Course Philosophy/Description

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

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.
ESL Framework

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>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Interpret products of whole numbers as repeated addition and as the total number of objects (up to 100) in equal groups or arrays.</td>
<td>3.OA.A.1*</td>
</tr>
<tr>
<td>2</td>
<td>Use multiplication and division within 100 to solve word problems involving measurement quantities (area) using drawings.</td>
<td>3.OA.A.3*</td>
</tr>
<tr>
<td>3</td>
<td>Multiply one-digit whole numbers by applying the properties of operations (commutative, associative, and distributive properties).</td>
<td>3.OA.B.5, 3.MD.C.7c</td>
</tr>
<tr>
<td>4</td>
<td>Use tiling and an area model to represent the distributive property.</td>
<td>3.OA.B.5, 3.MD.C.7c</td>
</tr>
<tr>
<td>5</td>
<td>Solve real-world problems involving finding areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts.</td>
<td>3.MD.C.7d</td>
</tr>
<tr>
<td>6</td>
<td>Fluently multiply and divide within 40 using strategies such as the relationship between multiplication and division.</td>
<td>3.OA.C.7*</td>
</tr>
<tr>
<td>7</td>
<td>Write equations when solving two-step word problems, using a symbol for an unknown; find the value of an unknown in an equation involving any of the four operations and use estimation strategies to assess the reasonableness of answers.</td>
<td>3.OA.D.8*</td>
</tr>
<tr>
<td>8</td>
<td>Recognize arithmetic patterns, including patterns in addition or multiplication tables, and explain the patterns using properties of operations.</td>
<td>3.OA.D.9</td>
</tr>
<tr>
<td>9</td>
<td>Fluently add and subtract (with regrouping) two 2-digit whole numbers within 100.</td>
<td>3.NBT.A.2*</td>
</tr>
<tr>
<td>10</td>
<td>Partition shapes into parts with equal areas and express the area of each part as a unit fraction; 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, 3.G.A.2</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)
<table>
<thead>
<tr>
<th>Effective Pedagogical Routines/Instructional Strategies</th>
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</thead>
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<tr>
<td><strong>Collaborative Problem Solving</strong></td>
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<tr>
<td>Connect Previous Knowledge to New Learning</td>
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<td>Making Thinking Visible</td>
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<td><strong>Develop and Demonstrate Mathematical Practices</strong></td>
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<tr>
<td>Inquiry-Oriented and Exploratory Approach</td>
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<tr>
<td>Multiple Solution Paths and Strategies</td>
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<tr>
<td>Use of Multiple Representations</td>
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<tr>
<td>Explain the Rationale of your Math Work</td>
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<tr>
<td>Quick Writes</td>
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<tr>
<td>Pair/Trio Sharing</td>
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<td>Turn and Talk</td>
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<td>Charting</td>
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<td>Gallery Walks</td>
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<td>Small Group and Whole Class Discussions</td>
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<td>Student Modeling</td>
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<td><strong>Analyze Student Work</strong></td>
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<tr>
<td>Identify Student’s Mathematical Understanding</td>
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<td>Identify Student’s Mathematical Misunderstandings</td>
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<td>Interviews</td>
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<td>Role Playing</td>
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<tr>
<td><strong>Anticipate Likely and Possible Student Responses</strong></td>
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<tr>
<td>Diagrams, Charts, Tables, and Graphs</td>
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<tr>
<td><strong>Collect Different Student Approaches</strong></td>
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<td>Multiple Response Strategies</td>
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<tr>
<td>Asking Assessing and Advancing Questions</td>
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<td>Revoicing</td>
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<td>Marking</td>
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<td>Recapping</td>
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<td>Challenging</td>
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<tr>
<td>Pressing for Accuracy and Reasoning</td>
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<tr>
<td>Maintain the Cognitive Demand</td>
</tr>
</tbody>
</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, Khan Academy, 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 arrays, addition properties, exploring multiplication, areas, and various ways to organize data.
    - [http://www.kidport.com/Grade3/Math/MathIndex.htm](http://www.kidport.com/Grade3/Math/MathIndex.htm)
    - [http://illuminations.nctm.org/Activity.aspx?id=4196](http://illuminations.nctm.org/Activity.aspx?id=4196)

- **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](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 solving math problems involving arrays, addition properties, exploring multiplication, and division tables, and various ways to organize data.
    - [http://www.kidport.com/Grade3/Math/MathIndex.htm](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.

CRP2. Apply appropriate academic and technical skills.
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.

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.

CRP4. Communicate clearly and effectively and with reason.
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.

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>
</tr>
</thead>
</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:** Work with students to create a variety of vocabulary sorting and matching games that relate student diction to vocabulary words in this unit. Students can work in teams or individually to play these games for approximately 10-15 minutes each week.

- 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. Students always seem to focus closely on lessons that involve edible manipulatives because they know that when the work is done, they feast! Students in each station collaborate to create figures composed of non-overlapping rectangles using Cheez-Its or Rice Chex. They then find the area of the figure by decomposing it and adding the areas of the non-overlapping rectangles. Each group will present their results to the class.

