Grade 1: Unit 4
Reason with Shapes and their Attributes
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 mathematics instructional model will be used as the basis for all mathematics instruction.

First grade Mathematics consists of the following domains: Operations and Algebraic Thinking (OA), Numbers and Operations in Base Ten (NBT), Measurement and Data (MD), and Geometry (G). In first grade, instructional time should focus on four critical areas: (1) developing understanding of addition, subtraction, and strategies for addition and subtraction within 20; (2) developing understanding of whole number relationships and place value, including grouping in tens and ones; (3) developing understanding of linear measurement and measuring lengths as iterating length units; and (4) reasoning about attributes of, and composing and decomposing geometric shapes.

1) Students develop strategies for adding and subtracting whole numbers based on their prior work with small numbers. They use a variety of models, including discrete objects and length-based models (e.g., cubes connected to form lengths), to model add-to, take-from, put-together, take-apart, and compare situations to develop meaning for the operations of addition and subtraction, and to develop strategies to solve arithmetic problems with these operations. Students understand connections between counting and addition and subtraction (e.g., adding two is the same as counting on two). They use properties of addition to add whole numbers and to create and use increasingly sophisticated strategies based on these properties (e.g., “making tens”) to solve addition and subtraction problems within 20. By comparing a variety of solution strategies, children build their understanding of the relationship between addition and subtraction.

2) Students develop, discuss, and use efficient, accurate, and generalizable methods to add within 100 and subtract multiples of 10. They compare whole numbers (at least to 100) to develop understanding of and solve problems involving their relative sizes. They think of whole numbers between 10 and 100 in terms of tens and ones (especially recognizing the numbers 11 to 19 as composed of a ten and some ones). Through activities that build number sense, they understand the order of the counting numbers and their relative magnitudes.

3) Students develop an understanding of the meaning and processes of measurement, including underlying concepts such as iterating (the mental activity of building up the length of an object with equal-sized units) and the transitivity principle for indirect measurement.

4) Students compose and decompose plane or solid figures (e.g., put two triangles together to make a quadrilateral) and build understanding of part-whole relationships as well as the properties of the original and composite shapes. As they combine shapes, they recognize them from different perspectives and orientations, describe their geometric attributes, and determine how they are alike and different, to develop the background for measurement and for initial understandings of properties such as congruence and symmetry.
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>
<th>Instruction: 8 weeks</th>
<th>Assessment: 1 week</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Name the attributes of a given two-dimensional shape (square, triangle, rectangle,</td>
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<td></td>
<td>regular hexagon), distinguishing between defining and non-defining attributes.</td>
<td>1.G.A.1</td>
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<tr>
<td>2</td>
<td>Build and draw shapes when given defining attributes.</td>
<td>1.G.A.1</td>
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<td>3</td>
<td>Create a composite shape by composing two-dimensional shapes (rectangles, squares,</td>
<td>1.G.A.2</td>
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<td></td>
<td>trapezoids, triangles, half-circles and quarter circles) or three-dimensional shapes</td>
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<td></td>
<td>(cubes, right rectangular prisms, right circular cones, and right circular cylinders),</td>
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<td></td>
<td>and compose new shapes from the composite shape.</td>
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<td>4</td>
<td>Partition circles and rectangles into two or four equal shares, describing the shares</td>
<td>1.G.A.3</td>
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<td>using halves, fourths, and quarters and use the phrases half of, fourth of, and quarter</td>
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<td></td>
<td>of. Describe the whole circle (or rectangle) partitioned into two or four equal shares as</td>
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<td></td>
<td>two of, or four of the shares.</td>
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<tr>
<td>5</td>
<td>Use addition and subtraction within 20 to solve problems, including word problems</td>
<td>1.OA.A.1</td>
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<td></td>
<td>involving situations of adding to, taking from, putting together, taking apart, and</td>
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<td></td>
<td>comparing with unknowns in all positions.</td>
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<tr>
<td>6</td>
<td>Add and subtract whole numbers within 20 using various strategies: counting on,</td>
<td>1.OA.C.6</td>
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<td></td>
<td>making ten, composing, decomposing, relationship between addition and subtraction,</td>
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<td></td>
<td>creating equivalent but easier or known sums, etc.</td>
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<tr>
<td>7</td>
<td>Count to 120 orally, read and write numerals, and write numerals to represent the</td>
<td>1.NBT.A.1</td>
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<td></td>
<td>number of objects (up to 120).</td>
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<tr>
<td>8</td>
<td>Add a 2-digit and a 1-digit number using concrete models and drawings with a place</td>
<td>1.NBT.C.4</td>
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<td>value strategy or properties of operations; explain or show how the model relates to the</td>
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<td></td>
<td>strategy (sums within 100).</td>
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<tr>
<td>9</td>
<td>Add a 2-digit number and a multiple of 10, using concrete models and drawings with a</td>
<td>1.NBT.C.4</td>
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<td></td>
<td>place value strategy or properties of operations. Explain or show how the model relates</td>
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<td></td>
<td>to the strategy (sums within 100).</td>
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</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 stagnant field of textbook problems; rather, it is a dynamic way of constructing meaning about the world around us, generating knowledge and understanding about the real world every day. Students should be metaphorically rolling up their sleeves and “doing mathematics” themselves, not watching others do mathematics for them or in front of them. (Protheroe, 2007)

Balanced Mathematics Instructional Model

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

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

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

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

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

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

### Technology Operations and Concepts
- ** Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).

  **Example:** Students will navigate websites such as Imagine Math Facts, MobyMax, SplashMath, Extramath, Learnzillion, Khan Academy.

### Research and Information Fluency
- ** Use digital tools and online resources to explore a problem or issue.

  **Example:** Students will access on-line interactive resources, such as number lines and base ten blocks, to solve addition and subtraction problems within 20. Students can create graphs using online tools.

  - [https://www.mathlearningcenter.org/resources/apps](https://www.mathlearningcenter.org/resources/apps)
  - [http://nlvm.usu.edu/en/nav/grade_g_1.html](http://nlvm.usu.edu/en/nav/grade_g_1.html)

### The Nature of Technology: Creativity and Innovation
- ** Describe how designed products and systems are useful at school, home, and work.

  **Example:** Students will explain how tools such as ten frames, number lines, and part-part-whole mats are useful.

- ** Identify a system and the components that work together to accomplish its purpose.

  **Example:** Students will explain how ten frames, number lines, and part-part-whole mats represent how to find a solution to a problem.

### Design
- ** Brainstorm ideas on how to solve a problem or build a product.

  **Example:** Students will work together to create drawings or equations to represent and solve addition word problems with three addends.

### Computational Thinking: Programming
- ** Create algorithms (a sets of instructions) using a pre-defined set of commands (e.g., to move a student or a character through a maze).

  **Example:** Students will create a set of instructions explaining why addition or subtraction equations within 20 are true or false.

**Link:** [http://www.state.nj.us/education/cccs/2014/tech/](http://www.state.nj.us/education/cccs/2014/tech/)
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 judgements about the use of specific tools, such as ten frames, number lines, part-part-whole mats, or base ten blocks. Students choose appropriate tools to explore and deepen understanding of addition and subtraction concepts. Students will create composite shapes using two-dimensional and three-dimensional shapes.

