Grade 3: Unit 3
Fractions as Numbers and Measurement
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 NJSL; 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.

Third grade Mathematics consists of the following domains: Operations and Algebraic Thinking (OA), Number and Operations in Base Ten (NBT), Number and Operations-Fractions (NF), Measurement and Data (MD), and Geometry (G). In third grade, instructional time should focus on four critical areas: (1) developing understanding of multiplication and division and strategies for multiplication and division within 100; (2) developing understanding of fraction, especially unit fractions (fractions with numerator, addition and subtraction of fractions with like denominators, and multiplication of fractions by whole numbers; (3) developing understanding of the structure of rectangular arrays and of area; and (4) describing and analyzing two-dimensional shapes.

1) Students develop an understanding of the meanings of multiplication and division of whole numbers through activities and problems involving equal-sized groups, arrays, and area models; multiplication is finding an unknown product, and division is finding an unknown factor in these situations. For equal-sized group situations, division can require finding the unknown number of groups or the unknown group size. Students use properties of operations to calculate products of whole numbers, using increasingly sophisticated strategies based on these properties to solve multiplication and division problems involving single-digit factors. By comparing a variety of solution strategies, students learn the relationship between multiplication and division.

2) Students develop an understanding of fractions, beginning with unit fractions. Students view fractions in general as being built out of unit fractions, and they use fractions along with visual fraction models to represent parts of a whole. Students understand that the size of a fractional part is relative to the size of the whole. For example, 1/2 of the paint in a small bucket could be less paint than 1/3 of the paint in a larger bucket, but 1/3 of a ribbon is longer than 1/5 of the same ribbon because when the ribbon is divided into 3 equal parts, the parts are longer than when the ribbon is divided into 5 equal parts. Students are able to use fractions to represent numbers equal to, less than, and greater than one. They solve problems that involve comparing fractions by using visual fraction models and strategies based on noticing equal numerators or denominators.

3) Students recognize area as an attribute of two-dimensional regions. They measure the area of a shape by finding the total number of same size units of area required to cover the shape without gaps or overlaps, a square with sides of unit length being the standard unit for measuring area. Students understand that rectangular arrays can be decomposed into identical rows or into identical columns. By decomposing rectangles into rectangular arrays of squares, students connect area to multiplication, and justify using multiplication to determine the area of a rectangle.

4) Students describe, analyze, and compare properties of two-dimensional shapes. They compare and classify shapes by their sides and angles, and connect these with definitions of shapes. Students also relate their fraction work to geometry by expressing the area of part of a shape as a unit fraction of the whole.
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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</thead>
<tbody>
<tr>
<td>1</td>
<td>Interpret the unit fraction $1/b$ as the quantity formed by 1 of $b$ equal parts of a whole and the fraction $a/b$ as the quantity formed by a parts of size $1/b$.</td>
<td>3.NF.A.1</td>
</tr>
<tr>
<td>2</td>
<td>Draw a number line depicting the position of $1/b$ (with $b = 2, 3, 4, 6,$ or $8$); represent the unit fraction $\frac{1}{4}$ on the number line by partitioning the number line between 0 and 1 into 4 equal lengths and name the point at the end of the first length as the position of the unit fraction $\frac{1}{4}$; apply the same method for placing points $\frac{1}{2}, \frac{1}{3}, \frac{1}{6},$ and $\frac{1}{8}$ on the number line.</td>
<td>3.NF.A.2a</td>
</tr>
<tr>
<td>3</td>
<td>Draw a number line depicting the position of fraction $a/b$ (with $b = 2, 4, 3, 6,$ or $8,$ and including whole numbers up to 5).</td>
<td>3.NF.A.2b</td>
</tr>
<tr>
<td>4</td>
<td>Generate simple equivalent fractions, explain why they are equivalent, and support the explanation with visual fraction models; locate them on the number line.</td>
<td>3.NF.A.3a, 3b</td>
</tr>
<tr>
<td>5</td>
<td>Express whole numbers as fractions, identify fractions equivalent to whole numbers and locate them on the number line.</td>
<td>3.NF.A.3c</td>
</tr>
<tr>
<td>6</td>
<td>Compare two fractions having the same numerator; compare two fractions having the same denominator; reason about their size and use the symbols $&gt;$, $=$, or $&lt;$ to record the comparison.</td>
<td>3.NF.A.3d</td>
</tr>
<tr>
<td>7</td>
<td>Tell and write time to the nearest minute, and solve word problems with addition and subtraction involving time intervals in minutes.</td>
<td>3.MD.A.1</td>
</tr>
<tr>
<td>8</td>
<td>Solve one step word problems by estimating and measuring volume and mass using appropriate tools and standard units of grams, kilograms, and liters.</td>
<td>3.MD.A.2</td>
</tr>
<tr>
<td>9</td>
<td>Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.</td>
<td>3.G.A.1</td>
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</tbody>
</table>

Instruction: 8 weeks
Assessment: 1 week
<table>
<thead>
<tr>
<th>No.</th>
<th>Objective</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.</td>
<td>3.MD.D.8</td>
</tr>
<tr>
<td>11</td>
<td>Fluently multiply and divide within 100 using strategies such as the relationship between multiplication and division.</td>
<td>3.OA.C.7</td>
</tr>
</tbody>
</table>
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 stagnate 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)
## Effective Pedagogical Routines/Instructional Strategies

<table>
<thead>
<tr>
<th>Collaborative Problem Solving</th>
<th>Analyze Student Work</th>
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<tbody>
<tr>
<td>Connect Previous Knowledge to New Learning</td>
<td>Identify Student’s Mathematical Understanding</td>
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<tr>
<td>Making Thinking Visible</td>
<td>Identify Student’s Mathematical Misunderstandings</td>
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<tr>
<td>Develop and Demonstrate Mathematical Practices</td>
<td>Interviews</td>
</tr>
<tr>
<td>Inquiry-Oriented and Exploratory Approach</td>
<td>Role Playing</td>
</tr>
<tr>
<td>Multiple Solution Paths and Strategies</td>
<td>Diagrams, Charts, Tables, and Graphs</td>
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<tr>
<td>Use of Multiple Representations</td>
<td>Anticipate Likely and Possible Student Responses</td>
</tr>
<tr>
<td>Explain the Rationale of your Math Work</td>
<td>Collect Different Student Approaches</td>
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<tr>
<td>Quick Writes</td>
<td>Multiple Response Strategies</td>
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<tr>
<td>Pair/Trio Sharing</td>
<td>Asking Assessing and Advancing Questions</td>
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<tr>
<td>Turn and Talk</td>
<td>Revoicing</td>
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<tr>
<td>Charting</td>
<td>Marking</td>
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<tr>
<td>Gallery Walks</td>
<td>Recapping</td>
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<tr>
<td>Small Group and Whole Class Discussions</td>
<td>Challenging</td>
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<tr>
<td>Student Modeling</td>
<td>Pressing for Accuracy and Reasoning</td>
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<td></td>
<td>Maintain the Cognitive Demand</td>
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</table>
Educational Technology

Standards

8.1.5.A.1, 8.1.5.A.3, 8.1.5.F.1, 8.2.5.D.2

➢ Technology Operations and Concepts:
   • Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.
     **Example:** Students will navigate websites such as Imagine Math Facts, MobyMax, Learnzillion, IXL Math, Khanacademy, or SuccessMaker.

