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GRADE 1 • MODULE 2

Place Value, Comparison, Addition, and Subtraction of Numbers to 20

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Grade 1 • Module 2

Place Value, Comparison, Addition and Subtraction of Numbers to 20

OVERVIEW

Module 2 serves as a bridge from addition and subtraction strategies within 10 to using the unit ten to add and subtract within 20, setting the foundation for place value concepts.

In Topic A, students learn to treat ten ones as a unit called a “ten” (1.NBT.2a). Thus, a teen number can be thought of as ten and some ones (1.NBT2b) rather than 10 ones and some more ones (K.NBT.1). In order to internalize the notion of ten as a unit, students compose and decompose teen numbers with drawings, number bonds, Hide Zero cards, addition and subtraction equations.

In Topic B, students use this decomposition and realize that two teen numbers can be compared by looking just at the ones. They use the symbols >, <, =. The “hungry mouth” of the symbol is open to the greater number (1.NBT.3).

Having established ten as a unit, in Topic C students have their first experience with the manipulation of like units in a 2-digit number—working with the ones while leaving the ten alone. This entails the addition or subtraction of 3 numbers using the associative property explored first within word problems. (1.OA.2, 1.OA.3). For example, to solve 12 + 5, students decompose 12 into 10 and 2, “associate” 2 with 5 rather than with the ten and then solve 10 + 7, i.e. 12 + 5 = (10 + 2) + 5 = 10 + (2 + 5) = 10 + 7 = 17. The strategy of adding or subtracting the ones is also used in Modules 4 and 6 to solve problems such as 29 − 5, 24 + 4, 48 − 4, 42 + 7, 50 + 6, 87 − 3, etc.

After working within the teen numbers and gaining confidence in separating out the ten, in Topic D students use the “make ten” strategy for addition (1.OA.6). Students realize that within a problem with three addends, it is sometimes possible to use the any-order property to make a ten, i.e. 1 + 5 + 9 = (9 + 1) + 5 = 10 + 5 = 15. In the next lessons, students decompose the second addend to “make ten:” 9 + 6 = 9 + (1 + 5) = (9 + 1) + 5 = 10 + 5 = 15. This is another use of the associative property. The 1 is associated with the 9 to make ten.
(1.OA.3). Throughout this Topic, students can “count on” to add the two parts. With time, many will realize that to make ten is more efficient. Regardless of their solution strategy, they are nonetheless gaining an important orientation towards ten which is foundational to their understanding of place value. This “make ten” strategy will be applied in later modules to solve problems such as 18 + 6, 27 + 9, 36 + 6, 49 + 7, etc. (1.OA.3).

The mid-module assessment follows Topic D.

Topic E opens with a day devoted to fluency practice with decompositions relevant to subtraction from the teens: making ten from numbers 1 to 9, the ten plus facts. The module continues with 4 days dedicated to solving word problems, the first two days allow students to apply their make ten strategy from Topic D, the second two lessons transition the students from addition to subtraction through solving the familiar “Take Apart” and “Take From” word problem types (1.OA.1). The teacher is encouraged to allow students to use whatever math drawing and strategy they choose, but to debrief the word problems juxtaposing the “take from ten” strategy with counting on. The same image (seen below) is perfect for modeling both strategies.

Topic F gives the students time to practice the take from ten subtraction strategy embedded within the word problems in Topic E. Lessons 23 and 24 present problems in which the number of ones in the teen number is very close to the number of ones of the subtrahend (13 – 4, 15 – 6, 12 – 4, etc.). In these cases, it might be easier to just “get to ten.” For example, 14 – 5 can be solved by subtracting 4 to get to ten and 1 more to get to 9, i.e. 14 – 5 = 14 – 4 – 1 = 10 – 1 = 9 (1.OA.6).

Topic G presents students with opportunities to solve “Compare/Difference unknown” and “Take From/Change Unknown” problems and strategize as they do so (1.OA.1). They bring all their learning from the module to bear on these more challenging word problem types while also reasoning about which strategy for solving is most efficient in different situations. The module closes with a culminating lesson to further solidify their understanding of the equal sign as it has been applied throughout the module. As in Lesson 17 in Module 1, they match equivalent expressions to construct true number sentences and explain their reasoning using words, pictures and numbers, e.g. 17 – 7 = 10 + 7 – 7, 9 + 1 + 5 = 9 + 6, 12 – 9 = 10 – 9 + 2, etc (1.OA.7).
Focus Grade Level Standards

Represent and solve problems involving addition and subtraction.