- 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:** The comedy team of Bud Abbott and Lou Costello performed at Hinchliffe Stadium prior to boxing matches (Abbott was from the coastal New Jersey city of Asbury Park, but Costello was a Paterson native). Hinchliffe is one of only three Negro League stadiums left standing in the United States and is on the National Register of Historic Places. In 1963 the Paterson Public Schools acquired the stadium and used it for public school events until 1997, but it is currently in a state of disrepair. Have students view the Abbott and Costello clip of “7 x 13 = 28” and identify the misconceptions.
  [https://www.youtube.com/watch?v=lzxVyo6cpos](https://www.youtube.com/watch?v=lzxVyo6cpos)
## Differentiated Instruction

**Accommodate Based on Students Individual Needs: Strategies**

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

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

## Assistive Technology
- Computer/whiteboard
- Tape recorder
- Video Tape

## Tests/Quizzes/Grading
- Extended time
- Study guides
- Shortened tests
- Read directions aloud

## Behavior/Attention
- Consistent daily structured routine
- Simple and clear classroom rules
- Frequent feedback

## Organization
- Individual daily planner
- Display a written agenda
- Note-taking assistance
- Color code materials
Differentiated Instruction

**Accommodate Based on Content Specific Needs:**

- Read a story aloud related to repeated addition.
- Teacher will model and review addition of doubles facts.
- Use pictorial representations to show the definition of an array and repeated addition.
- Provide sets of counters and/or number lines to skip count and relate repeated addition to multiplication. Use arrays/area models to aid students in solving problems.
- Explain orally and in writing how to determine the product of whole numbers using precise vocabulary.
- Apply and illustrate in writing the properties of operations when adding and multiplying whole numbers using key, technical vocabulary.
- Distribute copies of color coded Properties of Operations Chart.
- In small groups, students will create visual representations for an assigned property of an operation.
- Provide students with a word bank of all properties.
- Create groups of objects to demonstrate the commutative property of multiplication (i.e. 4 groups of 2 squares equals 2 groups of 4 squares).
- Share up to 10 objects equally between 2 people (divide objects into 2 equal groups).
Interdisciplinary Connections

Model interdisciplinary thinking to expose students to other disciplines.

**LA Connection: NJSLSA.W2**

*Name of Task: Skittles Cupcake Combos*

This task assesses students’ understanding of division and their ability to organize data. When students are given trivial word problems, they often just ask themselves what operation is called for; the context becomes irrelevant as they manipulate numbers, applying what they know. True context keeps students focused and interested in making sense of the math. Students begin to notice patterns and ask questions about what is going on in the problem. Then students begin to defend their math to one another. The following activity allows students to build on their knowledge of grouping materials in order to divide more efficiently.

Learn more information about story problems at:
https://resources.illuminateed.com/playlist/resource-sview/id/53c03664f07787db75f1a968/rid/53c08e3ff07787817df1a96d/bc0/explore/bc1/playlist

**Engineering Connection: 3-5-ETS1-1**

*Name of Task: Primary Garden Designers*

Students will design a school community garden as part of the class horticultural project. Students will use their understanding and knowledge of Shape, Perimeter and Area to design a garden space which can be used by the whole school community. To explore this task visit;
http://questgarden.com/183/05/3/15112023107/index.htm

**Digital Connection: 8.2.5.C.1**

*Name of Task: Students Design the Classroom*

In this WebQuest students will use problem solving strategies and creativity. The students will create the way they want their classroom to look through finding areas of rectilinear figures, partitioning shapes, analyzing equal areas. To explore this task visit;
## 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.OA.A.1. Interpret products of whole numbers, e.g., interpret $5 \times 7$ as the total number of objects in 5 groups of 7 objects each. For example, describe and/or represent a context in which a total number of objects can be expressed as $5 \times 7$.

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

3.OA.B.5. Apply properties of operations as strategies to multiply and divide.

*Examples: If $6 \times 4 = 24$ is known, then $4 \times 6 = 24$ is also known. (Commutative property of multiplication.) $3 \times 5 \times 2$ can be found by $3 \times 5 = 15$, then $15 \times 2 = 30$, or by $5 \times 2 = 10$, then $3 \times 10 = 30$. (Associative property of multiplication.) Knowing that $8 \times 5 = 40$ and $8 \times 2 = 16$, one can find $8 \times 7$ as $8 \times (5 + 2) = (8 \times 5) + (8 \times 2) = 40 + 16 = 56$. (Distributive property.)*

*[Students need not use the formal terms for these properties.]* *(Limit to single digit factors and multipliers. 7 x 4 x 5 would exceed grade 3 expectations because it would result in a two-digit multiplier (28 x 5)]

3.MD.C.7. Relate area to the operations of multiplication and addition.

- 3.MD.C.7c. Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths $a$ and $b + c$ is the sum of $a \times b$ and $a \times c$. Use area models to represent the distributive property in mathematical reasoning.

- 3.MD.C.7d. Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.

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.

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

OA.D.9. Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal Addends.*
3.NBT.A.2. Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

3.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.]*

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

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

2. Reason abstractly and quantitatively.

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

4. Model with mathematics.

5. Use appropriate tools strategically.

6. Attend to precision.

7. Look for and make use of structure.

8. Look for and express regularity in repeated reasoning.
Grade: Three  
Unit: 2 (Two)  
Topic: Modeling Multiplication, Division and Fractions

**NJSLS:**  

**Unit Focus:**  
- Represent and solve problems involving multiplication and division  
- Understand properties of multiplication and the relationship between multiplication and division  
- Geometric measurement: understand concepts of area and relate area to multiplication and to addition  
- Multiply and divide within 100  
- Solve problems involving the four operations, and identify and explain patterns in arithmetic  
- Use place value understanding and properties of operations to perform multi-digit arithmetic  
- Develop understanding of fractions as numbers.  
- Reason with shapes and their attributes

**New Jersey Student Learning Standard:**  
3.OA.A.1: Interpret products of whole numbers, e.g., interpret 5 x 7 as the total number of objects in 5 groups of 7 objects each. For example, describe and/or represent a context in which a total number of objects can be expressed as 5 x 7.