   • Use a graphic organizer to organize information about a problem or issue:
     **Example:** Students will use these graphic organizers to help reinforce various ways of solving math problems involving graphing, scaled drawing, estimation strategies, and area.


➢ Critical thinking, problem solving, and decision making:
   • Apply digital tools to collect, organize, and analyze data that support a scientific finding.
     **Example:** Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources when problem solving.

   https://www.mathlearningcenter.org/resources/apps

➢ Abilities for a Technological World:
   • Evaluate and test alternative solutions to a problem using the constraints and trade-offs identified in the design process to evaluate potential solution.
     **Example:** Students will apply a design process when math problems involving graphing, scaled drawing, estimation strategies, and area.

   http://www.kidport.com/Grade3/Math/MathIndex.htm
### 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>
<thead>
<tr>
<th>CRP2. Apply appropriate academic and technical skills.</th>
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<tbody>
<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 judgments about the use of specific tools and use tools to explore and deepen understanding of concepts.

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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 will communicate precisely using clear definitions and provide carefully formulated explanations when constructing arguments. Students will communicate and defend mathematical reasoning using objects, drawings, diagrams, and/or actions. Students will ask probing questions to clarify or improve arguments.
Career Ready Practices

**CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.**

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.

**Example:** Students will understand the meaning of a problem and look for entry points to its solution. They will analyze information, make conjectures, and plan a solution pathway. Students will monitor and evaluate progress and change course 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 collaboratively in groups to solve mathematical tasks. Students will listen to or read the arguments of others and ask probing questions to clarify or improve arguments.
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

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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 help 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 help students question and unpack biases & stereotypes.

This unit / lesson help students examine, research and question information and sources.

The curriculum encourage 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 student 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.

Culturally Relevant Pedagogy Examples

- 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 for students to remember. Use multi-modal activities, analogies, realia, visual cues, graphic representations, gestures, pictures practice and cognates. Model to students that some vocabulary has multiple meanings. Have students create the Word Wall with their definitions and examples of vocabulary from this unit to foster ownership.

- **Use Learning Stations: Provide a range of materials by setting up learning stations.**  
  **Example:** Reinforce understanding of concepts and skills by promoting the learning through student interests and modalities, experiences and/or prior knowledge. Encourage the students to make choices in content based upon their strengths, needs, values and experiences. Providing students with choice will give them a sense of ownership to their learning and understanding. For example: Students in each group move about the room measuring the perimeter of everyday items such as rugs, cabinet doors, their desks, etc., and recording them in their math journals along with an annotated diagram.

- **Everyone has a Voice:** Create a classroom environment where students know that their contributions are expected and valued.  
  **Example:** Norms for sharing are established that communicate 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 Problem-Based Learning Scenarios:** Present relatable real-world problems for your students to solve, explicitly referencing cultures and communities when applicable.  
  **Example:** Students choose songs (language appropriate) and time the length of the song to the nearest minute.
Differentiated Instruction

Accommodate Based on Students Individual Needs: Strategies

<table>
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<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>
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</tbody>
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<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>
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<tr>
<td></td>
<td>Read directions aloud</td>
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<td>Color code materials</td>
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</table>
Differentiated Instruction

Accommodate Based on Content Specific Needs:

- Demonstrate comprehension of fractions as equal parts of the whole by reading word problems which use key, technical vocabulary in simple sentences and then write the appropriate fraction.
- Retell how to recognize and generate equivalent fractions and explain why they are equivalent via visual fraction models.
- Demonstrate fractions equivalent to ½ using manipulatives (color tiles, fraction circles, fraction bars) and or technology (e.g., 2/4 = 1/2). For example, students identify the piece for 1 whole and use it as a reference. To find fractions equivalent to ½, students stack fractions of like color fraction circles on the ½ piece to find which pieces exactly cover the ½.
- Determine which of two fractions with like denominators represents a larger part of a whole (e.g., compare 2 fourths and 3 fourths). Model each step before students begin. As a class, create an anchor chart with examples.
- Scaffold complex concepts and provide leveled problems for multiple entry points.
- Write in order to demonstrate comprehension that shapes in different categories may share attributes and can define a larger category by identifying in writing what does and does not constitute a quadrilateral using key content vocabulary in simple sentences.
- Use straws to make four congruent figures. Have students change the angles to see the relationships between a rhombus and a square.
- As students develop definitions for these shapes, relationships between the properties will be understood.
- As a class, create an anchor chart with examples.
- Use of interactive word wall.
- Students are exposed to hands on manipulatives depicting shapes to help them understand their attributes.
- Interactive Word Wall and sentence starters can be used to build vocabulary.
Interdisciplinary Connections

Model interdisciplinary thinking to expose students to other disciplines.

Social Studies Connection: 6.1.4.D.20

Name of Task: I Like to Move It! Move It! Flags

Flags are a rich source of mathematics and create a cross curriculum link. Flags focus on the area model of fractions and drawing flags could focus on position, ratio, symmetry, geometrical constructions and scale drawings. Students can visit the world flag database or flag world to write instructions to draw a flag or to create co-operative problem solving tasks. Provide students with a flag template, rulers and colored pencils. Students in pairs, or groups write a set of instructions for the other students to create the flag e.g.

The Austrian flag is made of three equal horizontal stripes.
Two-thirds of the Austrian flag is red.
One-third of the Austrian flag is white.

Students will learn about different countries' flags, and specifically use flags like Italy's, Armenia's, France's, and Poland's, that are divided equally, and can best lend themselves to understanding simpler unit fractions. As students learn about the flags' colors’ significance as well each color representing a fraction of the entire flag, students will translate these simple fractions onto a number line on the chalkboard with the same colors coordinating to the colors of the flags.

Art Connection: 1.3.2.D.1

Name of Task: I Like to Move It! Move It!

Students can use paint to creatively divide number lines into color-coded fractions with different denominators. Each student can be assigned a different color and denominator combination, and then set to divide the space between 0 and 1 on the number line with only their denominator -- if they have 6 as a denominator, they will only put 0, 1/6, 2/6, 3/6, 4/6, 5/6, and 1 on their number line. Then, the students will break into groups to compare their fractions, and then they can decorate their number lines with other students’ fractions and colors.

http://illuminations.nctm.org/Activity.aspx?id=4148

ELA Connection:NJSLSA.W1

Name of Task: Equivalent Fractions

Students will develop skills in problem-solving when exploring equivalent fractions. Students will develop an understanding of equivalent fractions. They will create models of equivalent fractions and be able to tell what happens when the numerator or denominator changes. http://questgarden.com/180/69/6/1504160521277/
# 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
- PARCC
- 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

3.NF.A.1
Understand a fraction 1/b as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size 1/b. *(Grade 3 expectations in this domain are limited to fractions with denominators 2,3,4,6, and 8.)*

3.NF.A.2a
Represent a fraction 1/b on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size 1/b and that the endpoint of the part based at 0 locates the number 1/b on the number line. *(Grade 3 expectations in this domain are limited to fractions with denominators 2,3,4,6, and 8.)*

3.NF.A.2b
Represent a fraction a/b on a number line diagram by marking off a lengths 1/b from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line. *(Grade 3 expectations in this domain are limited to fractions with denominators 2,3,4,6, and 8.)*

3.NF.A.3a
Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.