1.OA.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.¹

1.OA.2 Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.

Understand and apply properties of operations and the relationship between addition and subtraction.

1.OA.3 Apply properties of operations as strategies to add and subtract.² Examples: If 8 + 3 = 11 is known, then 3 + 8 = 11 is also known. (Commutative property of addition.) To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12. (Associative property of addition.)

1.OA.4 Understand subtraction as an unknown-addend problem. For example, subtract 10 – 8 by

¹ See Glossary, Table 1.
² Students need not use formal terms for these properties.
finding the number that makes 10 when added to 8.

Add and Subtract within 20.

1.OA.6 Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use mental 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).

Understand place value.

1.NBT.2 Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases:
   a. 10 can be thought of as a bundle of ten ones—called a “ten.”
   b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.

1.NBT.3 Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <.

Foundational Standards

K.OA.3 Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation (e.g., 5 = 2 + 3 and 5 = 4 + 1).

K.OA.4 For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation.

K.NBT.1 Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (such as 18 = 10 + 8); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.

Focus Standards for Mathematical Practice

MP.2 Reason abstractly and quantitatively. Students solve Compare/Difference Unknown problem types such as “Maria has 8 snowballs. Tony has 15 snowballs. Maria wants to have the same number of snowballs as Tony. How many more snowballs does Maria need to have the same number as Tony?” They write the equation 8 + __ = 15 to describe the situation, make ten or count up to 15 to find the answer of 7 and reason abstractly to make a connection to subtraction, that the same problem can be solved using 15 – 8 = __.
**MP.4** Model with mathematics: Students use 5-groups, number bonds and equations to represent decompositions when both subtracting from the teens and adding to the teens when crossing the ten.

**MP.7** Look for and make use of structure. This module introduces students to the unit “ten.”, Students use the structure of the ten to add within the teens, to add to the teens and to subtract from the teens. E.g. 14 + 3 = 10 + 3 + 4 = 17, 8 + 5 = 8 + 2 + 3 = 10 + 3 and conversely 13 − 5 = 10 − 5 + 3 = 5 + 3.

**MP.8** Look for and make use of repeated reasoning. Students realize that when adding 9 to a number 1-9, they can complete the ten by decomposing the other addend into “1 and ___.”
# Overview of Module Topics and Lesson Focus

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<th>Standards</th>
<th>Module Topics</th>
<th>Days</th>
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<td>1.NBT.2a</td>
<td><strong>Internalize 10 Ones as a Unit Called a Ten</strong></td>
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</tr>
<tr>
<td>1.NBT.2b</td>
<td>- Lesson 1: Compose a Ten and Some Ones and Decompose a Teen Number as a Ten and Some Ones with Math Drawings, Number Bonds and Addition Equations (13 is a ten and 3 ones; 13 = 10 + 3)</td>
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<tr>
<td>1.NBT.5</td>
<td>- Lesson 2: Represent decompositions of teen numbers using addition and subtraction sentences (e.g. 10 + 5 = 15 and 15 – 5 = 10)</td>
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<tr>
<td>1.OA.1</td>
<td>- Lesson 3: Represent decompositions of teen numbers using addition and subtraction of 10 within 20. 5 + 10 = __, 15 – 10 = __</td>
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<td></td>
<td>- Lesson 4: Solve “Take Apart/Addend Unknown” Word Problems Using Ten as a Unit (“16 flowers are in the garden. Ten are orange and the rest are blue. How many flowers are blue?”)</td>
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<td></td>
<td>Note: Addition of three numbers (1.OA.2) with sums within 10 will be introduced during fluency.</td>
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<tr>
<td>1.NBT.3</td>
<td><strong>Utilize Knowledge of a Unit of Ten to Compare Teen Numbers Using Symbols</strong></td>
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</tr>
<tr>
<td>1.NBT.2a</td>
<td>- Lesson 5: Decompose Teen Numbers to Make Comparisons Using the Symbols &gt;, &lt;, =</td>
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<tr>
<td>1.NBT.2b</td>
<td>- Lesson 6: Create and Interpret Comparison Number Sentences, Using the Symbols &gt;, &lt;, = Using the Terms “Greater Than,” “Less Than” and “Equal to” e.g. 13 &lt; 10 + 5, 10 + 2 = 2 + 10</td>
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<tr>
<td></td>
<td>Note: “Compare/ Difference Unknown” problems introduced as application problems within numbers to 10 in this Topic.</td>
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<tr>
<td>1.OA.2</td>
<td><strong>Apply Knowledge of Teen Numbers as a Ten and Some Ones to Solve Addition and Subtraction Problems without Crossing Ten</strong></td>
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<tr>
<td>1.OA.3</td>
<td>- Lesson 7: Solve “Result Unknown” Word Problems with Math Drawings that Call for the Addition of 3 Whole Numbers, 10 and 2 other numbers with a sum less than 10. E.g. “Mr. Ramos put 10 plums in Ani’s&quot;</td>
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<tr>
<td>1.OA.6</td>
<td></td>
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<tr>
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<tr>
<td>1.NBT.2b</td>
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</tbody>
</table>
### Lesson 8: Add a Teen Number to a Single-Digit Number with a Sum Less than 20 Using the Associate Property