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

To Increase Comprehension and Communication Skills

## Environment

- Welcoming and stress-free
- Respectful of linguistic and cultural diversity
-Honors students’ background knowledge
-Sets clear and high expectations
-Includes routines and norms
-Is thinking-focused vs. answer-seeking
-Offers multiple modalities to engage in content learning and to demonstrate understanding
-Includes explicit instruction of specific language targets
-Provides participation techniques to include all learners

- Integrates learning centers and games in a meaningful way
- Provides opportunities to practice and refine receptive and productive skills in English as a new language
- Integrates meaning and purposeful tasks/activities that:
  - Are accessible by all students through multiple entry points
  - Are relevant to students’ lives and cultural experiences
  - Build on prior mathematical learning
  - Demonstrate high cognitive demand
  - Offer multiple strategies for solutions
  - Allow for a language learning experience in addition to content

## Sensory Supports*

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

## Graphic Supports*

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

## Interactive Supports*

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

## Verbal and Textual Supports

- Labeling
- Students’ native language
- Modeling
- Repetitions
- Paraphrasing
- Summarizing
- Guiding questions
- Clarifying questions
- Probing questions
- Leveled questions such as What? 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 helps students to develop research and critical thinking skills.

This curriculum creates windows and mirrors for students.

**PREJUDICE REDUCTION**
Teachers implement lessons and activities to assert positive images of ethnic groups & improve intergroup relations.

This unit / lesson helps students question and unpack biases & stereotypes.

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

The curriculum encourages discussion and understanding about the groups of people being represented.

This unit / lesson challenges dominant perspectives.

**EQUITABLE PEDAGOGY**
The instruction has been modified to meet the needs of each student.

Students feel respected and their cultural identities are valued.

Additional supports have been provided for students to become successful and independent learners.

Opportunities are provided for students to reflect on their learning and provide feedback.

**EMPOWERING SCHOOL CULTURE**
Using the other four dimensions to create a safe and healthy educational environment for all.

There are opportunities for students to connect with the community.

My classroom is welcoming and supportive for all students?

I am aware of and sensitive to the needs of my students and their families.

There are effective parent communication systems established. Parents can talk to me about issues as they arise in my classroom.

### Culturally Relevant Pedagogy Examples

- **Integrate Relevant Word Problems:** Contextualize equations using word problems that reference student interests and cultures.  
  **Example:** Create and use word problems that include student interests, current events, and/or relevance to real-world situations in order to make problems relatable to students when adding to, taking from, putting together, taking apart, comparing, and solving addition word problems with three whole numbers. Using content that students can relate to adds meaning, value, and connection.

- **Run Problem-Based Learning Scenarios:** Present relatable real-world problems for your students to solve, explicitly referencing culture and communities when applicable.  
  **Example:** Exploration of three-dimensional objects may include items that are found in the home, outside, and in the classroom. Provide examples of buildings around the world to identify solid figures.

- **Use Learning Stations:** Provide a range of material by setting up learning stations.  
  **Example:** Reinforce understanding of concepts and skills by promoting 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 boards will give them a sense of ownership to their learning and understanding.

- **Present New Concepts Using Student Vocabulary:** Use student diction to capture attention and build understanding before using academic terms.  
  **Example:** Teach math vocabulary in various modalities for students to remember. Use multi-modal activities, analogies, realia, visual cues, graphic representations, gestures, pictures practice and cognates. Model to students that some vocabulary has multiple meanings. Have students create the Word Wall with their definitions and examples to foster ownership. Work with students to create a variety of sorting and match games of vocabulary words in this unit. Students can work in teams or individually to play these games for approximately 10-15 minutes each week. This will give students a different way of becoming familiar with the vocabulary rather than just looking up the words or writing the definition down.

- **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.
## Differentiated Instruction

### Accommodate Based on Students Individual Needs: Strategies

<table>
<thead>
<tr>
<th>Time/General</th>
<th>Processing</th>
<th>Comprehension</th>
<th>Recall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extra time for assigned tasks</td>
<td>Extra Response time</td>
<td>Precise processes for balanced math instructional model</td>
<td>Teacher-made checklist</td>
</tr>
<tr>
<td>Adjust length of assignment</td>
<td>Have students verbalize steps</td>
<td>Short manageable tasks</td>
<td>Use visual graphic organizers</td>
</tr>
<tr>
<td>Timeline with due dates for reports and projects</td>
<td>Repeat, clarify or reword directions</td>
<td>Brief and concrete directions</td>
<td>Reference resources to promote independence</td>
</tr>
<tr>
<td>Communication system between home and school</td>
<td>Mini-breaks between tasks</td>
<td>Provide immediate feedback</td>
<td>Visual and verbal reminders</td>
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<tr>
<td>Provide lecture notes/outline</td>
<td>Provide a warning for transitions</td>
<td>Small group instruction</td>
<td>Graphic organizers</td>
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<td></td>
<td>Partnering</td>
<td>Emphasize multi-sensory learning</td>
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<thead>
<tr>
<th>Assistive Technology</th>
<th>Tests/Quizzes/Grading</th>
<th>Behavior/Attention</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer/whiteboard</td>
<td>Extended time</td>
<td>Consistent daily structured routine</td>
<td>Individual daily planner</td>
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<td>Tape recorder</td>
<td>Study guides</td>
<td>Simple and clear classroom rules</td>
<td>Display a written agenda</td>
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<tr>
<td>Video Tape</td>
<td>Shortened tests</td>
<td>Frequent feedback</td>
<td>Note-taking assistance</td>
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<td></td>
<td>Read directions aloud</td>
<td></td>
<td>Color code materials</td>
</tr>
</tbody>
</table>
Differentiated Instruction

Accommodate Based on Students Individual Needs: Strategies

- Teacher modeling
- Review pre-requisite skills and mental math strategies. These strategies may include review of using doubles, doubles plus one, number partners for 10, counting on, counting back, place value.
- Use drawings to represent problems involving addition and subtraction.
- Use manipulatives such as counters, color tiles, unifix cubes or base ten blocks to assist in solving addition or subtraction problems and understanding place value.
- Use hundreds chart, ten frames, number lines, part-part-whole mat for addition and subtraction.
- Use hundreds chart to assist with counting and reading numerals to 100.
- Chart academic vocabulary with visual representations.
- Use models, drawings and objects to visually see that the quantity on the left side of the equal sign is the same as the quantity on the right side.
- Use fact family triangles to find the missing unknown numbers.
- Introduce money by using dimes and pennies to represent tens and ones.
- Use graphic organizers to show strategies for addition or subtraction.
- Use materials such as clay, playdoh, blocks, toothpicks, or straws to build models of shapes.
- Fold shapes or use fraction bars or fraction circles to understand equal parts.
### Interdisciplinary Connections

**Social Studies Connection:** Social Studies Standard 6.1.4.C.14

**Task:** All about Grapes

- A brief history about grapes as well as an explanation of different types of grapes at:

**Art Connection:**

**Task:** Pine Cones Task  Visual and Performing Arts Standard 1.3.2.D.1

- Learn how to make glitter pine cones as an art activity at:

**Science Connection:**

**Task:** Pine Cones Task  Science Standard 1-LS1-1


**ELA Connection:** Language Arts Standard  RL.1.1

**Task:** Tangram Triangles

- Read an online book- “The Greedy Triangle by Marilyn Burns at : [http://www.youtube.com/watch?v=aE0yle-z5uE](http://www.youtube.com/watch?v=aE0yle-z5uE)

**Task:** Farm Animals

- Read an online book about Curious George and the Pizza at: [http://www.youtube.com/watch?v=WRpXiqBRudI](http://www.youtube.com/watch?v=WRpXiqBRudI)

**NBT Tasks: Read Alouds**

- Just Enough Carrots by Stuart Murphy  [https://www.youtube.com/watch?v=Vsa9T_k4SYk](https://www.youtube.com/watch?v=Vsa9T_k4SYk)
- Tally O’Malley by Stuart Murphy  [https://www.youtube.com/watch?v=_ODQk0DquM](https://www.youtube.com/watch?v=_ODQk0DquM)
- Two Ways To Count To Ten by Ruby Dee  [https://www.youtube.com/watch?v=ueXoeAoOc1s](https://www.youtube.com/watch?v=ueXoeAoOc1s)
- Centipede’s 100 Shoes by Toni Ross  [https://www.youtube.com/watch?v=xLuAt7qF8](https://www.youtube.com/watch?v=xLuAt7qF8)
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
- 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
- Running Records
### New Jersey Student Learning Standards

**1.G.A.1.**
Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes.

**1.G.A.2.**
Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape.

**1.G.A.3.**
Partition circles and rectangles into two and four equal shares, describe the shares using the words halves, fourths, and quarters, and use the phrases half of, fourth of, and quarter of. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.