3.NF.A.3b
Recognize and generate simple equivalent fractions, e.g., 1/2 = 2/4, 4/6 = 2/3. Explain why the fractions are equivalent, e.g., by using a visual fraction model.

3.NF.A.3c
Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. Examples: Express 3 in the form 3 = 3/1; recognize that 6/1 = 6; locate 4/4 and 1 at the same point of a number line diagram.

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

3.MD.A.1
Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.

3.MD.A.2
Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.

3.G.A.1
Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs. For example, draw a bar graph in which each square in the bar graph might represent 5 pets.

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

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

1. Make sense of problems and persevere in solving them.

2. Reason abstractly and quantitatively.

3. Construct viable arguments and critique the reasoning of others.

4. Model with mathematics.

5. Use appropriate tools strategically.

6. Attend to precision.

7. Look for and make use of structure.

8. Look for and express regularity in repeated reasoning.
<table>
<thead>
<tr>
<th>Grade: Three</th>
<th>Unit: 3 (Three)</th>
<th>Topic: Fractions as Numbers and Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NJSLS:</strong></td>
<td></td>
<td>3.NF.A.1, 3.NF.A.2a, 3.NF.A.2b, 3.NF.A.3a, 3b, 3c, 3.NF.A.3d, 3.MD.A.1, 3.MD.A.2, 3.G.A.1, 3.MD.D.8, 3.OA.C.7</td>
</tr>
</tbody>
</table>

**Unit Focus:**
- Develop understanding of fractions as numbers
- Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects
- Reason with shapes and their attributes
- Recognize perimeter as an attribute of plane figures and distinguish between linear and area measure
- Multiply and divide within 100

**New Jersey Student Learning Standard:**

3.NF.A.1: Understand a fraction $\frac{1}{b}$ as the quantity formed by 1 part when a whole is partitioned into $b$ equal parts; understand a fraction $\frac{a}{b}$ as the quantity formed by $a$ parts of size $\frac{1}{b}$. *(Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.)*

**Student Learning Objective 1:** Interpret the unit fraction $\frac{1}{b}$ as the quantity formed by 1 of $b$ equal parts of a whole and the fraction $\frac{a}{b}$ as the quantity formed by $a$ parts of size $\frac{1}{b}$.

**Modified Student Learning Objectives/Standards:**

M.EE.3.NF.A.1: Differentiate a fractional part from a whole.

<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 2</td>
<td>3.NF.1</td>
<td>Teacher involves students in partitioning a whole into equal pieces. Class can count iterations of equal pieces to demonstrate how many equal pieces are needed to make a whole.</td>
<td>How can a fraction be represented? Students will understand that a fraction describes the</td>
<td>IFL Task(s) – Set of Related Lessons “Understanding Fractions as Numbers”</td>
</tr>
<tr>
<td>Tasks are limited to fractions with denominators 2, 3, 4, 6, and 8.</td>
<td>Encourage the comparing of amounts using real-life objects. Utilize a story situation that requires students to partition figures into equal shares and name the amounts modeled. Students can then create their own stories. <strong>SPED Strategies:</strong> Demonstrate comprehension of fractions as equal parts of the whole by reading word problems which use key, technical vocabulary in simple sentences and then writing the appropriate fraction. Retell how to recognize and generate equivalent fractions and explain why they are equivalent via visual fraction models. Demonstrate fractions equivalent to ½ using manipulatives (color tiles, fraction circles, fraction bars) and or technology (e.g., 2/4 =1/2). For example, students identify the piece for 1 whole and use it as a reference. To find fractions equivalent to ½, students stack fractions of like color fraction circles on the ½ piece to find which pieces exactly cover the ½. Determine which of two fractions with like denominators represents a larger part of a whole (e.g., compare 2 fourths and 3 fourths). division of a whole or unit (area/region, set, linear/measurement) into equal parts. A fraction is relative to the size of the whole or unit. How does the denominator affect the size of the pieces? The denominator tells how many equal parts into which the whole or unit is divided. The numerator tells how many equal parts of that subdivided whole are indicated. Rational numbers (any number that can be expressed as a fraction) have an infinite number of equivalent forms, and the forms are equivalent if the same portion of the set or area of the figure is represented or they represent the same point on the number line. Comparison to known benchmark quantities can help determine the relative size of a fractional piece</td>
<td>PBA: Candy Bar Additional Tasks: Building a Deck Ruby’s Rectangles Making a Scarf Selling Bubble Gum</td>
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<tr>
<td>ELL Strategies:</td>
<td>because the benchmark quantity can be seen as greater, less than, or the same as the piece.</td>
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<tr>
<td>Demonstrate comprehension of fractions as equal parts of the whole by reading word problems in L1 (student’s native language) and/or which use pictures, drawings and selected words and then writing the appropriate fraction.</td>
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<tr>
<td>Students need many opportunities to solve word problems that require fair sharing. Students express fractions as “fair sharing”, parts of a whole, and parts of a set. They use various contexts (candy bars, fruit, and cakes) and a variety of models (circles, squares, rectangles, fraction bars, and number lines) to develop understanding of fractions and represent fractions.</td>
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<tr>
<td>Retell how to recognize and generate equivalent fractions and explain why they are equivalent using visual fraction models using key, technical vocabulary in simple sentences in the student's native language.</td>
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<td>Use cognates or flip books written in native language to use as a reference.</td>
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<td>Connect students’ prior knowledge and experiences to new learning. Find out what students already know about a topic by making a semantic web on the board.</td>
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</tbody>
</table>
Write the topic in the center of a circle and record students’ knowledge around it. Retell how to recognize and generate equivalent fractions and explain why they are equivalent via visual fraction models.

**New Jersey Student Learning Standard:**
3.NF.A.2a: Represent a fraction 1/b on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size 1/b and that the endpoint of the part based at 0 locates the number 1/b on the number line. *(Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.)*

**Student Learning Objective 2:** Draw a number line depicting the position of 1/b (with b = 2, 3, 4, 6, or 8); represent the unit fraction ¼ on the number line by partitioning the number line between 0 and 1 into 4 equal lengths and name the point at the end of the first length as the position of the unit fraction ¼; apply the same method for placing points 1/2, 1/3, 1/6, and 1/8 on the number line.

**Modified Student Learning Objectives/Standards:**
M.EE.3.NF.A.2a Differentiate a fractional part from a whole.

<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</td>
<td>3.NF.A.2</td>
<td>Before teaching fraction symbolism, reinforce fraction vocabulary and talk about fractional parts through modeling with concrete materials. This will lead to the development of fractional number sense needed to successfully compare and compute fractions. Use fraction benchmark quantities to make comparisons. Place fractions on a number line to demonstrate the beginning and end points and the fractional pieces in between.</td>
<td>A fraction describes the division of a whole or unit (area/region, set, linear/measurement) into equal parts. A fraction is relative to the size of the whole or unit. When decomposing a fraction into iterations of the unit fraction, the number of iterations is the same as the value of the numerator.</td>
<td>IFL Task(s) – Set of Related Lessons “Understanding Fractions as Numbers” PBA: Number Line Task Additional Tasks: All the Jumps</td>
</tr>
</tbody>
</table>
- Tasks have “thin context” or no context.
- Tasks are limited to fractions with denominators 2, 3, 4, 6, and 8.