**Student Learning Objective:** Interpret products of whole numbers as repeated addition and as the total number of objects (up to 100) in equal groups or arrays.

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

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<th>Tasks/Activities</th>
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| MP 2  
MP 4 | 3.OA.1                              | Students should relate multiplicative reasoning to iterating (making multiple copies and partitioning sets of objects). Mathematical expression: 4 x 5  
Students should be able to view 5 as the multiplicative unit (multiplicand) and 4 | In a multiplicative expression A x B, A can be defined as a scaling factor.  
Making multiplicative units with objects or units of measure as well as viewing | IFL Task(s) –  
Set of Related Lessons named “Comparing Two Properties: The Associative and  

Tasks do not require students to interpret products in terms of repeated addition, skip counting, or jumps on the number line.

The italicized example refers to describing a real-world context, but describing a context is not the only way to meet the standard. For example, another way to meet the standard would be to identify contexts in which a total can be expressed as a specified product.

As the scaling factor (number of multiplicative unit multiplier) for that multiplicative unit; 4 copies of 5; 4 groups of 5; $5 + 5 + 5 + 5 = 20$. The multiplier, or scale factor, represents the number of iterations.

Address symbolic and pictorial representations for multiplication and the connections.

Emphasize drawing and the interpretation of the diagram.

Encourage students to make comparisons to recognize and understand connections.

Have students wonder, ask questions (Why? What if?) and notice patterns.

Have students analyze responses from fictitious students to agree or disagree with conjectures/claims about a multiplicative scenario.

**SPED Strategies:**
Read a story aloud related to repeated addition.

Teacher will model and review addition of doubles facts.

The number of and number within multiplicative units is an indispensable foundational step that supports multiplicative reasoning.

A situation that can be represented by multiplication has an element that represents the scalar and an element that represents the quantity to which the scalar applies.

What does it mean to multiply?

Why do you think the product and the sum (repeated addition) are the same?

How can you use multiplication to compare?

One factor in a multiplication problem represents the number of groups/rows or columns and the other factor in a multiplication problem represents the number of items in each group.

**Distributive Properties of Multiplication**

**Additional Tasks:**
Farm Field Trip
Birthday Task
Pencils for the Year
IFL PBA: Donuts Multiplication Task
Use pictorial representations to show the definition of an array and repeated addition.

Provide sets of counters and/or number lines to skip count. Relate repeated addition to multiplication. Use arrays/area models to aid students in solving problems.

Explain orally and in writing how to determine the product of whole numbers using precise vocabulary in multiple sentences.

**ELL Strategies:**
Explain orally and in writing how to determine the product of whole numbers in L1 (student’s native language) and/or use gestures, drawings, equations and selected words.

Use pictorial representations to show the definition of an array and repeated addition.

Provide sets of counters and/or number lines to skip count. Relate repeated addition to multiplication. Use arrays/area models to aid students in solving problems.

Provide an interactive word/picture wall in native language.
In native language, explain orally and in writing how to determine the product of whole numbers using key vocabulary in a series of simple sentences.

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

**Student Learning Objective 2:** Use Multiplication and division within 100 to solve word problems by modeling equal groups or arrays and by writing equations to represent equal groups or arrays.

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

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<th>Tasks/Activities</th>
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<tbody>
<tr>
<td>MP 1 MP 4</td>
<td>3.OA.3-1</td>
<td>Model division as the unknown factor in multiplication in multiple ways (for example, bar modeling, number line, arrays, etc.). Model problems using pictorial representations and manipulatives. Use manipulatives, pictures, words, and/or equations to represent the problem and explain the thinking process. Teacher engages students in a variety of strategies that can be used to solve word problems involving multiplication &amp; division.</td>
<td>How can the same array model represent multiplication and division? How can I use the array model to explain multiplication and division? How can I model division? How are multiplication and division alike and different? How can I use known facts to find unknown facts?</td>
<td>Skittles Cupcake Combos Summer Jobs Ice Cream Scoops Performance Silly Band Task 3rd Grade Parade 1 Bakery Field Trip Soda Pop Tasks</td>
</tr>
</tbody>
</table>
Teacher divides students into small collaborative groups and engages them in problem solving, using manipulatives, as well as writing equations.

Teacher provides internet activities to students to facilitate learning.

Students use a variety of representations for creating and solving one-step word problems, i.e., numbers, words, pictures, physical objects, arrays, equal shares, or equations.

They use multiplication and division of whole numbers up to 10 x10.

Students explain their thinking, show their work by using at least one representation, and verify that their answer is reasonable.

**SPED Strategies:**
Write and explain equations to word problems modeled as equal groups or arrays and use some key vocabulary in simple sentences.

Explain in writing the process of how to solve multiplication word problems using measurement quantities by creating arrays, drawings, equations and

| How can different strategies be helpful when solving problems? | Seeing-arrays-as-equal-groups |
| IFL PBA: Three Problems |
using key, technical vocabulary in simple sentences.
Provide multiplication sheet as a reference tool.
Manipulatives such as counters and colored chips are used.

**ELL Strategies**
Write and explain equations to word problems modeled as equal groups or arrays in L1 (student’s native language) and/or use manipulatives such as counters and colored chips, illustrations and single illustrated words.