**1.OA.A.1.**
Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. *(benchmarked)*

**1.OA.C.6.**
Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., \(8 + 6 = 8 + 2 + 4 = 10 + 4 = 14\)); decomposing a number leading to a ten (e.g., \(13 - 4 = 13 - 3 - 1 = 10 - 1 = 9\)); using the relationship between addition and subtraction (e.g., knowing that \(8 + 4 = 12\), one knows \(12 - 8 = 4\)); and creating equivalent but easier or known sums (e.g., adding \(6 + 7\) by creating the known equivalent \(6 + 6 + 1 = 12 + 1 = 13\)) *(benchmarked)*

**1.NBT.A.1.**
Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral. *(benchmarked)*
1.NBT.C.4.
Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models (e.g. base ten blocks) or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten. *(benchmarked)*
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: One  
Unit: 4 (Four)  
Topic: Reason with Shapes and their Attributes

**NJSLS:**  
1.G.A.1, 1.G.A.2, 1.G.A.3, 1.OA.A.1, 1.OA.C.6, 1.NBT.A.1, 1.NBT.C.4

**Unit Focus:**  
- Reason with shapes and their attributes  
- Represent and solve problems involving addition and subtraction  
- Add and subtract within 20  
- Extend the counting sequence  
- Use place value understanding and properties of operations to add and subtract

**New Jersey Student Learning Standard(s):**  
1.G.A.1: Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes.

**Student Learning Objective 1:** Name the attributes of a given two-dimensional shape (square, triangle, rectangle, regular hexagon), distinguishing between defining and non-defining attributes.

**Modified Student Learning Objectives/Standards:**  
EE.1.G.A.1: Identify the relative position of objects that are on, off, in and out.

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<tr>
<th>MPs</th>
<th>Evidence Statement Key/Clarifications</th>
<th>Skills, Strategies &amp; Concepts</th>
<th>Essential Understandings/Questions (Accountable Talk)</th>
<th>Tasks/Activities</th>
</tr>
</thead>
</table>
| MP 3  
MP 4  
MP 7 | N/A | Early introductions to geometry include a basic understanding and ability to name shapes including triangles, squares, circles, and rectangles. They should encounter a variety of shapes, which means that there should also be a | Some everyday objects are close approximations to geometric solids. Plane shapes can be symmetrical. | (These tasks can be used with SLO #1 and #2)  
Shape Sort 1.G.A.1  
All vs. Only some 1.G.A.1 |
variety of orientations, using different colors and sizes.

Attention should be given to unfamiliar variants of shapes (i.e., obtuse triangles, rotated squares, etc.).

Understand defining attributes versus non-defining attributes.

Name attributes that define two-dimensional shapes (square, triangle, rectangle, regular hexagon).

Name attributes that do not define two-dimensional shapes

**SPED Strategies:**

Students should use attribute language to describe a given two-dimensional shape: number of sides, number of vertices/corners, straight sides, closed.

Students should articulate ideas such as, “A triangle is a triangle because it has three straight sides and is closed.” It is important that students are exposed to both regular and irregular shapes so that they can communicate defining attributes. Students should use attribute language to describe why these shapes are not triangles.

Many solid figures have flat surfaces and vertices.

How are everyday objects similar to plane shapes and geometric solids?

How can we show a shape has symmetry?

How can attributes be used to sort figures?

Can my students identify two-dimensional shapes and describe them according to specific attributes (e.g., number of sides, closed, number or vertices)?

Can my students distinguish between an open (gap in outline) and closed shape (no gap in outline)?

1 G Task 1a
1 G Task 1b
1 G Task 1c
1G1-Shape-Riddles
1G1-Shape-Engineer
1G1-Mystery-Shapes
1G1-Aloha-Toy-Company
ELL Strategies:
Introduce and chart academic vocabulary with visuals: defining/non-defining attributes, square, triangle, rectangle, hexagon, sides, corners, vertices.

Defining attributes vocabulary: sides, closed, vertices, edges, and faces.

Use drawings and selected, illustrated single words to describe orally and in writing the defining and non-defining attributes of 2-dimensional shapes.

Use key, technical vocabulary in phrases and simple sentences to describe orally and in writing the defining and non-defining attributes of 2-dimensional shape.

Create an anchor chart of defining and non-defining attributes with visuals.

Students maintain a math journal to demonstrate growth in math writing and reasoning.
New Jersey Student Learning Standard(s):
1.G.A.1: Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes.

Student Learning Objective 2: Build and draw shapes when given defining attributes.

Modified Student Learning Objectives/Standards:
E.E.1.G.A.1: Identify the relative position of objects that are on, off, in and out.

<table>
<thead>
<tr>
<th>MPs</th>
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<th>Essential Understandings/Questions (Accountable Talk)</th>
<th>Tasks/Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP 3</td>
<td>N/A</td>
<td>Students will have ample opportunity to explore a variety of shapes and begin classifying them according to specified attributes (e.g., sides, closed, vertices, edges, and faces). Variety also includes orientation of shapes, such as color, size, and direction. Students will evaluate objects they encounter in their everyday world and determine the basic geometric shapes that compose them. Exploration of three-dimensional objects may include items that are found in the home, outside, and in the classroom. Description of those objects should include appropriate geometric language, as well as discussion about what specific attributes let us know whether a shape is a triangle, cylinder, or square.</td>
<td>Plane shapes can be broken apart into other shapes. How can breaking apart larger shapes make new smaller shapes? Can my students draw or build a shape with specified attributes? Can students communicate the specific attributes that constitute a shape? (Example: regardless of size, all triangles have 3 sides). Can my students draw or build a shape with specific attributes? In other words, can they make the shape &quot;to order&quot;?</td>
<td>Tasks are found above in SLO #1.</td>
</tr>
<tr>
<td>MP 4</td>
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<tr>
<td>MP 7</td>
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</tbody>
</table>
Students are provided with a variety of manipulatives (objects that can help students understand abstract concepts in mathematics - may be actual blocks, coins, rods, or computer-based items) and technologies to encourage and support their exploration and conclusions.

Students will be asked to draw or build shapes with specified attributes. For example, "Draw a shape with exactly three straight sides", or "Build a cube whose faces are all squares".

Students will determine the defining attributes of shapes. For example, what differentiates a cylinder from a cone?

Defining attributes are attributes that must always be present.

Non-defining attributes are attributes that do not always have to be present.

The shapes can include triangles, squares, rectangles, and trapezoids.

Asks students to determine which attributes of shapes are defining compared to those that are non-defining.

Non-defining attributes are attributes that do not define a particular shape (color, position, location, etc.). The shapes can

Can my students make a sphere (or any other 3 dimensional shape) out of clay or playdough?
include triangles, squares, rectangles, and trapezoids. 1.G.2 includes half-circles and quarter-circles.

Examples:
- All triangles must be closed figures and have 3 sides. These are defining attributes.
- Triangles can be different colors, sizes and be turned in different directions, so these are non-defining.