\[
10 + 5 + 2 = (10 + 5) + 2 = 10 + 7
\]

### Lesson 9: Solve “Take Apart” Word Problems with Math Drawings Where the Total is Teen Number.  
E.g. “Mr. Ramos picked 17 apples. 2 were rotten. How many are not rotten?” Use dialogue to show that

\[
17 - 2 = (10 + 7) - 2 = 10 + (7 - 2) = 10 + 5 = 15
\]

### Lesson 10: Subtract from a Teen Number by Decomposing the Teen Number into a Ten and Some Ones Using Number Bonds and Subtracting Ones from Ones

\[
17 - 2 = (10 + 7) - 2 = 10 + (7 - 2) = 10 + 5
\]

### Lesson 11: Solve Word Problems with Math Drawings that Call for the Addition of 3 Whole Numbers, 2 of Which Make Ten.  
E.g. “Mr. Ramos is putting plums in his children’s lunch boxes. He put 7 plums in Ani’s, 5 plums in Sam’s, and 3 plums in Juliet’s. How many plums did Mr. Ramos put in all?”

### Lesson 12: Re-interpret the Sum of Three Whole Numbers as the Composition of a Ten and Some Ones (e.g. 8+3+2=10+3)

### Lesson 13: With 5-Group Drawings, Decompose One Addend and Compose a Part with 9 to Make a Ten e.g. 9+6 = 9+1+5 = 10+5 = 15

### Lesson 14: With 5-Group Drawings, Decompose One Addend and Compose a Part with 8 to Make a Ten e.g. 8+7 = 8+2+5 = 10+5 = 15 with Number Bonds