Explain in writing the process of how to solve multiplication word problems using measurement quantities in L1 (student’s native language) and/or creating arrays, drawings, equations and single technical words.

Provide interactive word/picture wall in native language with L1 (student’s native language) text and/or support.

Provide pictures and illustrations of answers as a visual.
New Jersey Student Learning Standards:

3.OA.B.5. Apply properties of operations as strategies to multiply and divide.

3.MD.C.7. Relate area to the operations of multiplication and addition.
   3.MD.C.7c. Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths \(a\) and \(b + c\) is the sum of \(a \times b\) and \(a \times c\). Use area models to represent the distributive property in mathematical reasoning.

Student Learning Objective 3: Multiply one-digit whole numbers by applying the properties of operations (commutative, associative, and distributive property).

Modified Student Learning Objectives/Standards:

M.EE.3.OA. A.4: Solve addition and subtraction problems when result is unknown, limited to operands and results within 20.

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<tbody>
<tr>
<td>MP 4</td>
<td>N/A</td>
<td>Diagrams and area models will be used to solve a story problem. Using diagrams and equations to solve word problem helps students make sense of the associative property. Teacher engages students in using concrete objects or drawings to build proficiency with composition and decomposition of shapes, spatial structuring, and addition of area measurements, students learn to investigate arithmetic properties using area models. For example, they learn to rotate rectangular arrays physically and mentally, understanding that their areas are preserved under rotation, and thus, for example, (4 \times 7 = 7 \times 4), illustrating the commutative property of multiplication.</td>
<td>One factor in a multiplication problem represents the number of groups/rows or columns and the other factor in a multiplication problem represent the number of items in each group. Solving for the total number of items (the product) in “(a) groups with (b) items” ((a \times b)) and (c) groups of these groups is the same as thinking about “(a)” groups of ((b \times c)). Both ways of putting the groups of items together result in the same product because, regardless of how</td>
<td>All Area IFL Task(s) – Set of Related Lessons named “Comparing Two Properties: The Associative and Distributive Properties of Multiplication” (3.MD.C.7c is not addressed in this IFL Unit.) PBA: Multiplication Task Additional Tasks:</td>
</tr>
<tr>
<td><strong>SPED Strategies:</strong></td>
<td><strong>ELL Strategies:</strong></td>
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<td>Apply and illustrate in writing the properties of operation when adding and multiplying whole numbers using key, technical vocabulary in some complex sentences.</td>
<td>Apply and illustrate in writing the properties of operation when adding and multiplying whole numbers in L1 (student’s native language) and/or use gestures, examples and selected technical words.</td>
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<tr>
<td>Distribute copies of color coded Properties of Operations Chart.</td>
<td>In small groups students will create visual representations for an assigned property of operations and word bank of all properties.</td>
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<tr>
<td>In small groups, students will create visual representations for an assigned property of operations.</td>
<td>the groups are put together, the same number of items are being combined. (Associative property) A product can be written as two or more different but equivalent expressions as long as the area or the total number of items in each figure is the same (e.g., 2 x 6 = 3 x 4).</td>
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<td>Provide students with a word bank of all properties.</td>
<td>Garden Path Task Distributive Property Task</td>
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<tr>
<td>Create groups of objects to demonstrate the commutative property of multiplication (i.e. 4 groups of 2 squares equals 2 groups of 4 squares.</td>
<td>Prove It!</td>
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<td>Share up to 10 objects equally between 2 people (divide objects into 2 equal groups)</td>
<td>Multiplication Task</td>
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<tr>
<td><strong>Garden Path Task</strong></td>
<td><strong>Introducing the Distributive Property</strong></td>
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<tr>
<td><strong>Distributive Property Task</strong></td>
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</table>
Create an interactive word/picture wall in native language and allow LEP students to talk to a peer in their native language when necessary to clarify understanding and clear up misunderstandings.

**New Jersey Student Learning Standards:**

3.OA.B.5. Apply properties of operations as strategies to multiply and divide.

3.MD.C.7. Relate area to the operations of multiplication and addition.

3.MD.C.7c. Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths \(a\) and \(b + c\) is the sum of \(a \times b\) and \(a \times c\). Use area models to represent the distributive property in mathematical reasoning.

**Student Learning Objective 4:** Use tiling and an area model to represent the distributive property.

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

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</table>
| MP 4 | N/A | Teacher engages students in using concrete objects or drawings to build proficiency with composition and decomposition of shapes, spatial structuring, and addition of area measurements, students learn to investigate arithmetic properties using area models. For example, they learn to rotate rectangular arrays physically and mentally, understanding that their areas are preserved under rotation, and thus, for example, \(4 \times 7 = 7 \times 4\), illustrating the commutative property of multiplication. Students also learn to understand and explain that the area of a rectangular region of, for example, in the picture below the area of a 7 x 6 figure can be determined by finding the area of a 5 x 6 and 2 x 6 and adding the two sums. | Students work with the distributive property. For example, in the picture below the area of a 7 x 6 figure can be determined by finding the area of a 5 x 6 and 2 x 6 and adding the two sums. | IFL Task(s) – Set of Related Lessons named “Comparing Two Properties: The Associative and Distributive Properties of Multiplication” (3.MD.C.7c is not addressed in this IFL Unit.)  

Additional Task(s): |
example; 12 length-units by 5 length-units can be found either by multiplying 12 x 5, or by adding two products, e.g., 10 x 5 and 2 x 5, illustrating the distributive property.