Students use attribute language to describe a given two-dimensional shape: number of sides, number of vertices/points, straight sides, closed. A child might describe a triangle as right side up or red. These attributes are not defining because they are not relevant to whether a shape is a triangle or not.

Students should articulate ideas such as “A triangle is a triangle because it has three straight sides and is closed.”

Common Misconceptions:
- Students may think that a square that has been rotated so that the sides form 45-degree angles with the vertical diagonal is no longer a square but a diamond. They need to have
experiences with shapes in different orientations. For example, in building shapes, ask students to orient the smaller shapes in different ways.

**SPED Strategies:**
Students may use interactive whiteboards or computers to move shapes into different orientations and to enlarge or decrease the size of a shape still keeping the same shape.

They can also move a point/vertex of a triangle and identify that the new shape is still a triangle. When they move one point/vertex of a rectangle they should recognize that the resulting shape is no longer a rectangle.

Use models to build shapes, such as clay, blocks, etc.

**ELL Strategies:**
Introduce and chart academic vocabulary with visuals: attribute, square, triangle, rectangle, hexagon, sides, corners, vertices.

Use drawings and selected, illustrated single words when working in pairs, to demonstrate comprehension of oral directions and explain orally how to draw and build shapes.

Use selected technical vocabulary in phrases or key, technical vocabulary in
simple sentences when working in pairs to
demonstrate comprehension of oral
directions and explain orally how to draw
and build shapes.

Students maintain a math journal to
demonstrate growth in math writing and
reasoning.

<table>
<thead>
<tr>
<th>New Jersey Student Learning Standard(s):</th>
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<tbody>
<tr>
<td><strong>1.G.A.2:</strong> Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape.</td>
</tr>
<tr>
<td><strong>Student Learning Objective 3:</strong> Create a composite shape by composing two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles and quarter circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders), and compose new shapes from the composite shape.</td>
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<tr>
<th>Modified Student Learning Objectives/Standards:</th>
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<tbody>
<tr>
<td><strong>E.E.1.G.A.2:</strong> Sort shapes of same size and orientation (circle, square, rectangle, triangle)</td>
</tr>
</tbody>
</table>

| MP 4 | MP 7 | Shapes can be composed from other shapes (e.g. trapezoids can be composed from triangles). |
| MP 4 | MP 7 | As students gain knowledge in the identification of geometric attributes, they are then introduced to other shapes such as trapezoids, half-circles and quarter-circles. With this introduction, students can begin to conclude that shapes may be put together to |
| MPs | Evidence Statement Key/ Clarifications | Skills, Strategies & Concepts |
| Essential Understandings/ Questions (Accountable Talk) | Tasks/Activities |
| Students should have ample experience with manipulatives and technologies that will allow them to create two and three-dimensional shapes. For example, use tangrams and pattern block puzzles. The concepts of halves and quarters are introduced and |
| 1.G.2 Make the Shape 1.G.2 Composing Shapes Task Cards |
| Two Ways to Compose 1.G.2 |
| Cover a Hexagon 1.G.2 |
form new shapes or bigger shapes can be taken apart to show the smaller shapes that compose them.

Students should have practice in creating these shapes through such methods as drawings, tracings and fashioning manipulatives together.

**SPED Strategies:**
Students may use pattern blocks, plastic shapes, tangrams, or computer programs to make new shapes.

Provide students with cutouts of shapes and ask them to combine them to make a particular shape.

Students can make three-dimensional shapes with clay or dough, slice into two pieces (not necessarily congruent) and describe the two resulting shapes. For example, slicing a cylinder will result in two smaller cylinders.

**ELL Strategies:**
Introduce and chart academic vocabulary with visuals: two-dimensional shape words, three-dimensional shape words. Use drawings and selected, illustrated single words to describe orally and in writing the composite shapes made from two- and three-dimensional shapes.

can be done so with manipulatives that show a circle segmented into pieces other than its whole.

Students should have experience composing a shape with previously composed shapes. For example, two quarter circles together form a half circle, and then two half circles made in this fashion can be composed to form a whole circle.

Can my students combine shapes in order to successfully make a new shape?

Can students put together a rectangle and a triangle to make a trapezoid?

Can students put two quarter circles together to make a half circle?

Can students make a cube with several rectangular patterns?

<table>
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<th>Tangram Squares</th>
<th>Tangram Triangles</th>
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<td>pattern-block-numbers</td>
<td>pattern-block-triangles</td>
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</table>

Part-Whole Relationships within Composite Shapes

| topic-b-lessons-4-6 |
Use drawings, phrases or key vocabulary in a series of simple sentences to describe orally and in writing the composite shapes made from two- and three-dimensional shapes.

Students maintain a math journal to demonstrate growth in math writing and reasoning.

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

1.G.A.3: Partition circles and rectangles into two and four equal shares, describe the shares using the words halves, fourths, and quarters, and use the phrases half of, fourth of, and quarter of. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.

**Student Learning Objective 4:** Partition circles and rectangles into two or four equal shares, describing the shares using halves, fourths, and quarters and use the phrases half of, fourth of, and quarter of. Describe the whole circle (or rectangle) partitioned into.

**Modified Student Learning Objectives/Standards:**

EE.I.G.A.3: Put together two pieces to make a shape that relates to the whole (i.e, two semicircles to make a circle, two squares to make a rectangle).

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<tbody>
<tr>
<td>MP 4</td>
<td>N/A</td>
<td>Shapes can be partitioned into equal parts or shares.</td>
<td>What activities can I provide that will allow for the exploration of wholes, halves, and fourths?</td>
<td>Fraction-pictures-1.G.3</td>
</tr>
<tr>
<td>MP 7</td>
<td>N/A</td>
<td>Students will recognize the &quot;part-whole&quot; relationship in representations of basic fractions such as 1/2 and 1/4 and be able to match the spoken, written, concrete, and pictorial representations of whole numbers, one- half, and one-fourth. Hexagons (and</td>
<td>How can I provide experiences that will introduce the concept of part-whole relationships in shapes</td>
<td>Eating-equal-parts</td>
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<td>Pizza Task 1.G.3</td>
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<td>Task A 1.G.3</td>
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<td>Task B 1.G.3</td>
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</tbody>
</table>
other easily partitioned shapes) provide a wonderful opportunity to introduce such fractional concepts. Mastery of this skill later prepares them for more sophisticated explorations with fractions.

The whole can be described based on the number of shares

Decomposing a whole into more equal shares creates smaller shares.

Folding shapes made from paper enables students to physically feel the shape and form the equal shares. Ask students to fold circles and rectangles first into halves and then into fourths. They should observe and then discuss the change in the size of the parts.

Manipulatives such as circle fractions provide a wonderful opportunity to introduce the part-whole relationship that exists with fractions. Begin with the whole, half and fourths to allow students to create a basic understanding of this concept.

**SPED Strategies:**
Student partitions a rectangular candy bar to share equally and put the parts back together to see that they equal the whole candy bar.

Student partitions an identical rectangular candy bar into four equal parts to share equally.

and as they relate to such operations as subtraction?

Can my students construct a whole circle using only halves and fourths?

Can my students communicate the relationship between the parts as related to the whole circle?

Do my students understand that by separating a circle into more pieces, it yields smaller pieces of the whole?

Can students divide a rectangle or a circle into 2 or 4 equal Shares using playdough, or with pencil and paper?

Can my students accurately describe the shares using the words and phrases from the standard?

Can my students explain that if someone cuts a cookie into fourths and then ate the whole cookie, they ate 4 pieces of cookie?