### Lesson 15: With 5-Group Drawings, Decompose One Addend and Compose a Part with Varied Addends (7,8, and 9) to Make a Ten with Number Bonds
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<td></td>
<td>Lesson 16: Practice Fluency with Partners to 10, Decompositions of Numbers to 10 and Subtraction of the Ones to “Get to the Ten”</td>
<td></td>
</tr>
</tbody>
</table>
|                 | Lesson 17: Make Ten to Solve “Put Together” and “Result Unknown” Word Problems with 2 Addends.  
  e.g. Maria has 8 snowballs. Tony has 7 snowballs.  
  How many snowballs do they have all together?  
  Compare Using the Make a Ten Method and Counting On. |      |
|                 | Lesson 18: Day 2 of Lesson 16  
  Lesson 19: Take from Ten to Solve “Take Away” and “Take Apart” Word Problems, , e.g. Solve 12 - 7 as 10 – 7 + 2 = 5.  
  e.g. Maria has 15 snowballs. She threw 7 at Tony.  
  How many snowballs does she have left?  
  Compare Counting On and Take from Ten Strategies. |      |
|                 | Lesson 20: Day 2 of Lesson 18 |      |
| 1.OA.3          | F  Decompose to Solve Subtraction Problems from the Teens with Solutions Less than Ten | 4    |
| 1.OA.6          |                                                                                   |      |
| 1.OA.7          |                                                                                   |      |
| 1.NBT.2a        |                                                                                   |      |
| 1.NBT.2b        |                                                                                   |      |
|                 | Lesson 21: Use the Take from Ten Method with Large Subtrahends of 7, 8 and 9. e.g. 13 – 9 becomes 10 – 9 (subtracting from the ten) + 3. |      |
|                 | Lesson 22: Day 2 of Lesson 20  
  Lesson 23: Use the Get to Ten Method with Subtrahends Close to the Number of Ones in the Teen Number. e.g. 12 – 4 = ? becomes 12 – 2 – 2 (to get to 10) – 1 = 9 |      |
|                 | Lesson 24: Day 2 of Lesson 22 |      |
| 1.OA.1          | G  Strategize to Solve “Compare/Difference Unknown” and “Take From/ Change Unknown” Word Problems | 5    |
| 1.OA.3          |                                                                                   |      |
| 1.OA.6          |                                                                                   |      |
| 1.OA.4          |                                                                                   |      |
| 1.OA.5          |                                                                                   |      |
  Represent Situation Equations with a Missing |      |
| 1.OA.7  | Addend, e.g. Solve $8 + \_ = 15$ as $8 + 2 + 5 = 15$ or by Counting On.  
  | 1.OA.8  | e.g. Maria has 8 snowballs. Tony has 15 snowballs. Maria wants to have the same number of snowballs as Tony. How many more snowballs does Maria need to have the same number as Tony?  
  |        |   ▪ Lesson 26: Relate Addition and Subtraction to Apply Counting On Strategies to Subtract from the Teens e.g. 12 - 9 can be thought of as $9 + \_ = 12$.  
  |        |   ▪ Lesson 27: Analyze Problems to Determine the Preferred Strategy for Subtracting, Take from Ten, Get to Ten, or Count On.  
  |        |   ▪ Lesson 28: Strategize to Solve “Take From/ Change Unknown” Problems. Represent Situation Equations with a Missing Addend, e.g. Solve $15 - \_ = 8$ as $8 + 2 + 5 = 15$ or by Counting On.  
  |        |   e.g. Maria has 15 snowballs. She threw some at Tony. Now she has 8 snowballs. How many did she throw at Tony?  
  |        |   ▪ Lesson 29: Further Understand the Meaning of the Equal Sign by Pairing Equivalent Expressions, Constructing True Number Sentences, and Explaining Using Words, Pictures and Numbers the Equivalence of Different Expressions e.g. $17 - 7 = 10 + 7 - 7 = 10$, $9 + 1 + 5 = 10 + 5 = 15$, and $12 - 9 = 10 - 1 + 2 = 3$.  
  |        |  
  |        | End-of-Module Assessment: Topics A - G (assessment 1 day, return 1 day, remediation or further applications 1 day) | 2  
  |        | Total Number of Instructional Days | 34  

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**Terminology**

**New or Recently Introduced Terms**
- A ten
- A ten and some ones
- Make ten

**Familiar Terms and Symbols**
- Number bonds
- 5-Groups
- Subtract
- Add
- Equals
- Partners to 10
- Teen numbers

**Suggested Tools and Representations**
- 5-groups
- Hide Zero cards
- Number bonds

**Scaffolds**

The scaffolds integrated into *A Story of Units* give alternatives for how students access information as well as express and demonstrate their learning. Strategically-placed margin notes are provided within each lesson elaborating on the use of specific scaffolds at applicable times. They address many needs presented by English language learners, students with disabilities, students performing above grade level, and students performing below grade level. Many of the suggestions are applicable to more than one population. The charts included in Module 1 provide a general overview of the lesson-aligned scaffolds, organized by Universal Design for Learning (UDL) principles. To read more about the approach to differentiated instruction in *A Story of Units*, please refer to the *How to Implement A Story of Units* document.

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3 These are terms and symbols students have seen previously.
4 Students with disabilities may require Braille, large print, audio, or special digital files. Please visit the website, www.p12.nysed.gov/specialed/aim, for specific information on how to obtain student materials that satisfy the National Instructional Materials Accessibility Standard (NIMAS) format.
### Assessment Summary

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<th>Standards Addressed</th>
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<td>Mid-Module Assessment Task</td>
<td>After Topic D</td>
<td>Constructed response with rubric</td>
<td>1.OA.2, 1.OA.3, 1.OA.6, 1.NBT.2a, 1.NBT.2b, 1.NBT.3</td>
</tr>
<tr>
<td>End-of-Module Assessment Task</td>
<td>After Topic G</td>
<td>Constructed response with rubric</td>
<td>1.OA.1, 1.OA.2, 1.OA.3, 1.OA.4, 1.OA.6, 1.NBT.2a, 1.NBT.2b, 1.NBT.3</td>
</tr>
</tbody>
</table>
1. Write the unknowns that make the number sentences true.