<table>
<thead>
<tr>
<th>Walking Along the Pond</th>
<th>Plotting Number Lines II</th>
<th>One Fourth Starting From One</th>
</tr>
</thead>
<tbody>
<tr>
<td>A fraction in which the total number of pieces in the whole is the same as the total number of the pieces is called one whole because all of the pieces of the whole are accounted for.</td>
<td>Comparison to known benchmark quantities can help determine the relative size of a fractional piece because the benchmark quantity can be seen as greater, less than, or the same as the piece.</td>
<td>If the numerator is half the quantity in the denominator, then the fraction is equal to a half.</td>
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<tr>
<td>It is important for students to understand that the denominator names the fraction part that the whole or set is divided into, and therefore is a divisor. The numerator counts or tells how many of the fractional parts are being discussed.</td>
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</table>

When comparing fractions of regions, the whole of each must be the same size. It is important to help students understand that two equivalent fractions are two ways of describing the same amount by using different-sized fractional parts.

Students should be able to represent fractional parts in various ways.

**SPED Strategies:**
Draw and represent unit fractions on a number line and explain in writing how to represent those fractions using key, technical vocabulary in simple sentences.

Model the process. Talk aloud while solving problems on the smartboard to show the thinking process and common errors.

**ELL Strategies:**
Draw and represent unit fractions on a number line and explain in writing how to represent those fractions in L1 (student’s native language) and/or use illustrations, gestures and selected technical words.

Have students explain their thinking process aloud in their native language to a classmate while solving a problem.
Allow ELL students to talk to a peer in their native language when necessary to clarify understanding and clear up misunderstandings.

**New Jersey Student Learning Standard:**
3.NF.A.2b: Represent a fraction $a/b$ on a number line diagram by marking off a lengths $1/b$ from 0. Recognize that the resulting interval has size $a/b$ and that its endpoint locates the number $a/b$ on the number line. *(Grade 3 expectations in this domain are limited to fractions with denominators 2,3,4,6, and 8.)*

**Student Learning Objective 3:** Draw a number line depicting the position of fraction $a/b$ (with $b = 2, 4, 3, 6, or 8,$ and including whole numbers up to 5).

**Modified Student Learning Objectives/Standards:**
M.EE.3.NF.A.2b: Differentiate a fractional part from a whole.

<table>
<thead>
<tr>
<th>MPs</th>
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<th>Tasks/Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MP 5</strong></td>
<td>3.NF.A.2</td>
<td>Students use benchmark quantities of 0, 1/2 and 1 to determine the relative size of the fractional part. A story situation with a number line model can be provided. Ask students to place and locate fractions on a number line. Review the creation of a number line and the importance of equal spacing between points. <strong>SPED Strategies:</strong> Model each step before students begin. As a class, create an anchor chart with examples.</td>
<td>The denominator tells how many equal parts into which the whole or unit is divided. The numerator tells how many equal parts of that subdivided whole are indicated. Rational numbers have an infinite number of equivalent forms, and the forms are equivalent if the same portion of the set or area of the figure is represented or they</td>
<td><strong>IFL Task(s) – Set of Related Lessons “Understanding Fractions As Numbers”</strong> <strong>PBA:</strong> Number Line Task <strong>Additional Tasks:</strong> Find Two Thirds Sharing Licorice Closest to Half</td>
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<td>Scaffold complex concepts and provide leveled problems for multiple entry points.</td>
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<tr>
<td>Interactive Word Wall and sentence starters can be used to build vocabulary.</td>
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<tr>
<td><strong>ELL Strategies:</strong> Explain how you represent a number line depicting a fraction ( \frac{a}{b} ) (with ( a &lt; b ) and ( b = 2, 4, 3, 4, 6, ) or 8) in L1 (student’s native language) and/or use equations, Number Line, illustrations, gestures.</td>
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<tr>
<td>Utilize interactive journals to review examples and to demonstrate growth in math writing and reasoning.</td>
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<td>Allow ELL students to talk to a peer in their native language when necessary to clarify understanding and clear up misunderstandings.</td>
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<td>represent the same point on the number line.</td>
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<tr>
<td>Comparison to known benchmark quantities can help determine the relative size of a fractional piece because the benchmark quantity can be seen as greater, less than, or the same as the piece.</td>
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<table>
<thead>
<tr>
<th>Find 1</th>
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<tbody>
<tr>
<td>Locating Fractions Greater Than One</td>
</tr>
<tr>
<td>Locating Fractions Less Than One</td>
</tr>
<tr>
<td>Using Fraction Strips to Explore</td>
</tr>
</tbody>
</table>
**New Jersey Student Learning Standards:**

3.NF.A.3a: Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.

3.NF.A.3b: Recognize and generate simple equivalent fractions, e.g., \( \frac{1}{2} = \frac{2}{4} \), \( \frac{4}{6} = \frac{2}{3} \). Explain why the fractions are equivalent, e.g., by using a visual fraction model.

**Student Learning Objective 4:** Generate simple equivalent fractions, explain why they are equivalent, and support the explanation with visual models; locate them on the number line.

**Modified Student Learning Objectives/Standards:**
M.EE.3.NF.A.3a, M.EE.3.NF.A.3b: Differentiate a fractional part from a whole.

<table>
<thead>
<tr>
<th>MP 5</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></td>
<td>3.NF.3a-1</td>
<td>Count shaded and unshaded portions and name the fraction. Divide the whole number of squares into equal groups and name the shaded and unshaded portions with a fraction. Provide two area models with different shaded areas that can be named in more than one way to demonstrate equivalence. Utilize ( \frac{1}{2} ) and 1 whole to compare fractions on a number line. A context, an area model, and a number line model can be used to demonstrate equivalent fractions. For example:</td>
<td>A fraction describes the division of a whole or unit (area/region, set, linear/measurement) into equal parts. A fraction is relative to the size of the whole or unit. Rational numbers have an infinite number of equivalent forms, and the forms are equivalent if the same portion of the set or area of the figure is represented or they represent the same point on the number line. The denominator tells how many equal parts into which</td>
<td>IFL Task(s) – Set of Related Lessons “Understanding Fractions As Numbers” Additional Tasks: Halves, Thirds Jon and Charlie’s Run Sharing Pie Fractions on a Number Line Nicholas’ Game</td>
</tr>
</tbody>
</table>
**SPED Strategies:**
Model each step before students begin. As a class, create an anchor chart with examples.

Scaffold complex concepts and provide leveled problems for multiple entry points.

Interactive word wall and sentence starters can be used to build vocabulary.

**ELL Strategies:**
Explain how you represent a number line depicting a fraction a/b (with a < b and b = 2, 4, 3, 4, 6, or 8) in L1 (student’s native language) and/or use equations, number line, illustrations, gestures. Utilize interactive journals to review examples and to demonstrate growth in math writing and reasoning.
Allow ELL students to talk to a peer in their native language when necessary to clarify understanding and clear up misunderstandings.

**New Jersey Student Learning Standard:**
3.NF.A.3c: Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. Examples: Express 3 in the form \(3 = \frac{3}{1}\); recognize that \(\frac{6}{1} = 6\); locate \(\frac{4}{4}\) and \(1\) at the same point of a number line diagram.