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<td>Halves and Quarters of Rectangles and Circles m5-topic-c-lessons-7-9</td>
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<tr>
<td>Pizza and Candy Bars 1.G.3</td>
<td>Pizza and Candy Bars Student Form 1.G.3</td>
</tr>
<tr>
<td>Partitioning Figures 1.G.3</td>
<td></td>
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</table>
Students should be able to discuss partitioning such as, “When I put the four parts back together, they equal the whole candy bar. I can compare the pieces (one half and one fourth) by placing them side-by-side. One fourth of the candy bar is smaller than one half of the candy bar.”

Students partition a pizza to share equally with three friends. They recognize that they now have four equal pieces and each will receive a fourth or quarter of the whole pizza.

**ELL Strategies:**
Introduce and chart academic vocabulary with visuals: circle, rectangle, whole, half, halves, quarters, fourths, half of, fourth of, quarter of, equal, unequal, partition.

Use drawings and selected, illustrated single words or key, technical vocabulary in simple sentences to describe orally and in writing fractional parts of partitioned shapes.

The teacher models and provides support in the pronunciation and spelling of fractional parts which may be difficult for ELLs, i.e. in words like halves, fourths, etc.

Students maintain a math journal to demonstrate growth in math writing and reasoning.

Can students recognize that dividing a circle into two unequal pieces does not yield halves?
**New Jersey Student Learning Standard(s):**

1.OA.A.1: Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, *e.g.*, by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. *(benchmarked)*

**Student Learning Objective #5:** Use addition and subtraction within 20 to solve problems, including word problems involving situations of adding to, taking from, putting together, taking apart, and comparing with unknowns in all positions.

**Modified Student Learning Objectives/Standards:**

EE.OA.A.1: Represent addition and subtraction with objects, fingers, metal images, drawings, sounds (*e.g.*, claps) or acting out situations.

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<tbody>
<tr>
<td>MP 1</td>
<td>Tasks should include all problem situations and all of their subtypes and language variants. Mastery is expected in “Add To” and “Take From” - Result and Change Unknown Problems, “Put Together/Take Apart” Problems, “Compare” – Difference Unknown, Bigger Unknown (more version) and Smaller Unknown (fewer version) Problems (for more information see CCSS)</td>
<td>Students should represent problems in multiple ways including drawings and or objects/manipulatives (<em>e.g.</em>, counters, unifix cubes, number lines).</td>
<td>Subtraction has an inverse relationship with addition.</td>
<td>add-to-change-unknown-problems-to-20</td>
</tr>
<tr>
<td>MP 2</td>
<td></td>
<td>Part-part-whole relationships show how two numbers-the parts-are related to a third number-the whole.</td>
<td>Many different problem situations can be represented by part-part-whole relationships and addition or subtraction.</td>
<td>add-to-start-unknown-problems-to-20</td>
</tr>
<tr>
<td>MP 3</td>
<td></td>
<td>“Add to” and “Take From” problem type situations involve actions. “Adding to” problems involve increasing by joining, while “taking from” problems involve decreasing or separating. Each of these situations can be further categorized by considering what information must be found (the result of the action, the change, or the start).</td>
<td>Part-part-whole relationships can be expressed by using number sentences like a+b = c or c-b=a, where a and b are the parts and c is the whole.</td>
<td>take-from-change-unknown-problems-to-20</td>
</tr>
<tr>
<td>MP 4</td>
<td></td>
<td>Other problem situations do not change the amounts in any set; these “no action”</td>
<td>Mathematical operations are used in solving problems in which a new value is produced from one or more values.</td>
<td>take-from-start-unknown-problems-to-20</td>
</tr>
<tr>
<td>MP 5</td>
<td></td>
<td>Flowers</td>
<td>Varied Problems Types Within 20-M4-Topic-E-Lessons-19-22</td>
<td></td>
</tr>
</tbody>
</table>
| Table 1, p. 93 and OA Progression, p. 9. | Situations may involve putting together collections of objects, taking apart a collection of objects, or comparing two collections of objects.

Understanding the relationship between addition and subtraction reduces the number of facts that students must “know” by giving them a consistent, reliable strategy for subtraction: use the related addition fact. These related facts then form fact families.

Students should be able to take apart and combine numbers in a wide variety of ways.

Students also need to make sense of quantity and be able to compare numbers.

Students must solve a variety of addition and subtraction word problems. To add, students should be able to solve for any unknown portion in a problem. The unknown can be one of the addends or the result/sum. Situational problems should have a variety of change unknown, whole unknown, and start unknown.

Students need to be exposed to a variety of strategies that will allow them to group addends many different ways to make the addition process easier. For instance, students should be guided to look for places where they can "make 10" before adding, “doubles”, “doubles +1”, or “doubles -1”.

| **Conservation:** A quantity in a set can be moved to the other set and the sets can be combined, but the whole amount remains the same because no additional items were added or taken away (ex. 9+6=10+5).

Algebraic thinking involves choosing, combining, and applying effective strategies for answering quantitative questions.

How can we represent a number using tens and ones?

How can we represent a number in a variety of ways?

How does using 10 as a benchmark help us compose numbers or add/subtract?

How can you solve a subtraction fact by thinking about a related addition fact?

| 1.OA.A.1 Unknown Addends | **How can you solve a subtraction fact by thinking about a related addition fact?**

**What strategies can I use to help me demonstrate fluency for addition and subtraction facts up to 10?** |
When students are comfortable with adding three addends, begin to introduce an unknown portion in the numeric sentence. From here, students can use their knowledge of related addition and subtraction facts to solve for the unknown portion.

Provide students with multiple opportunities to discuss their reasoning for the method they chose for their problem-solving.

Students make note of increasing/decreasing, doing and undoing as it relates to addition and subtraction.

Use the part-part-whole mat to respond to situational problems. For example, start with context and ask students to construct a model or use the part-part-whole mat to show the part-part-whole relationship and write equations.

Utilize subtraction to solve missing addend problems.

**SPED Strategies:**
Students use objects, drawings, or numbers to represent the different situations.

Students should use cubes, blocks, linking cubes, counters for visuals.

How do you use addition to solve word problems?

What strategies can you use to solve addition word problems?

How can different strategies be helpful when solving a problem?

What strategies can be used to solve story problems with an unknown addend?

Problems can be solved by counting all, counting on from a quantity, counting on from the largest set, or using derived facts when solving for the whole amount or the missing part of the whole.

Mapping devices (part-part-whole mat) can help you gain a sense of the quantities involved, to notice increases and decreases, and consider the doing and undoing related to addition and subtraction.
Provide models and demonstrate how to use the counters, cubes, etc for adding and subtracting.

**ELL Strategies:**
Introduce and chart academic vocabulary with visuals: add, addition fact, sum, subtract, subtraction fact, difference, related facts, unknown.

Draw pictures to depict the action of the problem to demonstrate comprehension of math problems read orally; then students explain orally the solution by drawing the solutions and using selected technical words, and/or phrases and/or simple sentences.

Utilize the fact family triangles or connecting cubes to solve word problems read orally.
New Jersey Student Learning Standard(s):
1.OA.C.6: Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13) *(benchmarked)

Student Learning Objective 6: Add and subtract whole numbers within 20 using various strategies: counting on, making ten, composing, decomposing, relationship between addition and subtraction, creating equivalent but easier or known sums, etc.