   a. \[10 + 7 = \underline{\quad} \quad \underline{\quad} = 15 - 10 \quad 14 - 4 = \underline{\quad}\]

   b. \[\underline{\quad} = 16 + 2 \quad 14 - 3 = \underline{\quad} \quad \underline{\quad} = 17 - 1\]

   c. \[7 + 3 + 4 = \underline{\quad} \quad 8 + 6 + 2 = \underline{\quad} \quad 1 + 6 + 9 = \underline{\quad}\]

2. Jerry counted 17 pennies in a bowl.

   a. Draw a number bond showing 17 with 10 as one part.

   b. Write an addition and a subtraction sentence using the numbers of your bond.

   \[
   \underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad} \quad \underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad}
   \]
c. Luis has 18 pennies. Use >, < or = to compare Jerry’s and Luis’ pennies

_____________________

d. Luis loses 2 pennies. Use >, < or = to compare Jerry’s and Luis’ pennies after Luis lost some.

_____________________

3. In Pam’s bowl of coins there were 6 new pennies and 9 old ones. How many pennies were there in all? Explain how you know using a labeled drawing and numbers.

Circle the method that best describes how you figured out the total number of pennies.

I counted all.     I counted on.     I made ten first.
4. Eva wants to show a kindergarten friend how to make ten to add 8 and 5. Draw a picture that Eva might draw to help the kindergarten student understand.

a. Eva wrote this to match her picture. Fill in the unknown to make a true number sentence.

\[ 8 + 5 = 10 + \_ \_ \_ \]

b. Eva says that \(8 + 5\) is also the same as \(4 + 3 + 6\). Is she correct? Use math drawings and numbers to show your thinking.

c. Jerry had 16 pennies. He lost 6 of them. Eva found them and put them in her pocket with 7 other pennies. Who has more pennies now? Explain your thinking using labeled drawings, numbers and < or >.
Mid-Module Assessment Task Standards Addressed

Represent and solve problems involving addition and subtraction.

1.OA.2 Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.

Understand and apply properties of operations and the relationship between addition and subtraction.

1.OA.3 Apply properties of operations as strategies to add and subtract. Examples: If $8 + 3 = 11$ is known, then $3 + 8 = 11$ is also known. (Commutative property of addition.) To add $2 + 6 + 4$, the second two numbers can be added to make a ten, so $2 + 6 + 4 = 2 + 10 = 12$. (Associative property of addition.)

Add and subtract within 20.

1.OA.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 $6 + 6 + 1 = 12 + 1 = 13$).

Understand place value.

1.NBT.2 Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases:

a. 10 can be thought of as a bundle of ten ones—called a “ten.”

b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.

1.NBT.3 Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols $>$, $=$, and $<$.
Evaluating Student Learning Outcomes

A Progression Toward Mastery chart is provided to describe steps that illuminate the gradually increasing understandings that students develop on their way to proficiency. In this chart, this progress is presented from left (Step 1) to right (Step 4). The learning goal for each student is to achieve Step 4 mastery. These steps are meant to help teachers and students identify and celebrate what the student CAN do now, and what they need to work on next.

<table>
<thead>
<tr>
<th>Assessment Task Item</th>
<th>STEP 1 Little evidence of reasoning without a correct answer.</th>
<th>STEP 2 Evidence of some reasoning without a correct answer.</th>
<th>STEP 3 Evidence of some reasoning with a correct answer or evidence of solid reasoning with an incorrect answer.</th>
<th>STEP 4 Evidence of solid reasoning with a correct answer.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The student is unable to do any component.</td>
<td>The student is unable to do a significant element of the task.</td>
<td>The student correctly answers most of the questions but makes a minor mistake.</td>
<td>The student correctly: ▪ draws a number bond with parts 10 and 6. ▪ writes an addition and subtraction number sentence corresponding to the number bond. ▪ Compares Jerry and Luis’ pennies by writing 16 &gt; 15 or 15 &lt; 16,</td>
</tr>
<tr>
<td>1.NBT.2a</td>
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<tr>
<td>1.NBT.2b</td>
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<tr>
<td>1.NBT.3</td>
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<tr>
<td>2</td>
<td>The student correctly answers 3 or less of the problems.</td>
<td>The student correctly answers at least 4 of the questions.</td>
<td>The student correctly answers at least 7 of the 9 questions.</td>
<td>The student correctly: ▪ answers all questions with ten. ▪ answers the three questions adding and subtracting within the teens ▪ answers the three questions with three addends.</td>
</tr>
<tr>
<td>1.OA.1</td>
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# A Progression Toward Mastery