**Student Learning Objective 5:** Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. Examples: Express 3 in the form \(3 = \frac{3}{1}\); recognize that \(\frac{6}{1} = 6\); locate \(\frac{4}{4}\) and \(1\) at the same point of a number line diagram.

**Modified Student Learning Objectives/Standards:**
M.EE.3.NF.A.3c: Differentiate a fractional part from a whole.

<table>
<thead>
<tr>
<th>MPs</th>
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<th>Tasks/Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP 3 MP 5 MP 7</td>
<td>3.NF.3c</td>
<td>Partition a whole into equal pieces and demonstrate the equivalence to a whole number. Count iterations of equal pieces to assure that number of parts counted total the denominator to represent a whole number. Provide story situations that require students to partition figures and cover figures with square tiles that represent square feet. Utilize a number line to show the various whole numbers that can be represented and written in fraction form:</td>
<td>How can fractions be represented on a number line? How can you use visual models to compare simple equivalent fractions? A fraction describes the division of a whole or unit (area/region, set, linear/measurement) into equal parts. A fraction is relative to the size of the whole or unit.</td>
<td>IFL Task(s) – Set of Related Lessons named “Understanding Fractions As Numbers” PBA: Number Line Task Additional Tasks: Measuring Daily Rainfall Placing Fractions Fractions on a Number Line</td>
</tr>
</tbody>
</table>
SPED Strategies:
Students think all shapes can be divided the same way. Present shapes other than circles, squares, or rectangles to prevent students from overgeneralizing that all shapes can be divided the same way. Provide students with manipulatives that depict fractional parts.

ELL Strategies:
Students need many opportunities to discuss fractional parts using concrete models to develop familiarity and understanding of fractions.

Students need to relate dividing a shape into equal parts and representing this relationship on a number line, where the equal parts are between two whole numbers. Help students plot fractions on a number line, by using the meaning of the fraction. For example, to plot 4/5 on a number line, there are 5 equal parts with 4 copies of the 5 equal parts.

Allow ELL students to talk to a peer in their native language when necessary to clarify understanding and clear up misunderstandings.

Iterating a unit fraction is an interpretation of a fraction that illustrates the equal parts that the fraction is composed of.

A fraction in which the total number of pieces in the whole is the same as the total number of the pieces is called one whole because all of the pieces of the whole are accounted for.
New Jersey Student Learning Standard:
3.NF.A.3d: Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.

Student Learning Objective 6: Compare two fractions having the same numerator; compare two fractions having the same denominator; reason about their size and use the symbols >, =, or < to record the comparison.

Modified Student Learning Objectives/Standards:
M.EE.3.NF.A.3D Differentiate a fractional part from a whole.

<table>
<thead>
<tr>
<th>MP 2</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 7</td>
<td>3.NF.3d</td>
<td>Partitioning a whole into equal pieces.</td>
<td>How can fractions be represented on a number line?</td>
<td>IFL Task(s) – Set of Related Lessons “Understanding Fractions As Numbers”</td>
</tr>
<tr>
<td>MP 8</td>
<td></td>
<td>Counting iterations of equal pieces.</td>
<td>How can you use visual models to compare simple equivalent fractions?</td>
<td>PBA: Candy Bar</td>
</tr>
<tr>
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<td></td>
<td>Comparing amounts by using a benchmark of 1 and ½.</td>
<td>A fraction describes the division of a whole or unit (area/region, set, linear/measurement) into equal parts. A fraction is relative to the size of the whole or unit.</td>
<td>Additional Task: Fraction Comparisons</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Utilize a story situation that requires students to share a fraction of a whole set of individual items.</td>
<td>A fraction in which the total number of pieces in the whole is the same as the total number of the pieces is called one whole because all</td>
<td>Measuring Daily Rain</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>SPED Strategies:</strong> Explain how to compare two fractions with the same numerator or denominator using key, technical vocabulary in simple sentences</td>
<td></td>
<td>Comparing Fractions Game</td>
</tr>
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<td></td>
<td></td>
<td>Model each step before students begin. As a class, create an anchor chart with examples.</td>
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<td></td>
<td></td>
<td>Create flip books with key terms and examples.</td>
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</table>

IFL Task(s) – Set of Related Lessons “Understanding Fractions As Numbers”
PBA: Candy Bar
Additional Task: Fraction Comparisons
Measuring Daily Rain
Comparing Fractions Game
| **Scaffold complex concepts and provide leveled problems for multiple entry points.**  

**ELL Strategies:**  
Explain how to compare two fractions with the same numerator or denominator using L1 (student’s native language), and/or using gestures and selected technical words.  
Utilize interactive journals to review examples of previous concepts and to demonstrate growth in math writing and reasoning.  
Allow ELL students to talk to a peer in their native language when necessary to clarify understanding and clear up misunderstandings.  

| of the pieces of the whole are accounted for.  
Iterating a unit fraction is an interpretation of a fraction that illustrates the equal parts that the fraction is composed of.  
Rational numbers have an infinite number of equivalent forms, and the forms are equivalent if the same portion of the set or area of the figure is represented or they represent the same point on the number line.  
If the numerator is half the quantity in the denominator, then the fraction is equal to a half.  
Comparison to known benchmark quantities can help determine the relative size of a fractional piece because the benchmark quantity can be seen as greater, less than, or the same as the piece. |
New Jersey Student Learning Standard:
3.MD.A.1: Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes. (e.g., by representing the problem on a number line diagram).

Student Learning Objective 7: Tell and write time to the nearest minute, and solve word problems with addition and subtraction involving time intervals in minutes.

Modified Student Learning Objectives/Standards:
M.EE.3MD.A.1: Tell time to the hour on a digital clock.

<table>
<thead>
<tr>
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</tr>
</thead>
</table>
| MP 1 MP 4 | 3MD.1-1 | Analog clocks represent hours as numbers and minutes are represented as tick marks.  
Students should use the number line as a visual model to solve real world problems involving time.  
Students should choose appropriate strategies to solve real world problems involving time. | Why is telling time to the minute important?  
Why do we measure time?  
What connections can I make between a clock and a number line?  
What math tools do we need to determine elapsed time? | Seat Time  
Jazz Trip  
Tv Time  
After School Play Time  
Time to Get Clean |

**SPED Strategies:**
Demonstrate understanding of time to the nearest minute by solving word problems which use key, technical vocabulary in simple sentences.

Use explicit directions with steps and procedures enumerated. Guide students through initial practice promoting gradual independence.
Use alternative methods of delivery of instruction such as recordings and videos that can be accessed independently or repeated if necessary.

Scaffold complex concepts and provide leveled problems for multiple entry points.

Model each step before students begin. As a class, create an anchor chart with examples.

Students have access to Judy clocks to help them in telling time.

Use of a word/picture wall.

**ELL Strategies:**
Demonstrate understanding of time to the nearest minute by solving word problems in L1 (student’s native language) and/or use pictures, gestures, and selected technical words.

Provide analog clocks that allow students to move the minute hand.

Students need experience representing time from a digital clock to an analog clock and vice versa.

Provide word problems involving addition and subtraction of time intervals in minutes. Have students represent the problem on a number line.
New Jersey Student Learning Standard:
3.MD.A.2. Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units.

Student Learning Objective 8: Solve one step word problems by estimating and measuring volume and mass using appropriate tools and standard units of grams, kilograms, and liters.