There are many ways to find the area of this figure.

Teacher challenges students to find, record, and share all the ways they solved this problem.

Students use grid paper to practice with more problems.

**SPED Strategies:**
Apply and illustrate in writing the properties of operations when adding and multiplying whole numbers using key, technical vocabulary in some complex sentences.

In small groups students will create visual representations for an assigned property of operations.

Provide students with a word bank of all properties and create groups of objects to demonstrate the commutative property of

<table>
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<th>Olympic Cola Display</th>
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<td>Oops! I’m Decomposing!</td>
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<td>A Whole Lot Of Garden</td>
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<tr>
<td>Boxing the Plots</td>
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<tr>
<td>PBAs: Using Simpler Problems Areas of Squares</td>
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multiplication (i.e. - 4 groups of 2 squares equals 2 groups of 4 squares).

Share up to 10 objects equally between 2 people (divide objects into 2 equal groups).

**ELL Strategies:**
Apply and illustrate in writing the properties of operations when adding and multiplying whole numbers in L1 (student’s native language) and/or use gestures, examples and selected technical words.

Distribute copies of color coded Properties of Operations Chart.

In small groups students will create visual representations for an assigned property of operations.

Create groups of objects to demonstrate the commutative property of multiplication (i.e. - 4 groups of 2 squares equals 2 groups of 4 squares.)
**New Jersey Student Learning Standard:**

3.MD.C.7d: Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.

**Student Learning Objective 5:** Solve real-world problems involving finding areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts.

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

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<tr>
<td>MP 7</td>
<td>3.MD.7d</td>
<td>Teacher provides a model for students to explore finding the area of a rectilinear figure by decomposing and with no overlapping. Students create their own problems and solve. They discuss findings in their small group. <strong>Example:</strong> Students can decompose a rectilinear figure into different rectangles. They find the area</td>
<td>Does rearranging pieces of a shape changes its area? Why are square units used to find the area of a region? How can we find the area of a nonstandard shape? How can you use what you know about area to find the area of nonrectangular shapes?</td>
<td><strong>Oops! I’m Decomposing!</strong> <strong>Micah and Nina’s Rectangle</strong> <strong>PBAs: Finding Area</strong> <strong>Using Simpler Problems</strong></td>
</tr>
</tbody>
</table>
of the figure by adding the areas of each of the rectangles together.

SPED Strategies:
Explain the technique of finding areas of rectilinear figures by arranging them into non-overlapping rectangles and adding the areas of the non-overlapping parts, using key vocabulary in simple sentences.

In small groups find the area of a rectangle by tiling an area and counting unit squares using manipulatives, technology, or visual models and diagrams.

Allow students to talk to a peer when necessary to clarify understanding and clear up misunderstandings.

ELL Strategies:
Explain the technique of finding areas of rectilinear figures by arranging them into non-overlapping rectangles and adding the areas of the non-overlapping parts in L1
(student’s native language) and/or use Diagrams, pictures, gestures and illustrated single words.

In small groups find the area of a rectangle by tiling an area and counting unit squares using manipulatives, technology, or visual models and diagrams.

Allow LEP 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.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 6:** Fluently multiply and divide within 40 using strategies such as the relationship between multiplication and division.

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

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<tbody>
<tr>
<td>MP 2 MP 7 MP 8</td>
<td>3.OA.7-1</td>
<td>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.</td>
<td>Operations create relationships among numbers. The relationship among the operations and their properties promote computational fluency.</td>
<td>Find the Unknown Number My Special Day! Finding Factors Field Trip</td>
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<tr>
<td>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.</td>
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<td>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 skills in performing them flexibly, accurately, and efficiently.</td>
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<tr>
<td>Strategies students may use to attain fluency include:</td>
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<tr>
<td>- Multiplication by zeros and ones</td>
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<tr>
<td>- Doubles (2s facts), Doubling twice (4s), Doubling three times (8s)</td>
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<tr>
<td>- Tens facts (relating to place value, 5 x 10 is 5 tens or 50)</td>
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<td>- Five facts (half of tens)</td>
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<td>- Skip counting (counting groups of __ and knowing how many groups have been counted)</td>
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<td>- Square numbers (ex: 3 x 3)</td>
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<td>- Nines (10 groups less one group, e.g., 9 x 3 is 10 groups of 3 minus one group of 3)</td>
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<td>- Decomposing into known facts (6 x 7 is 6 x 6 plus one more group of 6)</td>
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<td>- Turn-around facts (Commutative Property)</td>
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<tr>
<td>- Fact families (Ex: 6 x 4 = 24; 24 ÷ 6 = 4; 24 ÷ 4 = 6; 4 x 6 = 24)</td>
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</table>

| 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? |
| Students 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. |
To develop an understanding of the distributive property, students need to decompose the whole into groups.

Area models can be used to develop this understanding. To find the product of $3 \times 9$, students can decompose 9 into the sum of 4 and 5 and find

$3 \times (4 + 5) = (3 \times 4) + (3 \times 5)$

Students need to understand the part/whole relationships in order to understand the connection between multiplication and division.

Teacher provides ample experiences and strategies for students to understand the relationship between multiplication and division.

Teacher assigns students to computers to practice. A possible link is below.


