in the coordinate plane.</td>
<td>Students will be graphing in all four quadrants of the coordinate plane in order to solve real-world and mathematical problems.</td>
<td>How can I use vertical and horizontal number lines to solve problems?</td>
<td>Additional Tasks:</td>
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<td>If both x-coordinates are the same (2, -1) and (2, 4), then students recognize that a</td>
<td>6.G.A.3</td>
<td>Walking the Block</td>
<td>6.NS.C.8 Distance Between Points</td>
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<td>The coordinates of the vertices of a polygon on</td>
<td>How do I compare and order rational numbers?</td>
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<td>Reflecting Trapezoids</td>
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<td>Doubling Areas</td>
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<td>Which Perimeter is Larger?</td>
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<td>6.G.A.3</td>
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<td>Changing the Dimensions</td>
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**Tasks may or may not contain context.** Finding distances is limited to points with integer coordinates. Students find the distance between points when ordered pairs have the same x-coordinate or same y-coordinate. They will use absolute value to find distances between points with the same first coordinate or the same second coordinate.

**Example:**
What is the distance between (–5, 2) and (–9, 2)?
Solution: The distance would be 4 units. This would be a horizontal line since the y-coordinates are the same.

In this scenario, both coordinates are in the same quadrant. The distance can be found by using a number line to find the distance between –5 and –9. Students could also recognize that –5 is 5 units from 0 (absolute value) and that –9 is 9 units from 0 (absolute value). Since both of these are in the same quadrant, the distance can be found by finding the difference between the distances 9 and 5. (| 9 | - | 5 |).

Students will be graphing in all four quadrants of the coordinate plane in order to solve real-world and mathematical problems.

**6.G.A.3**
Students are given the coordinates of polygons to draw in the coordinate plane.

If both x-coordinates are the same (2, -1) and (2, 4), then students recognize that a
vertical line has been created and the distance between these coordinates is the distance between -1 and 4, or 5.

If both the y-coordinates are the same (-5, 4) and (2, 4), then students recognize that a horizontal line has been created and the distance between these coordinates is the distance between -5 and 2, or 7.

Using this understanding, students solve real-world distance and mathematical problems, including finding the area and perimeter of geometric figures drawn on a coordinate plane.

**SPED Strategies:**
Provide examples and practice identifying the scale on an axis of a coordinate plane.

Provide examples and practice identifying absolute values of integers in relation to coordinates.

Practice and demonstrate adding and subtracting integers in relation to coordinates.

Provide examples, review and practice determining the length of a side of a polygon joining points with the same first and second coordinate.

Practice drawing the conclusion that a horizontal line is formed when the y-values

the coordinate plane can be used to find the lengths of the sides of the polygon and its perimeter.

Why is graphing on the coordinate plane helpful?

How can I use coordinates to find the distances between points?

How can I use number lines to find the distances between points?
are the same and vertical when the x-values are the same in a set of coordinate pairs.

Create visual, verbal or tactile cues or reminders.

Link new learning to prior learning.

Connect to real-life experiences.

Pre-teach prerequisite skills and concepts. Embed links to websites for additional knowledge.

Design web quests to search for background information.

Teach and model fundamental skills and procedures explicitly until they become automatic.

Present information through different modalities (i.e. visual, auditory, tactile, and kinesthetic).

**ELL Strategies:**
Provide students with graph paper and have them work in groups to plot given points on a coordinate plane, and orally discuss the process to the class.

Use small groups/triads.

Provide a variety of ways to respond: oral, choral, student boards, concrete models
(e.g., fingers), pictorial models (e.g., ten-frame), pair share, and small group share.

Create a large picture wall with different shapes, and formulas, with translated names of figures and properties.

Provide students with reference sheets with L1 (Student’s native language) text materials.

Utilize white boards where students can draw mathematical representations of coordinate planes, formulas for figures and illustrate problem solving skills.

Use of translation dictionary or software.

Teach students how to ask questions such as: “Do you agree?” and “Why do you think so?” to extend think-pair-share conversations.