Modified Student Learning Objectives/Standards:
M.EE.3. MD.A.2: Identify the appropriate measurement tool to solve one-step word problems involving mass and volume.

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<tbody>
<tr>
<td>MP 1</td>
<td>3.MD.2-1</td>
<td>Teacher asks students to reason about the units of mass and volume.</td>
<td>How do I estimate and measure?</td>
<td>Fill It Up</td>
</tr>
<tr>
<td>MP 2</td>
<td>3.MD.2-2</td>
<td>Students need multiple opportunities weighing classroom objects and filling containers to help them develop a basic understanding of the size and weight of a liter, a gram, and a kilogram.</td>
<td>When is an estimate more appropriate than an actual measurement?</td>
<td>More Punch Please</td>
</tr>
<tr>
<td>MP 4</td>
<td>3.MD.2-3</td>
<td>Milliliters may also be used to show amounts that are less than a liter.</td>
<td>How do units within a system relate to each other (e.g., time, length, volume, weight)?</td>
<td>Packing out Suitcase</td>
</tr>
<tr>
<td>MP 5</td>
<td>Estimates are the result of reading a scale.</td>
<td>Word problems should only be one-step and include the same units.</td>
<td></td>
<td>Student Sheet</td>
</tr>
<tr>
<td>MP 6</td>
<td>Only the answer is required (methods, representations, etc. are not assessed here).</td>
<td>Examples: Students identify 5 things that have a mass of about one gram. They record their findings</td>
<td></td>
<td>Candy Gram Task</td>
</tr>
<tr>
<td></td>
<td>Units of grams (g), kilograms (kg), and liters (l).</td>
<td></td>
<td></td>
<td>Penguin Exhibit Task</td>
</tr>
</tbody>
</table>
with words and pictures. (Students can repeat this for 5 grams and 10 grams.) This activity helps develop gram benchmarks. One large paperclip weighs about one gram. A box of large paperclips (100 clips) has a mass of about 100 grams so 10 boxes would have a mass of one kilogram.

Students must pick up and weigh and fill containers and other classroom objects to help them develop a basic understanding of the size and mass of a liter, a gram, and a kilogram. Milliliters may also be used to show amounts that are less than a liter.

**SPED Strategies:**
Model solving word problems, highlight key terms and steps.

Review prerequisite skills and academic vocabulary.

Use online resources for skill building (videos, academic games).

Provide students with the opportunity to engage in project based activities.

Compare and explain orally and in writing the difference in liquid volumes and masses using key vocabulary in simple sentences.

Create an interactive word wall.
Expose students to various measurement tools.

**ELL Strategies:**
Compare and explain orally and in writing the difference in liquid volumes and masses in L1 (student’s native language) and/or use illustrations, gestures and selected technical words.

Provide opportunities for students to use appropriate tools to measure and estimate liquid volumes in liters only and masses of objects in grams and kilograms. Students need practice in reading the scales on measuring tools since the markings may not always be in intervals of one. The scales may be marked in intervals of two, five or ten.

Students need multiple opportunities “massing” classroom objects and filling containers to help (use of realia) them develop a basic understanding of the size and mass of a liter, a gram, and a kilogram. Milliliters may also be used to show amounts that are less than a liter.

Allow students to hold gram and kilogram weights in their hand to use as a benchmark.

Use of interactive word/picture wall.
### New Jersey Student Learning Standard:

**3.G.A.1:** Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals.

**Student Learning Objective 9:** Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

### Modified Student Learning Objectives/Standards:

**M.EE.3.G.A.1:** Describe attributes of two-dimensional shapes.

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<tr>
<th>MPs</th>
<th>Evidence Statement Key/Clarifications</th>
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<th>Tasks/Activities</th>
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</thead>
<tbody>
<tr>
<td>MP 5 MP 6 MP 7</td>
<td>N/A</td>
<td>Teacher promotes understanding of the structure of rectangular arrays and describing and analyzing two-dimensional shapes. Sets the tone and creates activities to help students investigate quadrilaterals (technology may be used during this exploration). Students recognize shapes that are and are not quadrilaterals by examining the properties of the geometric figures.</td>
<td>Where in the real world can I find shapes? How are geometry shapes and objects classified? How can objects be represented and</td>
<td>Which Shape? What Makes a Shape? Properties of Quadrilaterals Area of Playground Carpeted Area of Bedroom</td>
</tr>
</tbody>
</table>
Shapes in different categories share attributes. Quadrilaterals are figures with four sides.

Students should be encouraged to provide details and use proper vocabulary when describing the properties of quadrilaterals. They sort geometric figures (see examples below) and identify squares, rectangles, and rhombuses as quadrilaterals.

Students use technology [http://nlvm.usu.edu/en/nav/grade_g_3.html](http://nlvm.usu.edu/en/nav/grade_g_3.html) to explore properties of shapes as well as using actual geometric shapes and real life objects.

They conceptualize that a quadrilateral must be a closed figure with four straight sides and begin to notice characteristics of the angles and the relationship between opposite sides.

**SPED Strategies:**
Write in order to demonstrate comprehension that shapes in different categories may share attributes and can define a larger category by identifying in writing what does and does not constitute a quadrilateral using key content vocabulary in simple sentences.
Use straws to make four congruent figures. Have students change the angles to see the relationships between a rhombus and a square.

As students develop definitions for these shapes, relationships between the properties will be understood.

Model each step before students begin. As a class, create an anchor chart with examples.

Use of interactive word wall.

Students are exposed to hands on manipulatives depicting shapes to help them understand their attributes.

**ELL Strategies:**
Write in order to demonstrate comprehension that shapes in different categories may share attributes and can define a larger category by identifying in writing what does and does not constitute a quadrilateral in L1 (student’s native language) and/or point to shapes, use gestures, pictures and single words.

Students should classify shapes by attributes and drawing shapes that fit specific categories. For example, parallelograms include: squares, rectangles, rhombi, or other shapes that have two pairs of parallel sides. Also, the broad category quadrilaterals include all types of parallelograms, trapezoids and other four-sided figures.
Use straws to make four congruent figures. Have students change the angles to see the relationships between a rhombus and a square. As students develop definitions for these shapes, relationships between the properties will be understood.

Utilize interactive journals to review examples of previous concepts and to demonstrate growth in math writing and reasoning.

Allow ELL students to talk to a peer in their native language when necessary to clarify understanding and clear up misunderstandings.

Use of gestures and choice questions.

Provide students with manipulatives of shapes.

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**New Jersey Student Learning Standard:**

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

**Student Learning Objective 10:**
Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same area and different perimeters.