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<tr>
<th>Level</th>
<th>Standards</th>
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<tbody>
<tr>
<td>3</td>
<td>1.OA.1, 1.OA.6, MP.1</td>
<td>The student’s answer is incorrect and there is no evidence of reasoning.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The student’s answer is incorrect but there is evidence of reasoning. For example, the student is able to write a number sentence.</td>
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<tr>
<td></td>
<td></td>
<td>The student’s answers is right but response is incomplete, maybe missing labels for the drawing or an addition sentence but essentially strong.</td>
</tr>
</tbody>
</table>
|       |           | The student correctly:  
- finds there are 16 pennies in Jorge’s bowl.  
- correctly draws and labels.  
- writes a corresponding number sentence.  
- chooses a strategy which from your best teacher estimate is accurate. |
| 4     | 1.OA.1, 1.OA.2, 1.OA.3, 1.OA.6, 1.NBT.2a, 1.NBT.2b, 1.NBT.3 | The student is unable to answer any component correctly. |
|       |           | The student is able to answer 1 component correctly. |
|       |           | The student is able to answer 3 of four components correctly. |
|       |           | The student correctly:  
- Draws a representation to show how to make ten.  
- Correctly fills in the 3 to complete a true number sentence.  
- Shows correct thinking to prove $8 + 5 = 4 + 3 + 6$.  
- Compares Jerry’s and Eva’s pennies correctly after calculating each’s totals. |
Name: Maria
Date: ________________

1. Write the unknowns that make the number sentences true.
   a) 10 + 7 = 17
   b) __ = 16 + 2
   c) 7 + 3 + 4 = __

   5 = 15 - 10
   14 - 3 = 11
   8 + 6 + 2 = __

   14 - 4 = 10
   16 = 17 - 1
   1 + 6 + 9 = 16

2. Jerry counted 17 pennies in a bowl.
   a. Draw a number bond showing 17 with 10 as one part.
      \[ \begin{array}{c}
      17 \\
      \hline
      10 \\
      \hline
      7 \\
      \end{array} \]
   b. Write an addition and a subtraction sentence using the numbers of your bond.
      \[ 17 = 10 + 7 \]
      \[ 17 - 7 = 10 \]
c. Luis has 18 pennies. Use >, < or = to compare Jerry’s and Luis’ pennies

\[ 18 > 17 \]

d) Luis loses 2 pennies. Use >, < or = to compare Jerry’s and Luis’ pennies after Luis lost some.

\[ 16 < 17 \]

3. In Pam’s bowl of coins there were 6 new pennies and 9 old ones. How many pennies were there in all? Explain how you know using a labeled drawing and numbers.

\[ 9 + 6 = 15 \]

Circle the method that best describes how you figured out the total number of pennies.

- I counted all.
- I counted on.
- I made ten first.
4. Eva wants to show a kindergarten friend how to make ten to add 8 and 5. Draw a picture that Eva might draw to help the kindergarten student understand.

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a. Eva wrote this to match her picture. Fill in the unknown to make a true number sentence.

\[ 8 + 5 = 10 + \underline{3} \]

b. Eva says that 8 + 5 is also the same as 4 + 3 + 6. Is she correct? Use math drawings and numbers to show your thinking.

\[
\begin{align*}
8 + 5 &= 13 \\
2 + 3 &= 10 \\
4 + 6 + 3 &= 13
\end{align*}
\]

c. Jerry had 16 pennies. He lost 6 of them. Eva found them and put them in her pocket with 7 other pennies. Who has more pennies now? Explain your thinking using labeled drawings, numbers and < or >.

\[
\begin{align*}
16 - 6 &= 10 \\
10 + 3 &= 13 \\
10 &< 13
\end{align*}
\]
1. Write the numbers that go in the blanks.