Model and post conversation starters such as: “I agree because….” “Can you explain how you solved it?” “I noticed that…” “Your solution is different from/ the same as mine because…” “My mistake was to….”
Integrated Evidence Statements

6.Int.1: Solve two-step word problems requiring operations on multi-digit whole numbers or decimals.
- Operations are no more complex than those specified for 6.NS.2, 6.NS.3-1, 6.NS.3-2, 6.NS.3-3, and 6.NS.3-4 with the exception of 3-digit x 3-digit.
- For purposes of assessment, the possibilities for multiplication are 1-digit x 2-digit, 1-digit x 3-digit, 2-digit x 3-digit, 2-digit x 4-digit, 2-digit x 5-digit, or 3-digit x 3-digit (For example, 7.68 x 15.3 or 0.35 x 18.241.)

6.C.2: Base explanations/reasoning on the relationship between addition and subtraction or the relationship between multiplication and division. Content Scope: Knowledge and skills articulated in 6.NS.1

6.C.3: Base arithmetic explanations/reasoning on concrete referents such as diagrams (whether provided in the prompt or constructed by the student in her response), connecting the diagrams to a written (symbolic) method. Content Scope: Knowledge and skills articulated in 6.NS.1

6.C.4: Base explanations/reasoning on a number line diagram (whether provided in the prompt or constructed by the student in her response). Content Scope: Knowledge and skills articulated in 6.NS.6, 6.NS.7

6.C.5: Base explanations/reasoning on a coordinate plane diagram (whether provided in the prompt or constructed by the student in her response). Content Scope: Knowledge and skills articulated in 6.NS.6, 6.NS.8

6.C.9: Distinguish correct explanation/reasoning from that which is flawed, and – if there is a flaw in the argument – present corrected reasoning. (For example, some flawed ‘student’ reasoning is presented and the task is to correct and improve it.) Content Scope: Knowledge and skills articulated in 5.NBT, 5.MD.C.
- Tasks may have scaffolding, if necessary, in order to yield a degree of difficulty appropriate to Grade 6.

6.D.1: Solve multi-step contextual word problems with degree of difficulty appropriate to Grade 6, requiring application of knowledge and skills articulated in Type I, Sub-Claim A Evidence Statements.
- Tasks may have scaffolding, if necessary, in order yield a degree of difficulty appropriate to Grade 6.

6.D.2: Solve multi-step contextual problems with degree of difficulty appropriate to Grade 6, requiring application of knowledge and skills articulated in 5.NBT.B, 5.NF, 5.MD, and 5.G.A.
- Tasks may have scaffolding, if necessary, in order yield a degree of difficulty appropriate to Grade 6.

- Tasks may have scaffolding, if necessary, in order to yield a degree of difficulty appropriate to Grade 6.
<table>
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<tr>
<th><strong>Number System</strong></th>
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<td>Fraction greater than one</td>
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# References & Suggested Instructional Websites

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<td>Imagine Math Facts</td>
<td><a href="https://www.imaginelearning.com/programs/math-facts">https://www.imaginelearning.com/programs/math-facts</a></td>
</tr>
<tr>
<td>SuccessMaker</td>
<td><a href="https://paterson1991.smhost.net/lms/sm.view">https://paterson1991.smhost.net/lms/sm.view</a></td>
</tr>
<tr>
<td>North Carolina Department of Public Instruction – Common Core standards “unpacked” for 6th Grade Mathematics</td>
<td><a href="http://www.nepublicschools.org/curriculum/mathematics/scos/current/#unpacking">http://www.nepublicschools.org/curriculum/mathematics/scos/current/#unpacking</a></td>
</tr>
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<td>Georgia Department of Education – Various Common Core resources</td>
<td><a href="https://www.georgiastandards.org/Common-Core/Pages/Math-6-8.aspx">https://www.georgiastandards.org/Common-Core/Pages/Math-6-8.aspx</a></td>
</tr>
<tr>
<td>Illustrative Mathematics – Common Core tasks</td>
<td><a href="https://www.illustrativemathematics.org/">https://www.illustrativemathematics.org/</a></td>
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<td>Learnzillion – Common Core lessons and presentations</td>
<td><a href="https://learnzillion.com/">https://learnzillion.com/</a></td>
</tr>
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<td>Inside Mathematics – Various Common Core resources</td>
<td><a href="http://www.insidemathematics.org/">http://www.insidemathematics.org/</a></td>
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<td>EngageNY – Common Core lessons and resources</td>
<td><a href="https://www.engageny.org/">https://www.engageny.org/</a></td>
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<td>Common Core Math Tasks – Common Core tasks</td>
<td><a href="http://commoncoremathtasks.wikispaces.com/6.NS.2-4">http://commoncoremathtasks.wikispaces.com/6.NS.2-4</a></td>
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<td>Khan Academy</td>
<td><a href="https://www.khanacademy.org/commoncore/grade-6-RP">https://www.khanacademy.org/commoncore/grade-6-RP</a></td>
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</table>
### Field Trip Ideas