**Modified Student Learning Objectives/Standards:** N/A

<table>
<thead>
<tr>
<th>MPs</th>
<th>Evidence Statement Key/Clarifications</th>
<th>Skills, Strategies &amp; Concepts</th>
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<th>Tasks/Activities</th>
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</thead>
<tbody>
<tr>
<td>MP 2</td>
<td>N/A</td>
<td>Perimeter of a figure is equivalent to the sum of the length of all sides.</td>
<td>Measurement describes the attributes of objects and events.</td>
<td>The Fence Or The Yard?</td>
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<tr>
<td>MP 4</td>
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<p>| MP 5 | Rectangles that have the same perimeter can have different areas. Rectangles that have same area can have different perimeters. Develop activities understanding of the structure of rectangular arrays and of area. Measure and estimate lengths in standard units. Relate addition and subtraction to length. Exploration activities with geoboards, tiles, and graph paper to find all the possible rectangles that have a given perimeter (e.g., find the rectangles with a perimeter of 14 cm.) They record all the possibilities using dot or graph paper, compile the possibilities into an organized list or a table, and determine whether they have all the possible rectangles. Teacher encourages students to organize their work and create a table to record their work. It can serve as a visual to help students discover that the area of rectangles may be the same, but the perimeter of the rectangles varies. Students develop an understanding of the concept of perimeter by walking around the perimeter of a room, using rubber bands to represent the perimeter of a plane figure on a geoboard, or tracing around a shape on an interactive whiteboard. | Standard units of measure enable people to interpret results or data. Why do I measure? What types of problems are solved with measurement? What strategies help estimate measurements? When will I use perimeter in real-life problem solving? How do we find the perimeter of shapes for which we do not know or cannot recall a formula? Why is the perimeter and area not always the same in polygons (i.e., rectangles)? | Pentomino Perimeters How Big Is The Desk? Settle the Argument Draw a Garden Table |</p>
<table>
<thead>
<tr>
<th></th>
<th>Show rectangles that have the same perimeter but different areas.</th>
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<tbody>
<tr>
<td></td>
<td>Show rectangles having different perimeters but the same area.</td>
</tr>
<tr>
<td><strong>SPED Strategies:</strong></td>
<td>Create flip books with examples.</td>
</tr>
<tr>
<td></td>
<td>Use manipulatives or real objects, inclusive of geoboards and shapes.</td>
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<tr>
<td></td>
<td>Write about how to solve real-world mathematical problems on how to find the perimeter and area of polygons. Explain why rectangles may have the same area but different perimeters or same perimeters and different areas using key vocabulary in simple sentences.</td>
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<tr>
<td><strong>Modeling:</strong></td>
<td>To explore finding the perimeter of a rectangle, have students use non-stretchy string. They should measure the string and create a rectangle before cutting it into four pieces. Then, have students use four pieces of the non-stretchy string to make a rectangle. Two pieces of the string should be of the same length and the other two pieces should have a different length that is the same. Students should be able to make the connection that perimeter is the total distance around the rectangle.</td>
</tr>
<tr>
<td><strong>ELL Strategies:</strong></td>
<td>Write about how to solve real-world mathematical problems on how to find the</td>
</tr>
</tbody>
</table>
perimeter and area of polygons. Explain why rectangles may have the same area but different perimeters or same perimeters and different areas in L1 (student’s native language) and/or using gestures, pictures, diagrams and single words.

Geoboards can also be used to find the perimeter of rectangles. Provide students with different perimeters and have them create the rectangles on the geoboards. Have students share their rectangles with the class.

Have discussions about how different rectangles can have the same perimeter with different side lengths.

Present problem situations in which the perimeter and two or three of the side lengths are known, requiring students to find the unknown side length. Students need to explore how measurements are affected when one attribute to be measured is held constant and the other is changed. Using square tiles, students can discover that the area of rectangles may be the same, but the perimeter of the rectangles varies. Geoboards can also be used to explore this same concept.

Use of probing questions.
**New Jersey Student Learning Standard:**
3.OA.C.7: Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$, one knows $40 \div 5 = 8$) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.

**Student Learning Objective 11:** Fluently multiply and divide within 100 using strategies such as the relationship between multiplication and division.

**Modified Student Learning Objectives/Standards:** N/A

<table>
<thead>
<tr>
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</tr>
</thead>
</table>
| MP 2 | 3.OA.7-1 3.OA.7-2  
- Tasks do not have a context.  
- Only the answer is required.  
- Tasks require findings of products and related quotients accurately. For example, each 1-point task might require four or more computations, two or more multiplication and two or more division.  
- 75% of tasks are from the harder three quadrants of the times table (a × b where a > 5 and/or b > 5).  
- Tasks are not timed. | Teacher provides ample experiences and strategies for students to understand the relationship between multiplication and division.  
Teacher engages students in multiple strategies to reach all types of learners. Students should have exposure to multiplication and division problems presented in both vertical and horizontal forms.  
Teacher allows for activities that allow students to study and examine patterns and relationships in multiplication facts and relating multiplication and division; this way students build a foundation for fluency with multiplication and division facts.  
Students demonstrate fluency with multiplication facts through 10 and the related division facts. Multiplying and dividing fluently refers to knowledge of procedures, knowledge of when and how to use them appropriately, and skill in performing them flexibly, accurately, and efficiently.  
Operations create relationships among numbers.  
The relationship among the operations and their properties promote computational fluency. | Multiplying and dividing fluently refers to knowledge of procedures, knowledge of when and how to use them appropriately, and skill in performing them flexibly, accurately, and efficiently.  
Operations create relationships among numbers.  
The relationship among the operations and their properties promote computational fluency. | Finding Factors  
Multiplication Chart Mastery  
Task: Making the “Hard” Facts Easy  
Field Trip  
Planting Tomatoes  
Find the Unknown Number  
My Special Day |
of when and how to use them appropriately, and skills in performing them flexibly, accurately, and efficiently.

Instructional Strategies:
- Students need to understand the part/whole relationships in order to understand the connection between multiplication and division.
- They need to develop efficient strategies that lead to the big ideas of multiplication and division. These big ideas include understanding the properties of operations, such as the commutative and associative properties of multiplication and the distributive property. The naming of the property is not necessary at this stage of learning.

Teacher promotes strategies such as the distributive property.

Teacher creates situations for student to engage in experiences working with manipulatives, pictures, arrays, word problems, and numbers to internalize the basic facts (up to 9x9).

**SPED Strategies:**
Explain orally how to multiply and divide within 50, using the relationship between multiplication and division using key, technical vocabulary in simple sentences.

| How do you solve problems using multiplication and division in real world situations? |
| In order to multiply and divide fluently, students must have a variety of strategies. |
| How does understanding the inverse relationship between multiplication and division help you efficiently multiply and divide? |
Clearly model steps, procedures.

Create arrays and area models.

Manipulatives such as cubes, grid or graph paper, and sets of counters should be provided.

Provide students with multiplication charts to use as a reference.

Use of interactive word wall.

**ELL Strategies:**
Explain orally how to multiply and divide within 50 using the relationship between multiplication and division in L1 (student’s native language) and/or use illustrations, gestures and selected technical words.

Manipulatives such as unifix cubes, cubes, grid or graph paper, and sets of counters should be utilized.
Use of interactive word/picture wall.

Pictures/illustrations should be provided as a visual.
Integrated Evidence Statements

3.NF.A.Int.1: In a contextual situation involving a whole number and two fractions not equal to a whole number, represent all three numbers on a number line diagram, then choose the fraction closest in value to the whole number.

- Fractions equivalent to whole numbers are limited to 0 through 5.
- Fraction denominators are limited to 2, 3, 4, 6 and 8.

3.Int.3: Solve real world and mathematical problems involving perimeters of polygons requiring a substantial addition, subtraction, or multiplication step, drawing on knowledge and skills articulated in 3.NBT. Content Scope: 3.MD.8, 3.NBT.2, and 3.NBT.3

- Tasks must be aligned to the first standard and 1 or more of the subsequent standards listed in the content scope. Substantial (def.) – Values should be towards the higher end of the numbers identified in the standards.