Modified Student Learning Objectives/Standards: N/A

<table>
<thead>
<tr>
<th>MPs</th>
<th>Evidence Statement Key/Clarifications</th>
<th>Skills, Strategies &amp; Concepts</th>
<th>Essential Understandings/Questions (Accountable Talk)</th>
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</tr>
</thead>
</table>
| MP 2 | N/A | Students need a variety of strategies for solving addition and subtraction problems through 20. Students also need to be fluent with sums or differences within 10. These strategies will provide students with a variety of choices when deciding the best way to solve problems. This standard brings together all of the previous strategies and operations to apply in any given addition or subtraction situation. Students should add and subtract using the following strategies:  
  • Counting on  
  • Making ten  
  • Composing numbers  
  • Decomposing numbers  
  • Relationship between addition and subtraction | What are efficient methods for finding sums and differences?  
  -use doubles, doubles plus one, doubles minus one, make a ten.  
  Compensation: A quantity in a set can be moved to the other set and the sets can be combined, but the whole amount will remain the same because no additional items are added or taken away. (9+6=10+5) | 1.OA.6 A Birdbath  
  Eating Grapes 1.OA.6  
  Silly Bands Problem 1.OA.6  
  Pencil Task 1.OA.6  
  Cookies Task 1.OA.6  
  Rocks Task 1.OA.6  
  French Fries Task 1.OA.6  
  Task A 1.OA.6  
  Task B 1.OA.6  
  Task C 1.OA.6 |
- Creating equivalent but easier or known sums

Fluency within 10 allows sums and differences within 20 to be solved quickly, as students can decompose larger numbers as needed. For example, 13 - 4 can be thought of as 13 - 3 - 1 = 10 - 1 = 9.

Teachers should guide students through a wide variety of methods for solving addition and subtraction problems. While the correct answer is important, students need to feel comfortable in solving for the answer in the way that makes the most sense to them while also having knowledge and practice with other strategies.

Students need to be taught how to communicate their reasoning for choosing a specific strategy. For example, students can show how they solve 6 + 7 by first changing it to 6 + 6 + 1 (creating equivalent but easier or known sums) followed by 12 + 1 (fluency of knowing 6 and 6 is 12) and then 12 + 1 = 13, which they relate to counting on by one from twelve to get 13.

Additionally, they should be encouraged to justify their reasoning in verbal, written and visual modalities with drawings, models and pictures.

<table>
<thead>
<tr>
<th></th>
<th>be taken apart, but the composition of the whole quantity remains the same. (Doing and Undoing, Inverse Operations, 4+5=9, 9-5=4)</th>
<th>Pennies Task 1.OA.6 Fact Family Center Game</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Have students been exposed to a wide range of problem-solving tools that go beyond counting fingers and using a number line?</td>
<td></td>
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<tr>
<td></td>
<td>Can students communicate their reasoning for choosing a specific strategy for problem-solving?</td>
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<tr>
<td></td>
<td>Can students use the strategy of counting on?</td>
<td></td>
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<tr>
<td></td>
<td>Can students use the strategy of making a ten?</td>
<td></td>
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<tr>
<td></td>
<td>Can students use the strategy of decomposing a number to quickly solve an addition or subtraction problem?</td>
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<tr>
<td></td>
<td>Can students use a related addition fact to solve a subtraction problem?</td>
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<tr>
<td><strong>SPED Strategies:</strong></td>
<td>Can students create easier sums within a problem to solve a large problem?</td>
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<td>--------------------------------------------------------------------------</td>
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<tr>
<td>Use of objects, diagrams, graph paper, counters, or whiteboards and various strategies will help students develop fluency.</td>
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<tr>
<td>Model and provide models for students to follow.</td>
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<td>Allow students opportunity to use computer to solve.</td>
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<tr>
<td><strong>ELL Strategies:</strong></td>
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<td></td>
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<tr>
<td>Introduce and chart academic vocabulary with visuals: add, subtract, make a ten, plus, minus, difference, equals, altogether.</td>
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<tr>
<td>The teacher models (using gestures, drawing, counters, ten-frames) how to add and subtract using the specific strategy.</td>
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<tr>
<td>The student can explain orally and in writing using drawings, base ten blocks and/or sentence frames (First, I ___, Then, I ___, Finally, I ___) to find sums or differences within 20 by decomposing a number or using tens.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students maintain a math journal to demonstrate growth in math writing and reasoning.</td>
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</tbody>
</table>
### New Jersey Student Learning Standard(s):  
**1.NBT.A.1:** Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral. *(benchmarked)*

### Student Learning Objective 7:  
Count to 120 orally, read and write numerals, and write numerals to represent the number of objects (up to 120).

### Modified Student Learning Objectives/Standards:  
**EE.1.NBT.A.1:** Count by ones to 30

<table>
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<tr>
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<tbody>
<tr>
<td>MP 2</td>
<td>N/A</td>
<td>Rote counting forward to 120 by counting on from any number less than 100. Students are developing strategies for counting that build on the understanding of how the numbers in the counting sequence are related—each number is one more (or one less) than the number before (or after). It is important for students to connect different representations for the same quantity or number. Students use materials to count by ones and tens to a build models that represent a number, then they connect this model to the number word and its representation as a written numeral. Students learn to use numerals to represent numbers by relating their place-value notation to their models. They build on their previous experiences with numbers 0 to 20 in Kindergarten to create models for 21 to 120</td>
<td>Count on starting at any number less 100 and continue to 120. Read, write and represent a number of objects with a written numeral. Quantities can be compared using matching and words. Recognize and understand patterns on a 100 chart. (tens and ones) A number line can represent the order of numbers. Counting finds out the answer to “how many” in objects/sets.</td>
<td>1nbt1_number_paths 1nbt1_rote_counting_interview CCGPS_NBT.1 Group of Lessons Mystery Number 1.NBT.1 missing numbers 20-50 Counting Bears 1.NBT.1 Counting Buttons 1.NBT.1 Relay to 120</td>
</tr>
</tbody>
</table>
with groupable materials (beans, unifix cubes, and plastic links). Students represent the quantities shown in the models by placing numerals in labeled hundreds, tens and ones columns. The students then move to representing the numbers in standard form, where the group of hundreds, tens, and ones shown in the model matches the left-to-right order of digits in numbers.

Post the number words in the classroom for students to be able to read and write them.

**SPED Strategies:**
Use counting charts, teacher modeling and base-ten blocks.

Use sand or glue for tracing numbers.

Count aloud and have students repeat.

**ELL Strategies:**
Introduce and chart academic vocabulary with visuals: number words 0-120, ones, tens, hundreds.

Demonstrate comprehension of step-by-step directions and numbers in English. Then identify orally or repeat numbers and finally write the numerals.

Demonstrate comprehension of single step oral directions and numbers stated orally. Identify

| Numbers can represent quantity, position, location and relationships. |
| Why do we need to be able to count objects? |
| How can we use counting to compare objects in a set? |
| How do we know if a set has more or less? |
| How can we represent a number using tens and ones? |
| How many ones do we use to create a ten? |
| What happens when we collect ten ones? |
| What does a number represent? |
| What can a number line show us? |
| How can I use a number line to help me count? Or count on? |

| How Many Are Here Today? |
| Group It and Move It |
| Spin and Represent |
| Creating a Number Line |
| Hop To It |
| Exploring the 99 Chart |
| Oh No 99 Chart! |
orally and in writing, numerals and groups of objects representing a numeral to 120. Using a counting chart, the teacher models how to identify orally and in writing numerals and groups of objects (such as base-ten blocks) representing a number to 120.

New Jersey Student Learning Standard(s):
1.NBT.C.4: Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models (e.g. base ten blocks) or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten. *(benchmarked)

Student Learning Objective 8: Add a 2-digit and a 1-digit number using concrete models and drawings with a place value strategy or properties of operations; explain or show how the model relates to the strategy (sums within 100).

Modified Student Learning Objectives/Standards:
EE.1.NBT.C.4: Compose numbers less than or equal to five in more than one way.