Teacher creates situations for students to engage in experiences working with manipulatives, pictures, arrays, word problems, and numbers to internalize the basic facts (up to 9 x 9).
**SPED Strategies:**
Explain orally how to multiply and divide within 40, using the relationship between multiplication and division using key, technical vocabulary in simple sentences.
Solve multiplication problems with a multiplier 1, 2, 5, or 10.
Solve division problems within 100 with a divisor of 1, 2, 5, or 10
Manipulatives such as base ten blocks or a rectangular grid to model multiplication and division should be utilized.

<table>
<thead>
<tr>
<th>Image 1</th>
<th>Image 2</th>
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</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Image 1" /></td>
<td><img src="image2.png" alt="Image 2" /></td>
</tr>
</tbody>
</table>

**ELL Strategies:**
Explain orally how to multiply and divide within 40 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 base ten blocks or a rectangular grid to model multiplication and division should be utilized.
New Jersey Student Learning Standard:
3.OA.D.8: Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

Student Learning Objective 7: Write equations when solving two-step word problems, using a symbol for an unknown; find the value of an unknown in an equation involving any of the four operations and use estimation strategies to assess the reasonableness of answers.

Modified Student Learning Objectives/Standards:
M.EE.3.OA.D.8 Solve one-step word problems using addition or subtraction within 20.

<table>
<thead>
<tr>
<th>MP</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 1 MP 4</td>
<td>3.OA.8</td>
<td>Teacher encourages students to represent problems using equations with a letter to represent unknown quantities.</td>
<td>Are students able to identify key words in word problem that will point to the particular operations that are necessary to solve a multi-step word problem?</td>
<td>Read All About It Hooked On Solutions!</td>
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<td>Example: Mike runs 2 miles a day. His goal is to run 25 miles. After 5 days, how many miles does Mike have left to run in order to meet his goal? Write an equation and find the solution (2 x 5 + m = 25).</td>
<td>Are students able to translate a word problem into a numeric sentence and assign a variable to an unknown quantity?</td>
<td>Thematic Unit: Cookie Dough Mini Assessment Box Tops</td>
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<td></td>
<td>Estimation strategies are revisited, including using compatible numbers (numbers that sum to 10, 50, or 100) or rounding.</td>
<td>What are some strategies for solving unknowns in open sentences and equations?</td>
<td>Two-Step Problems Using the Four Operations</td>
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<tr>
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<td></td>
<td>Students use front-end estimation with adjusting using the highest place value and estimating from the front end making adjustments to the estimate by taking into account the remaining amounts. Encourage students to represent the problem situation in a drawing or with counters or</td>
<td>How do you decide that your calculation is reasonable?</td>
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</table>
situation types with unknowns in various positions.

blocks. Students should determine the reasonableness of the solution to all problems using mental computations and estimation strategies.

Students can use base–ten blocks or centimeter grid paper to construct rectangular arrays to represent problems.

Students are to identify arithmetic patterns and explain them using properties of operations. They can explore patterns by determining likenesses, differences and changes. Use patterns in addition and multiplication tables.

The focus in this standard is to have students use and discuss various strategies.

Students should estimate during problem solving, and then revisit their estimate to check for reasonableness.

Students skip-count and examine multiplication patterns.

**SPED Strategies:**
Students use benchmark numbers that are easy to compute.

Demonstrate understanding of a two-step word problem which uses key, technical vocabulary in simple sentences by writing an equation with an unknown value.
| | Extend a simple addition or subtraction pattern (i.e. - adding by 2s, subtracting by 3s). | Predict what will come next in a shape pattern with three shapes (i.e. - square, circle, triangle).  
**ELL Strategies:**  
Demonstrate understanding of a two-step word problem which uses L1 (student’s native language) and/or pictures, drawings, step-by-step word problems with selected technical vocabulary by writing an equation with an unknown value.  
Extend a simple addition or subtraction pattern (i.e. - adding by 2s, subtracting by 3s).  
Predict what will come next in a shape pattern with three shapes (i.e. - square, circle, or triangle).  
Use illustrations/diagrams/drawings and sentence frames.  
Teacher creates a cloze activity where words are omitted from a math passage and students are required to fill in the blanks.  
Allow LEP 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.OA.D.9: Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.

Student Learning Objective 8: Recognize arithmetic patterns, including patterns in addition or multiplication tables, and explain the patterns using properties of operations.

Modified Student Learning Objectives/Standards:

M.EE. 3.OA.D.9 Identify arithmetic patterns,

<table>
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<tr>
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</thead>
<tbody>
<tr>
<td>MP 3</td>
<td>N/A</td>
<td>Teacher empowers students to examine and discover arithmetic patterns involving both addition and multiplication. Using a multiplication table, highlight a row of numbers and students record what they notice about the highlighted numbers. Through questioning, the teacher coaches students in understanding and identifying patterns related to the properties of operations. <strong>Examples:</strong> • Even numbers are always divisible by 2. Even numbers can always be decomposed into 2 equal addends ($14 = 7 + 7$). • Multiples of even numbers (2, 4, 6, and 8) are always even numbers.</td>
<td>What arithmetic patterns do you see? Arithmetic patterns are patterns that change by the same rate, such as adding the same number. For example, the series 2, 4, 6, 8, 10 is an arithmetic pattern that increases by 2 between each term. On an addition chart, the sums in each row and column increase by the same amount. On a multiplication chart, the products in each row and column increase by the same amount (reinforcing skip counting).</td>
<td>Task 1 Patterns in a Table 2 Addition Patterns Mirror Image Skip-Counting Patterns Take the Easy Way Out!</td>
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<tr>
<td>MP 6</td>
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<td>MP 7</td>
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<tr>
<td>MP 8</td>
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</tbody>
</table>

Tasks/Activities
In an addition table, students examine patterns they notice. In their groups they explain why the pattern works this way.