3.Int.5:
Add, subtract, or multiply to solve a one-step word problem involving masses or volumes that are given in the same units, where a substantial addition, subtraction, or multiplication step is required drawing on knowledge and skills articulated in 3.NBT, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.7. Content Scope: 3.MD.2, 3.NBT.2, and 3.NBT.3

- Tasks must be aligned to the first standard and 1 or more of the subsequent standards listed in the content scope. Substantial (def.) – Values should be towards the higher end of the numbers identified in the standards.

3.C.4-7: 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 2.NBT

- Tasks may have scaffolding, if necessary, in order to yield a degree of difficulty appropriate to Grade 3.

3.D.1
Solve multi-step contextual word problems with degree of difficulty appropriate to Grade 3, requiring application of knowledge and skills articulated in Type I, Sub-Claim A Evidence Statements.

- Tasks may have scaffolding.
- Multi-step problems must have at least 3 steps.

3.D.2: Solve multi-step contextual problems with degree of difficulty appropriate to Grade 3, requiring application of knowledge and skills articulated in 2.OA.A, 2.OA.B, 2.NBT, and/or 2.MD.B.

- Tasks may have scaffolding, if necessary, in order to yield a degree of difficulty appropriate to Grade 3.
- Multi-step problems must have at least 3 steps.
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<td>Common Factor</td>
<td>Foot</td>
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<td>Common Multiple</td>
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<td>Commutative Property of Multiplication</td>
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<td>Compare</td>
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<td>Compatible Numbers</td>
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<td>Compose</td>
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<td>Decompose</td>
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<td>Distributive Property</td>
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<td>Divisor</td>
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<td>Dividend</td>
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<td>Eighths</td>
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<td>Elapsed Time</td>
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<td>Endpoint</td>
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<td>Expanded Form</td>
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<td>Equivalent Fractions</td>
<td>Multiplicative Identity Property of 1</td>
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<tr>
<td>Numerator</td>
<td>Partial Product</td>
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<tr>
<td>Partial Quotient</td>
<td>Part of a whole</td>
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<tr>
<td>Pattern</td>
<td>Place Value</td>
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<tr>
<td>Reasonableness</td>
<td>Prime Number</td>
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<tr>
<td>Related Facts</td>
<td>Product</td>
<td></td>
</tr>
<tr>
<td>Remainder</td>
<td>Quotient</td>
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<tr>
<td>Round</td>
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<td>Rule</td>
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## References & Suggested Instructional Websites

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<td><a href="http://www.insidemathematics.org">http://www.insidemathematics.org</a></td>
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<td><a href="http://maccss.ncdpi.wikispaces.net/Third+Grade">http://maccss.ncdpi.wikispaces.net/Third+Grade</a></td>
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<td><a href="http://nlvm.usu.edu/">http://nlvm.usu.edu/</a></td>
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<td><a href="http://mrsgebauer.com/mathsites.html">http://mrsgebauer.com/mathsites.html</a></td>
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<td><a href="http://www.illustrativemathematics.org/">www.illustrativemathematics.org/</a></td>
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<td><a href="http://www.k-5mathteachingresources.com/">www.k-5mathteachingresources.com/</a></td>
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<td><a href="http://www.georgiastandards.org/Common-Core/Pages/Math-K-5.aspx">www.georgiastandards.org/Common-Core/Pages/Math-K-5.aspx</a></td>
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Field Trip Ideas

**ALSTEDE FARMS** – Students can learn about farming in the most fun way! Alstede Farms personalizes each farm tour and field trip, depending on the group’s interests. You can navigate the farm by taking hayrides out to the beautiful fields and explore the orchards, greenhouses, school classroom, pet friendly animals and last but not least – having a great outdoor day at their family owned farm. You can also choose the other activities- climb the giant hay pyramid or take a self-guided tour of our animals.

http://alstedefarms.com/group-events-and-tours/group-farm-tours/?gclid=CIjzn-W4lMYCFQgUHwodK1oAxA

**Math Connection:** Students can navigate the hay stakes and fields to create and solve problems involving addition, subtraction, multiplication, and division.

**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.

http://www.bouncefactorynj.com/

**Math Connection:** The students can 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

**DAVID BRADLEY CHOCOLATES** - Watch Fresh Chocolates being made through our observation window. Taste free samples of chocolate daily. Share your ideas for the perfect chocolate combination. Learn how to temper chocolate at home with our instructions.


**Math Connection:** Teachers can engage students in finding the area of a box of chocolates. Students can calculate sums and differences as chocolates move on the conveyor belt. A delicious box of chocolates can be divided so that every child has an assortment of about the same amount of items that can be sorted by different attributes (color, size, shape). Students can also use the box of chocolates to define rectangular areas.
**ELLIS ISLAND/STATUE OF LIBERTY** - Today the Ellis Island Immigration Museum is part of the Statue of Liberty National Monument and is under the care of the National Parks Service. It is a place where visitors can spend hours learning about Ellis Island's history before, during, and after its use as America's immigration station. The museum also tells the stories of why so many people immigrated to America and what became of them after they arrived.

http://www.statueoflibertytickets.com/Ellis-Island/

**Math Connection:** Students can analyze immigration data to create and solve problems involving addition, subtraction, multiplication, and division.

**LIBERTY SCIENCE CENTER** - An interactive science museum and learning center located in Liberty State Park. The center, which first opened in 1993 as New Jersey's first major state science museum, has science exhibits, the largest IMAX Dome theater in the United States, numerous educational resources, and the original *Hoberman sphere.*

http://lsc.org/plan-your-visit/

**Math Connection:** Students will be able to use measurement, estimation, and computational skills in a multi-step word problem and students will be able to collect data, estimate insect and animal population growth over a specified timeframe

**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**

http://momath.org/

**Math Connection:** The 30-plus stations let kids design 3-D images in a Colosseum-inspired computer studio, scatter across a digital floor that lights the shortest distance between each person, and glide a Plexiglas cart over acorn-shaped rubber balls (matching diameters make for a surprisingly smooth ride) and so much more.
**LEGO LAND DISCOVERY CENTER** - LEGOLAND® Discovery Center and LEGO Education work in partnership to deliver high quality educational experiences that will prepare today’s students for tomorrow’s world. **Requires approval from Unit Superintendent**
https://www.legolanddiscoverycenter.com/

**Math Connection:** LEGOLAND DISCOVERY CENTERS offer hands-on learning across curriculum, including science, mathematics, language arts, technology, and engineering design, while building and reinforcing collaboration, creativity, critical thinking, and problem solving.

**HEALTH BARN USA** - Students are busy in the organic garden composting and tempting their taste buds with fresh food and herbs, in the making and tasting the Rainbow Swirly Smoothie, and getting smart about produce by playing the seasonal food game with their classmates for stickers! Goodie bags are included. *School Assemblies: The wildly popular "Try it, You'll Like" and "Super Salad Bar" assemblies are guaranteed to have students requesting healthy foods at school and at home. These WOW programs are also supported by grants available from Life n’ Sync 501C3. **Requires approval from Unit Superintendent**
www.healthbarnusa.com

**Math Connection:** Students can navigate the hay stakes and fields to create and solve problems involving addition, subtraction, multiplication, and division.