   a. \[ 9 + 6 = \underline{____} \quad \underline{____} = 8 + 5 \quad 7 + 9 = \underline{____} \]

   b. \[ 9 + \underline{____} = 13 \quad 8 + \underline{____} = 12 \quad 12 = \underline{____} + 7 \]

   c. \[ 12 - 9 = \underline{____} \quad 14 - 5 = \underline{____} \quad 13 - \underline{____} = 8 \]

   d. Write a related addition fact for each of the three problems in the last row in the spaces below.

   \[ \underline{____} \quad \underline{____} \quad \underline{____} \]
2. Mr. Baggy owns a pet store.
   a. He counted 12 goldfish in a tank. He took out some to sell. There were 9 left in the tank. How many did he remove? Explain your answer using a labeled math drawing and a number sentence.

   _____ goldfish were removed.

   b. Mr. Baggy has sold 8 snakes this week. His goal is to sell 13 snakes. How many more snakes does he need to sell to make his goal? Show your thinking by making a labeled drawing and a number sentence.

3. Mr. Baggy has 11 starfish and 14 lizards.
   a. Mr. Baggy sold 8 starfish. Make a math drawing to show how to solve 11 - 8 the "take from 10" way.

   b. Mr. Baggy took out 5 lizards. Make a math drawing to show 14 - 5 = 9 the "get to ten" way.
4. Mr. Baggy also has 8 little white mice, 15 finches, 14 small turtles.
   a. Show number bonds with one part ten for the number of turtles and one for the number of finches. Use <,>,= to compare the number of finches and turtles.

   b. How many more finches than mice does Mr. Baggy have? Explain your answer by making a math drawing and number sentence.

   c. Write a subtraction and an addition number sentence with a blank for the unknown that you could use to find out how many more turtles than mice Mr. Baggy has.

   d. Mr. Baggy sold 4 mice, 7 finches and 6 turtles to one customer. How many animals did the customer buy in all?
Standards Addressed

**Represent and solve problems involving addition and subtraction.**

1.OA.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.

1.OA.2  Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.

**Understand and apply properties of operations and the relationship between addition and subtraction.**

1.OA.3  Apply properties of operations as strategies to add and subtract.\(^1\) Examples: If 8 + 3 = 11 is known, then 3 + 8 = 11 is also known. (Commutative property of addition.) To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12. (Associative property of addition.)

1.OA.4  Understand subtraction as an unknown-addend problem. For example, subtract 10 – 8 by finding the number that makes 10 when added to 8.

**Add and Subtract within 20.**

1.OA.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).

**Understand place value.**

1.NBT.2  Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases:

a. 10 can be thought of as a bundle of ten ones—called a “ten.”

b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.

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\(^1\) Students need not use formal terms for these properties.
1.NBT.3 Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <.

Evaluating Student Learning Outcomes

A Progression Toward Mastery chart is provided to describe steps that illuminate the gradually increasing understandings that students develop on their way to proficiency. In this chart, this progress is presented from left (Step 1) to right (Step 4). The learning goal for each student is to achieve Step 4 mastery. These steps are meant to help teachers and students identify and celebrate what the student CAN do now, and what they need to work on next.

A Progression Toward Mastery

<table>
<thead>
<tr>
<th>Assessment Task Item</th>
<th>STEP 1</th>
<th>STEP 2</th>
<th>STEP 3</th>
<th>STEP 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.OA.4 1.OA.6</td>
<td>Little evidence of reasoning without a correct answer. (1 Point)</td>
<td>Evidence of some reasoning without a correct answer. (2 Points)</td>
<td>Evidence of some reasoning with a correct answer or evidence of solid reasoning with an incorrect answer. (3 Points)</td>
<td>Evidence of solid reasoning with a correct answer. (4 Points)</td>
</tr>
</tbody>
</table>