<table>
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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>MP 2</td>
<td>1.NBT.4-1</td>
<td>1. Tasks should focus on the connections among the students’ concrete models/drawings, written numerical work, and explanations in terms of strategies/reasoning.</td>
<td></td>
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<tr>
<td>MP 3</td>
<td>1. Tasks should focus on the connections among the students’ concrete models/drawings, written numerical work, and explanations in terms of strategies/reasoning.</td>
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<tr>
<td>MP 4</td>
<td>1. Tasks should focus on the connections among the students’ concrete models/drawings, written numerical work, and explanations in terms of strategies/reasoning.</td>
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<tr>
<td>MP 7</td>
<td>1. Tasks should focus on the connections among the students’ concrete models/drawings, written numerical work, and explanations in terms of strategies/reasoning.</td>
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<tr>
<td>MP 8</td>
<td>1. Tasks should focus on the connections among the students’ concrete models/drawings, written numerical work, and explanations in terms of strategies/reasoning.</td>
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</tbody>
</table>

This standard calls for students to use concrete models, drawings, and place value strategies to add within 100.

Students should not be exposed to the standard algorithm of carrying or borrowing in first grade.)

Students extend their number fact and place value strategies to add

Are students able to demonstrate mastery of place value by adding only those digits in the ones positions and then adding only those digits in the tens position (if regrouping is not necessary)? When necessary, can students compose a ten?

Can students add a two-digit number and a one-digit number?

Add 1.NBT.4

The following tasks can be used for both SLO 8 & 9

Task 3e - 1.NBT.4

Task 3f - 1.NBT.4
| Interviews (individual or small group) should target these connections within 100. They represent a problem situation using any combination of words, numbers, pictures, physical objects, or symbols. Students should always explain and justify their mathematical thinking both verbally and in writing.

This standard focuses on developing addition-the intent is not to introduce traditional algorithms or rules.

Provide students with problems to add a two-digit number and a one-digit number. (Students can initially be given addition problems that do not require regrouping, and then addition problems that do require composing a ten.) Provide students with a variety of manipulatives and technologies which can aid in their practice of adding 100. They represent a problem situation using any combination of words, numbers, pictures, physical objects, or symbols. Students should be exposed to problems both in and out of context and presented in horizontal and vertical forms. Students should always explain and justify their mathematical thinking both verbally and in writing.

This standard focuses on developing addition-the intent is not to introduce traditional algorithms or rules.

Provide students with problems to add a two-digit number and a one-digit number. (Students can initially be given addition problems that do not require regrouping, and then addition problems that do require composing a ten.) Provide students with a variety of manipulatives and technologies which can aid in their practice of adding 100. They represent a problem situation using any combination of words, numbers, pictures, physical objects, or symbols. Students should be exposed to problems both in and out of context and presented in horizontal and vertical forms. Students should always explain and justify their mathematical thinking both verbally and in writing.

This standard focuses on developing addition-the intent is not to introduce traditional algorithms or rules.

Provide students with problems to add a two-digit number and a one-digit number. (Students can initially be given addition problems that do not require regrouping, and then addition problems that do require composing a ten.) Provide students with a variety of manipulatives and technologies which can aid in their practice of

| Tasks should focus on the general method of adding tens and ones separately for finding the sum of any two-digit numbers. Composing a ten must be included in the range of tasks. Interviews (individual or small group or small group) should target understanding of this general method. Can students use different concrete models to add? Can students explain the reasoning behind the strategy used? Sets of ten can be perceived as single entities. These sets can be counted and used as a means of describing quantities. The grouping of ones and tens and hundreds can be taken apart in different ways. The following tasks add two 2-digit numbers. Students can decompose to add on the multiple of ten or the 1-digit number. SLO 8 & 9 Task C 1.nbt.4 |
addition and subtraction through 100.

Base-10 manipulatives can be used to show students how to concretely model addition and to reinforce the idea of place value, of adding tens and tens, ones and ones, and when necessary, composing a ten.

Students should also be able to apply their place value skills to decompose numbers.

Use coins such as pennies, nickels, dimes, and quarters as manipulatives. Students can use the heads and tails sides as the two parts.

**SPED Strategies:**
Use base ten blocks, cubes, links or counters.

Use a place value chart.

**ELL Strategies**
Introduce and chart academic vocabulary with visuals: ones, tens, hundreds, column, row, digit, addend, plus.

Use drawings and selected, illustrated technical words to
express orally how to add one-digit and two-digit numbers.

Use drawings and key, technical vocabulary in a series of simple sentences to express orally how to add one-digit and two-digit numbers.

Use base-ten blocks to explain how to add one-digit and two-digit numbers.

Students maintain a math journal to demonstrate growth in math writing and reasoning.

| New Jersey Student Learning Standard(s): |
| 1.NBT.C.4: Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models (e.g. base ten blocks) or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten. *(benchmarked)\n
| Student Learning Objective 9: Add a 2-digit number and a multiple of 10, using concrete models and drawings with a place value strategy or properties of operations. Explain or show how the model relates to the strategy (sums within 100). |

| Modified Student Learning Objectives/Standards: |
| EE.1.NBT.C.4: Compose numbers less than or equal to five in more than one way. |

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<tr>
<td>MP 2</td>
<td>1.NBT.4-1</td>
<td>Use concrete models and drawings with a strategy based on place value</td>
<td>Can students add a two-digit number and a multiple of ten?</td>
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<tr>
<td>MP 3</td>
<td>Tasks should focus on the connections among the students’ concrete models/drawings, written numerical work, and explanations in terms of strategies/reasoning.</td>
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<tr>
<td>MP 4</td>
<td>Interviews (individual or small group) should target these connections</td>
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<td>MP 7</td>
<td>Tasks should focus on the general method of adding tens and ones separately for finding the sum of any two-digit numbers. Composing a ten must be included in the range of tasks.</td>
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<tr>
<td>MP 8</td>
<td>Interviews (individual or small group) should target understanding of this general method.</td>
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**1.NBT.4-2**

- Tasks should focus on the general method of adding tens and ones separately for finding the sum of any two-digit numbers. Composing a ten must be included in the range of tasks.
- Interviews (individual or small group) should target understanding of this general method.

- Value to add a two-digit number and a multiple of 10.
- Use concrete models and drawings with properties of operations to add a two-digit number and a multiple of 10.
- Students will explain or show how the model relates to the strategy.
- It is important for students to understand if they are adding a number that has 10s to a number with 10s, they will have more tens than they started with; the same applies to the ones.
- Base-10 manipulatives can be used to show students how to concretely model addition and to reinforce the idea of place value, of adding tens and tens, ones and ones, and when necessary, composing a ten.
- Provide students with a variety of manipulatives and technologies which can aid in their practice of addition and subtraction through 100.
- This standard calls for students to use concrete models, drawings, and explanations in terms of strategies/reasoning.

- Can students use different concrete models to add?
- Can students explain the reasoning behind the strategy used?
- Are students able to demonstrate mastery of place value by adding only those digits in the ones positions and then adding only those digits in the tens position (if regrouping is not necessary)?
- When necessary, can students compose a ten?
- Sets of ten can be perceived as single entities. These sets can be counted and used as a means of describing quantities.
- The grouping of ones and tens and hundreds can be taken apart in different ways.

**Sams-base-10 blocks problems**
- sums-of-90_center_game
- Farmer Brown
- Pinecones Task & Pinecones Student Form
- The following tasks add two 2-digit numbers. Students can decompose to add on the multiple of ten or the 1-digit number.
- SLO 8 & 9 math-g1-m4-topic-f-lesson-23
- Task C 2 digits
and place value strategies to add within 100.

Students extend their number fact and place value strategies to add within 100. They represent a problem situation using any combination of words, numbers, pictures, physical objects, or symbols.