Teacher also asks students to investigate a hundreds chart in search of addition and subtraction patterns. They record and organize all the different possible sums of a number and explain why the pattern makes sense.

Students work in pairs/small groups to discuss what patterns they notice when 2, 4, 6, 8, or 10 are multiplied by any number (even or odd). (The product will always be an even number.)

**SPED Strategies:**
- Identify and explain orally and in writing arithmetic patterns in addition or multiplication tables using the properties of operations with key, technical vocabulary in simple sentences.
- Create repeating shape patterns given a rule (i.e. - given the rule ABCABC, student draws ▲▼➤▲▼➤)
  - Teacher Modeling
  - Number Chart
  - Technology and Technological Resources

Students explain a pattern using properties of operations.

Discoveries should include:
- Any sum of two even numbers is even.
- Any sum of two odd numbers is even.
- Any sum of an even number and an odd number is odd.
- The multiples of 4, 6, 8, and 10 are all even because they can all be decomposed into two equal groups.
- The doubles (2 addends the same) in an addition table fall on a diagonal while the doubles (multiples of 2) in a multiplication table fall on horizontal and vertical lines.
- The multiples of any number fall on a horizontal and a vertical line due to the commutative property.
- All the multiples of 5 end in a 0 or 5 while all the multiples of 10 end with
ELL Strategies:
Identify and explain orally and in writing arithmetic patterns in addition or multiplication tables using the properties of operations in L1 (student’s native language) and/or use gestures, diagrams and selected technical words.

Use of interactive word/picture wall in native language.

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

0. Every other multiple of 5 is a multiple of 10.

New Jersey Student Learning Standard:
3.NBT.A.2. Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

Student Learning Objective 9: Fluently add and subtract (with regrouping) two 2-digit whole numbers within 100.

Modified Student Learning Objectives/Standards:
M.EE.3.NBT.A.2: Demonstrate understanding of place value to tens.

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<thead>
<tr>
<th>MPs</th>
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</tr>
</thead>
</table>
| MP2 | 3.NBT.2
  - Tasks have no context.
  - Tasks are not timed | Teacher engages students in working with problems written in both vertical and horizontal forms, including opportunities for students to apply the commutative and associative properties. | Students use the place value strategy to add and subtract with ease. | Performance Assessment: A Question of Numbers |

Example 1:
172 + 265 =
Students explain their thinking and show their work by using strategies and algorithms, and verify that their answer is reasonable.

**Example:**
There are 178 fourth graders and 225 fifth graders on the playground. What is the total number of students on the playground?

Use place value understanding to round numbers to the nearest 10 and 100.

Estimate sums/differences.

Fluently add and subtract within 1,000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

Provide opportunities to practice adding to 1000 to achieve fluency.

Students practice doubles, making tens, making hundreds to help them mentally add numbers.

Students work with base ten blocks and the number line to master skills.

Add the hundreds first
100+200 = 300
Add the tens 70+60 = 130
Add the ones 2+5 = 7
300+130+7 = 437
OR USE EXPANDED FORM 100+70+2

**Example 2:**
There are 178 fourth graders and 225 fifth graders on the playground. What is the total number of students on the playground?

100 + 200 = 300
70 + 20 = 90
8 + 5 = 13
300 + 90 + 13 = 403

Students use the properties to accurately find sums/differences.

How can we select among the most useful mental math strategies for the task we are trying to solve?

How can I learn to quickly calculate sums in my head?

What strategies will help me add numbers quickly and accurately?

Arrow Cards
Perfect 500!
Field Day Fun
The Power of Properties
Toys For Us
From 100 to 0
Soccer Uniform
Task 1
Task 2
Task 3
Students practice adding to 1000 using problems written both vertically and horizontally, and word problems. Algorithms, place value, properties are among the most effective strategies used.

Interactive websites are used to help students with fluency.

Teacher pairs up students to allow discussion time for their work.

**SPED Strategies:**
Explain orally how to add and subtract within 100 using strategies and algorithms, diagrams, charts/posters, equations and key vocabulary in simple sentences.

In groups, practice rounding whole two-digit numbers to the nearest 10 using place value materials.

**ELL Strategies:**
Explain orally how to add and subtract within 100 using strategies and algorithms in L1 (student’s native language) and /or diagrams, charts/posters, pictures and single words.

In groups practice rounding whole two-digit numbers to the nearest 10 using place value materials.

Students apply the commutative and associative properties, the understanding of inverse operations.

Adding and subtracting fluently refers to knowledge of procedures, knowledge of when and how to use them appropriately, and skill in performing them flexibly, accurately, and efficiently.
Create an interactive word/picture Wall and a class anchor chart as a reference tools.

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

**Student Learning Objective 10:** Partition shapes into parts with equal areas and express the area of each part as a unit fraction; 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.

**Modified Student Learning Objectives/Standards:**
M.EE.3.NF.A.2, 3.G.A.2
Differentiate a fractional part from a whole. Recognize that shapes can be partitioned into equal areas.
M.EE.3.NF.A.1
Differentiate a fractional part from a whole.