1. The student completes 3 or less problems successfully.
2. The student is able to complete at least 4 problems successfully.
3. The student is able to complete at least 6 problems successfully. May struggle with missing addends and subtrahends.
4. The student correctly:
   - Completes set a adding two addends crossing the ten.
   - Completes set b finding a missing addend crossing the ten.
   - Completes set c subtracting from the teens crossing the ten and with a missing addend as the subtrahend.
| 2 | 1.OA.1 1.OA.6 | The student is unable to answer either of the questions correctly | The student answers 1 of the questions correctly. | The student answers the questions correctly but is not thorough in the responses for example, missing a number sentence for one of the solutions. | The student correctly:  
- shows a complete solution for how many were removed in this Take From/ Change Unknown problem.  
- shows a complete solution for how many are needed to make the goal in the Add to/Change Unknown problem. |
|---|---|---|---|---|---|
| 3 | 1.OA.1 1.OA.3 1.OA.6 | The student shows little understanding of making a math drawing showing an organized ten with some ones. | Is not able to model the methods correctly but is able to draw the totals correctly and show an understanding of subtracting from the model. | Models one of the methods correctly. | The student correctly:  
- Models how to solve 11 – 8 the take from 10 way.  
- Models 14 -5 the “get to ten” way. |
| 4 | 1.OA.1 1.OA.2 1.OA.3 1.OA.4 1.OA.6 1.NBT.2a 1.NBT.2b 1.NBT.3 | Answers 1 or less questions correctly. | Answers 2 of the questions correctly with all accompanying models. | Answers 3 of the four questions correctly and with all requested models and number sentences. | The student correctly:  
- Represents 14 and 15 with number bonds and compares them with an appropriate symbol.  
- Find Mr. Baggy has 7 more finches than mice and shows a number sentence and drawing.  
- Writes and addition and subtraction sentence with blanks to solve for how many more turtles than mice Mr. Baggy has.  
- Finds how many animals Mr. Baggy sold by adding 4, 7, and 6. |
1. Write the numbers that go in the blanks.

a) \[ 9 + 6 = \underline{15} \]
\[ 13 = 8 + 5 \]
\[ 7 + 9 = \underline{16} \]

b) \[ 9 + \frac{4}{5} = 13 \]
\[ 8 + \frac{4}{5} = 12 \]
\[ 12 = \frac{5}{7} + 7 \]

c) \[ 12 - 9 = \underline{3} \]
\[ 14 - 5 = \underline{9} \]
\[ 13 - \frac{5}{7} = 8 \]

Write a related addition fact for each of the three problems in the last row in the spaces below.

d) \[ 3 + 9 = 12 \]
\[ 9 + 5 = 14 \]
\[ 8 + 5 = 13 \]
2. Mr. Baggy owns a pet store.
   a) He counted 12 goldfish in a tank. He took out some to sell. There were 9 left in the tank. How many did he remove? Explain your answer using a labeled math drawing and a number sentence.
   
   \[
   \begin{array}{c}
   \text{removed} \\
   12 - 9 = 3 \\
   \text{left} \\
   10 \ 1
   \end{array}
   \]
   
   \[
   3 \text{ goldfish were removed.}
   \]
   b) Mr. Baggy has sold 8 snakes this week. His goal is to sell 13 snakes. How many more snakes does he need to sell to make his goal? Show your thinking by making a labeled drawing and a number sentence.
   
   \[
   \begin{array}{c}
   \text{sold} \\
   8 + 5 = 13 \\
   \text{need}
   \end{array}
   \]

3. Mr. Baggy has 11 starfish and 14 lizards.
   a) Mr. Baggy sold 8 starfish. Make a math drawing to show how to solve 11 - 8 the "take from 10" way.
   
   \[
   11 - 8 = 3
   \]
   b) Mr. Baggy took out 5 lizards. Make a math drawing to show 14 - 5 = 9 the "get to ten" way.
   
   \[
   14 - 5 = 9
   \]
4) Mr. Baggy also has 8 little white mice, 15 finches, 14 small turtles.

a) Show number bonds with one part ten for the number of turtles and one for the number of finches. Use <, >, = to compare the number of finches and turtles.

\[
\begin{align*}
14 & < 15 \\
10 & 4 \\
10 & 5
\end{align*}
\]

b) How many more finches than mice does Mr. Baggy have? Explain your answer by making a math drawing and number sentence.

\[
\begin{align*}
15 - 8 & = 7 \\
\underline{8 + \square} & = 15 \\
\underline{\text{mice}} & \\
\underline{\text{finches}}
\end{align*}
\]

c) Write a subtraction and an addition number sentence with a blank for the unknown that you could use to find out how many more turtles than mice Mr. Baggy has.

\[
14 - 8 = \square \\
8 + \square = 14
\]

d) Mr. Baggy sold 4 mice, 7 finches and 6 turtles to one customer. How many animals did the customer buy in all?

\[
4 + 6 + 7 = 17
\]