Students should be exposed to problems both in and out of context and presented in horizontal and vertical forms.

Students should always explain and justify their mathematical thinking both verbally and in written format.

Students should also be able to apply their place value skills to decompose numbers.

**SPED Strategies:**
Use Base Ten Blocks, Model for students.

Use graph paper.

Use counters.
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<th><strong>ELL Strategies:</strong></th>
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<td>Introduce and chart academic vocabulary with visuals: ones, tens, hundreds, column, row, digit, addend, plus.</td>
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<tr>
<td></td>
<td>Use drawings and selected, illustrated technical words to express orally how to add one-digit and two-digit numbers.</td>
</tr>
<tr>
<td></td>
<td>Use drawings and selected technical vocabulary in phrases and simple sentences using provided sentence frames to express orally how to add one-digit and two-digit numbers.</td>
</tr>
<tr>
<td></td>
<td>Express orally how to add one-digit and two-digit numbers using key, technical vocabulary in a series of simple sentences.</td>
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<tr>
<td></td>
<td>Students maintain a math journal to demonstrate growth in math writing and reasoning.</td>
</tr>
</tbody>
</table>
### Unit 4 Vocabulary

- add
- addends
- adding to
- addition
- Associative Property of Addition
- attributes
- backwards
- categories
- circle
- closed shape
- Commutative Property of Addition
- compare
- comparing with unknowns in all positions
- compose
- composite shape
- concrete models
- cones
- corners
- count back
- count on
- cube
- cylinder
- data points
- day
- decompose
- difference
- digit

- equal
- equal shares/parts
- equal sign
- equation (number sentence)
- fewer
- flat surface
- forward
- fourth of
- fourths
- friendly number
- greater than
- half of
- half-circles
- half-hour
- halves
- hexagon
- interpret
- is the same as
- less than
- longer
- make a ten
- minus
- minute hand
- more
- more than
- most
- multiple of ten
- number

- number line
- (number) after
- (number) before
- numeral
- object
- octagon
- ones
- order
- organize
- overlaps
- partition
- part-part-whole
- putting together
- pyramid
- quarter circles
- quarter of
- quarters
- reasoning
- rectangle
- rectangular prism
- related facts
- represent
- representation
- rhombus
- shorter
- side corners
- sides
- solid shape
- solve

- square
- subtract
- sum
- take away
- taking apart
- taking from
- tally chart
- tally mark
- ten frame
- ten less data
- ten more
- tens
- three-dimensional
- total
- trapezoid
- triangle
- two-dimensional
- unequal shares/parts
- units
- unknown addends
- value
- vertices
- whole
### References & Suggested Instructional Websites

- [https://www.engageny.org/](https://www.engageny.org/)
- [https://www.teachingchannel.org/](https://www.teachingchannel.org/)
- [https://www.illustrativemathematics.org/](https://www.illustrativemathematics.org/)
- [http://www.k-5mathteachingresources.com/](http://www.k-5mathteachingresources.com/)
- [http://betterlesson.com/](http://betterlesson.com/)
- [https://learnzillion.com/](https://learnzillion.com/)
- [http://www.insidemathematics.org/](http://www.insidemathematics.org/)
- [http://greatminds.net/](http://greatminds.net/)
- [https://www.georgiastandards.org/Georgia-Standards/Pages/Math-K-5.aspx](https://www.georgiastandards.org/Georgia-Standards/Pages/Math-K-5.aspx)
- [http://interactivesites.weebly.com/math.html](http://interactivesites.weebly.com/math.html)
- [https://www.mathsisfun.com/definitions/index.html](https://www.mathsisfun.com/definitions/index.html)
- [http://www.katm.org/flipbooks/4%20FlipBook%20Final%20CCSS%202014.pdf](http://www.katm.org/flipbooks/4%20FlipBook%20Final%20CCSS%202014.pdf)
Field Trip Ideas

HEAVEN HILLS – Heaven Hills is a locally owned and operated garden center and farm market in Vernon, NJ. The only thing better than a getaway to the country is gathering a large group of your classmates, coworkers, friends and family to join you on a visit to Heaven Hill Farm to experience a true working farm for some exclusive educational and seasonal fun.
http://www.heavenhillfarm.com/tours-for-schools/

HILLVIEW FARMS - We welcome schools and groups to visit our family farm to gain a positive farm experience. By visiting Hillview Farms, we aim to engage students in the workings of a farm. They will experience different types of farm animals, how they live, what they eat, how they feel and sound. They learn why all the different animals are raised, how the farm produces its own food, and how that food is harvested and stored.
http://hillviewfarmnj.com/

ALSTEDE FARMS Chester, NJ - Let us teach you about farming in the most fun way! We open our doors to groups of all ages and sizes because we understand the importance of hands-on education. We personalize each farm tour and field trip, depending on the group’s interests. You will navigate our farm by taking hayrides out to the beautiful fields and orchards, greenhouses, school classroom, our friendly animals and last but not least – having a great outdoor day at our family owned farm. You choose the other activities- climb the giant hay pyramid, have lunch and refreshing lemonade or take a self-guided tour of our animals.
http://alstedefarms.com/group-events-and-tours/group-farm-tours/?gclid=C1jzn-W4lMYCFQgUHwodK1oAxA

GREEN MEADOWS FARM Hazlet, NJ - Green Meadows Petting Farm in Hazlet, New Jersey is a unique hands on learning adventure with hundreds of friendly farm animals. Some of our many petting zoo activities include milking a cow, feeding our animals, tractor drawn hayrides and fall pumpkin picking. Give us a call and we'll bring the fun to you! We're the ideal farm animal experience for families, birthday parties, groups and school field trips!
http://www.greenmeadowsfarmnj.com/

PENNINGS ORCHARD Warwick, NY - We look forward to seeing you next year for all your favorite activities including the u-pick, farm market, pumpkin fields, hayrides, farm animals, kiddie maze and more.
http://www.penningsorchard.com
Field Trip Ideas

BERGEN COUNTY ZOO Paramus, NJ - This great zoo, located in Van Saun County Park, is home to a wide variety of wild and domestic animals, living in recreated habitats natural to each species. School Programs for grades Pre-K and up include 'Sense'-Sational Animals (grades Pre-K - 1): a unique introduction to animals through the five senses; Survival Strategies (grades 2 and up): an exploration of incredible adaptations for survival; Dispelling the Myths (all grades): unravels riddles like Are Snakes Really Slimy? Can Owls Really Turn Their Heads all the way around? and more; and several others, including thematic Guided Tours of the zoo for Pre-K and up. A program takes 30 - 40 minutes per group of 25.
https://www.co.bergen.nj.us/departments-and-services/parks

TURTLE BACK ZOO West Orange, NJ - We have daily, free live animal programs. We also offer programs for groups that can be scheduled for an Education Center Classroom. There is a fee for these programs and they have to be scheduled at least three weeks in advance. Programs can be especially tailored for to meet your needs, including for Boy and Girl Scout groups to help with badge requirements.
http://turtlebackzoo.com/education/

BRONX ZOO Bronx, NY - Visit the largest urban zoo in America and get up close to more than 600 species from around the globe. Meet exotic animals, birds, reptiles, and insects from across Asia, Africa, the Americas and more without ever leaving the Bronx.
http://bronxzoo.com/field-trips

LIBERTY SCIENCE CENTER Jersey City, NJ - 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 FOR ALL FIELD TRIPS:
- count objects
- decompose numbers
- answer how many questions
- create real-life addition and subtraction word problems
- compare numbers
- organize, represent, and interpret data with up to three categories
- identify and name the attributes of two-dimensional and three-dimensional shapes
- measure and order objects by length