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<tr>
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<tbody>
<tr>
<td>MP 2</td>
<td>3.NF.A.1</td>
<td>Represent unit fractions on a number line.</td>
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<td>- Tasks do not involve the number line.</td>
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<td>- Fractions equivalent to whole numbers are limited to 0 through 5.</td>
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<td>- Tasks are limited to fractions with denominators 2, 3, 4, 6, and 8.</td>
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<td>Teacher provides students with a blank number line and coaches them into cutting into equal parts.</td>
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<td></td>
<td>Teacher gives a variety of shapes and students partition it into equal parts,</td>
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<td>How can fractions be represented?</td>
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<td>What fractions are on the number line between 0 and 1?</td>
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<td>The number line diagram is the first time students work with a number line for numbers that are between whole numbers (e.g., that ½ is between 0 and 1).</td>
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<td>Lets Go Fly A Kite</td>
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<td>Play Area Shapes</td>
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<td>Pattern Block Fractions</td>
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<td>I Like to Move</td>
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<td>PBA: Candy Bar</td>
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recognizing that these parts all have the same area. They identify the fractional name of each part and are able to partition a shape into parts with equal areas in several different ways.

**Example:**

How did you determine the denominator of the fraction? The numerator?

What do the denominator and numerator represent in a fraction?

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.

What unit fraction represents the size of each interval on your number line?

**Example:**

This figure was partitioned/divided into four equal parts. Each part is \( \frac{1}{4} \) of the total area of the figure.
**SPED Strategies:**

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.

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

Students express fractions as “fair sharing”, parts of a whole, and parts of a set.

Students should 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.

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.

Use different models, such as fraction bars and number lines to allow students to

Students will understand that 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 (fractions) 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 because the benchmark quantity can be seen as greater, less than, or the same as the pieces.
compare unit fractions to reason about their sizes.

**ELL Strategies:**

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.

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

Students express fractions as “fair sharing”, parts of a whole, and parts of a set.

Students should 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.

Use different models, such as fraction bars and number lines to allow students to compare unit fractions to reason about their sizes.
Integrated Evidence Statements

3.Int.1: Given a two-step problem situation with the four operations, round the values in the problem, then use the rounded values to produce an approximate solution. Content Scope: 3.OA.8, 3.NBT.1, 3.NBT.2, 3.NBT.3

- Tasks must be aligned to the first standard and 1 or more of the subsequent standards listed in the content scope.
- Tasks do not require computations beyond the grade 3 expectations.
- Tasks do not require a student to write a single equation with a letter standing for the unknown quantity in a two-step problem, and then solve that equation.
- Tasks may require students to write an equation as part of their work to find a solution, but students are not required to use a letter for the unknown.
- Addition, subtraction, multiplication and division situations in these problems may involve any of the basic situation types with unknowns in various positions.

3.Int.2: Solve two-step word problems using the four operations requiring a substantial addition, subtraction, or multiplication step, drawing on knowledge and skills articulated in 3.NBT. Content Scope: 3.OA.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.
- Tasks do not require a student to write a single equation with a letter standing for the unknown quantity in a two-step problem, and then solve that equation.
- Tasks may require students to write an equation as part of their work to find a solution, but students are not required to use a letter for the unknown.
- Addition, subtraction, multiplication and division situations in these problems may involve any of the basic situation types with unknowns in various positions. Substantial (def.) – Values should be towards the higher end of the numbers identified in the standards.

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.4: Use information presented in a scaled bar graph to solve a two-step “how many more” or “how many less” problem requiring a substantial addition, subtraction, or multiplication step, drawing on knowledge and skills articulated in 3.NBT. Content Scope: 3.MD.3, 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.
### Integrated Evidence Statements

**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.C.5-2:** Present solutions to multi-step problems in the form of valid chains of reasoning, using symbols such as equals signs appropriately (for example, rubrics award less than full credit for the presence of nonsense statements such as $1 + 4 = 5 + 7 = 12$, even if the final answer is correct), or identify or describe errors in solutions to multi-step problems and present corrected solutions. **Content Scope:** Knowledge and skills articulated in 3.MD.7b, 3.MD.7d

- Tasks may include those with and without real-world contexts.
- Multi-step problems have at least 3 steps.

**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.
# Unit 2 Vocabulary

- Algorithm
- Associative Property of Multiplication
- Area
- Array
- Column
- Common Denominator
- Common Factor
- Common Multiple
- Commutative Property of Multiplication
- Compare
- Compatible Numbers
- Composite Number
- Decompose
- Denominator
- Distributive Property
- Divisibility Rules
- Division
- Divisor
- Dividend
- Equation
- Equivalent Fractions
- Equal Parts
- Estimate
- Fact Family
- Factors
- Factor Pairs
- Fractions
- Greatest Common Factor
- Identity Property of Multiplication
- Inverse Operations
- Interpret
- Length
- Measure
- Mental Math/ Mental Calculation
- Mixed Number
- Model/ Visual Model
- Multiples
- Multiplicative Identity Property of 1
- Numerator
- Partial Product
- Partial Quotient
- Part of a Whole
- Pattern
- Place Value
- Prime Number
- Product
- Quotient
- Reasonableness
- Related Facts
- Remainder
- Round
- Row
- Rule
- Term
- Unit Fraction
- Variable
- Width
- Whole Number
- Zero Property of Multiplication
References & Suggested Instructional Websites

http://www.insidemathematics.org
http://maccss.ncdpi.wikispaces.net/Third+Grade
http://nlvm.usu.edu/
https://www.teachingchannel.org
www.illustrativemathematics.org/
www.k-5mathteachingresources.com/
www.georgiastandards.org/Common-Core/Pages/Math-K-5.aspx
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.
Field Trip Ideas

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.
Field Trip Ideas

**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.