**THE BOUNCE FACTORY** *(Warren, NJ)* - STEM- Inspired FUN Field Trips The Bounce Factory, Bricks 4 Kidz of Hunterdon Somerset and Team Makers of North Jersey have combined to create a unique and exciting Field Trip for students in grades 1st – 8th. It integrates STEM learning with fun, hands on activities that will focus on Science, Engineering and Math concepts. The students will build motorized models with LEGO® bricks and discuss engineering and physics principals; enter the Bounce rooms for activities that will set in motion discussions of how physics impacts their play; learn about Math and Science concepts while playing integrative teambuilding activities that build their skills and promote working together; learn strategy and the power of collaboration while playing laser tag in a state of the art facility.  

**LIBERTY SCIENCE CENTER** *(Jersey City, NJ)* - An interactive science museum and learning center with math connections. There is a math guidebook for teachers to make connections with math: [http://lsc.org/plan-your-visit/](http://lsc.org/plan-your-visit/)

**NATIONAL MUSEUM OF MATHEMATICS** *(New York, NY)* - Mathematics illuminates the patterns and structures all around us. Our dynamic exhibits, gallery, and programs will stimulate inquiry, spark curiosity, and reveal the wonders of mathematics. MoMath has innovative exhibits that will engage folks from 105 to 5 years old (and sometimes younger), but with a special emphasis on activities for 4th through 8th graders.  
**Requires approval from Unit Superintendent**  

**MUSEUM OF AMERICAN FINANCE** *(New York, NY)* – For more than 20 years, educators from around the country have been bringing students to the Museum to help them understand how finance impacts their daily lives. The Museum offers discounted admission for pre-booked groups of eight or more, as well as a variety of classes for students in middle school through college.  
[http://www.moaf.org/index](http://www.moaf.org/index)

**LEGOLAND DISCOVERY CENTER** *(Yonkers, NY)* – Merry-Go-Round Workshop (Engineering Design, Mathematics, Listening and Speaking) This workshop provides a fun, hand-on way to get students excited about engineering, design, and mathematics. Students build a LEGO merry-go-round to explore gear ratios then experiment with gear trains to see which combination enables their ride to spin the fastest.  
**Requires approval from Unit Superintendent**  
[https://www.legolanddiscoverycenter.com/westchester/education/elementary-school.aspx](https://www.legolanddiscoverycenter.com/westchester/education/elementary-school.aspx)

**BUEHLER'S CHALLENGER & SCIENCE CENTER** *(Paramus, NJ)* - Fly a space mission beyond your wildest dreams in the challenger simulator! Students will work on teams to complete their mission, while conducting experiments, monitoring life support, and implementing navigation orders. In this dynamic environment, students use principles of science, mathematics, and technology to complete their tasks. There are 3 missions to choose from: “Rendezvous with Comet Halley”, “Return to the Moon”, “Voyage to Mars”.  
**Requires approval from Unit Superintendent**  
[http://www.bcsce.org/5-9th-grade/](http://www.bcsce.org/5-9th-grade/)
Field Trip Ideas

BRANCH BROOK PARK SKATING RINK (Newark, NJ) - A unique educational experience that gets students excited about learning! Students will learn how the concepts of Science, Technology, Engineering and Math can be found in everyday experiences, even FUN experiences like roller skating! Our professional STEM Educators teach visiting students about how STEM principles exist in just about every part of life. The lessons focus on hands on activities that are both educational and fun! Lessons are customized based on teachers needs to directly relate back to classroom learning making this program completely unique! Following the completion of the 1hour STEM Lesson, the students roller skate for physical fitness. While Roller Skating the concepts students learned are continually reinforced. Our lessons are designed not only to help students overcome their fear of learning STEM concepts but to show how STEM is both FUN & EXCITING!