Math Perspectives Teacher Development Center

Assessing Math Concepts

Understanding the Instructional Levels

By Kathy Richardson

The Assessing Math Concepts Instructional Levels identify the particular level of insight and facility a student has reached with a given mathematical concept. They are organized into categories that describe the kind of instruction the student needs. The following describes what each Instructional Level means in general. However, the Instructional Levels for each assessment are defined with very specific indicators, thus providing teachers the information they need to provide appropriate and effective instruction.

Ready to Apply (A) – The student can already do a particular task and is ready to use this skill in other settings.

Needs Practice (P) – The student can do a particular task with some level of effort but still needs more experiences to develop facility and consistency.

Needs Instruction (I) – The student has some idea of what a task is about but needs support.

Needs Prerequisite (N) – The student does not yet understand the concept and needs to work with mathematical ideas that precede the concept being assessed.

The Size of the Number(s) When determining the instructional level, the size of the number must be taken into consideration. For example, a child may know how many to add or take away from a number without counting for Numbers to 6, but need to count on to change Numbers to 10, or need to start counting from 1 to change Numbers to 20.

The Shapes and Colors The shapes and colors are used on the online Instructional Report to give teachers a visual picture of how their students are doing. The shapes are highlighted to show what the child knows (highest A) and what they need to work on (the lowest P–or I or N) in those cases where the child has not yet reached the P level.

- **(A)** Ready to Apply (Green Rhombus**)**
- **(A-)** Almost Ready to Apply (Yellow Circle)
- **(P)** Needs Practice (Yellow Circle)
- **(I)** Needs Instruction (Blue Triangle)
- **(N)** Needs Prerequisite (Reddish Square)

Assessment 1: Counting Objects

Part One: Counting Objects

Task 1: Counting a Pile

Focus Question: Can the student count confidently and accurately to find out how many?

The responses that determine the instructional level are:

1) knowledge of the rote sequence,
2) method of counting,
3) keeping track,
4) knowing how many counted.

When determining the instructional level, the size of the number must be taken into consideration. For example, a child may know how many he counted after counting a pile of 12, but not remember where he landed after counting a pile of 32; or a child may be able to count out a pile of 9 but not be able to count out a pile of 18.

Ready to Apply

(A) Counts correctly; knows how many; does not line up first
(A–) Counts almost correctly; leaves out a number or doesn't know how many

Needs Practice

(P) Counts with some difficulty, may be off by one or two, or lines up first

Needs Instruction

(I) Can't keep track
(I–) Can't count one-to-one

Task 2: Making a Pile

Focus Question: Can the children count out a particular amount?

Ready to Apply

(A) Counts out the quantity asked for with ease and accuracy
(A-) Counts past the quantity asked for but self-corrects

Needs Practice

(P) Counts out the quantity but is not correct

Needs Instruction

(I) Counts past, doesn't notice

Part Two: One More/One Less

Task 3: One More and One Less (In Sequence)

The instructional level is determined by the number of times the student can add one or take one away without counting, and the number of errors.

Focus Question: Does the student know one more (or one less) in sequence without counting?

Ready to Apply

(A) Knows one more (or one less) without counting for 3 (out of 3), with no errors

(A–) Knows one more (or one less) without counting for 2 (out of 3), but says the rote sequence (counts under his or her breath) one time, with no error

Needs Practice

(P) Knows one more (or one less) without counting for 2 (out of 3) but counts to figure out one number, or makes 1 error

Needs Instruction

(I) Knows without counting, or uses the rote sequence (counts under their breath) for 1 (out of 3)

Needs Prerequisite

(N) Counts to find out for one more (or one less) for 3 (out of 3), or makes 3 errors

Task Four: One More and One Less (Not in Sequence)

Focus Question: Does the student know one more (or one less) without counting when the numbers are presented out of sequence?

Adding 1 more to/taking 1 away from numbers presented out of sequence is more difficult than when the numbers are presented in sequence, but the criteria are the same as for Task Three. The instructional level is determined by the number of times the student can add one or take one away without counting, and the number of errors.

Ready to Apply

(A) Knows one more (or one less) without counting for 3 (out of 3) numbers, with no errors

(A-) Knows one more (or one less) for 2 (out of 3) but needs to say the rote sequence (under their breath) for 1 number

Needs Practice

(P) Knows one more (or one less) for 2 (out of 3) without counting, but needs to count to figure out 1 number; or makes 1 error

Needs Instruction

(I) Knows one more (or one less) for 1 (out of 3); **or** uses the rote sequence for 1 number

Needs Prerequisite

(N) Counts to find out one more (or one less) for 3 (out of 3) numbers; **or** makes 3 errors

Extension: One More/One Less Over the Decades

Focus Question: Does the student know one more (or one less) without counting when presented numbers out of sequence that go over the decades?

The extension is, by definition, an assessment task that not all children being assessed with Counting Objects will be expected to reach. It does, however, efficiently assess children's ability to count to 100. It does this by asking children to show they know, for example, what number comes after 29 or 69. Going over the decades is the number pattern that is most critical to know when counting to 100. A child who appears to be able to count to 100 but who is unable to identify "what comes next" when given a number in isolation does not really understand what is essential for counting to 100. It may be that they have learned to count in the same way one might learn to sing a song in a foreign language without an understanding of what one is saying. Children who do know one more over the decades can be assessed to see if they know the pattern well enough to know what "comes before" for numbers such as 30 or 70.

Ready to Apply

(A) Knows one more (or one less) without counting for 3 (out of 3) numbers, with no errors

(A-) Knows one more (or one less) for 2 (out of 3) numbers but needs to say the rote sequence (under their breath) for 1 number

Needs Practice

(P) Knows one more (or one less) for 2 (out of 3) numbers without counting, but needs to count to figure out 1 number; **or** they make 1 error

Needs Instruction

(I) Knows one more (or one less) for 1 (out of 3) numbers; **or** uses the rote sequence for 1 number

Needs Prerequisite

(N) Counts to find out one more (or one less) for 3 (out of 3) numbers; **or** makes 3 errors

Assessment 2: Changing Numbers

Level 1: Adds On or Takes Off to Change a Number

Focus Question: Can the child add/take away the appropriate number of objects to change one number into another? If so, how do they determine how many to add on/take away?

The purpose of Level 1 is to find out whether children understand that one number is contained in another number. There are two ways that children can demonstrate this level of thinking. One way is to add on or take off the appropriate number of objects. So, for example, a child would change 5 to 8 by getting 3 counters and adding them on, or she would change 8 to 6 by taking 2 counters away. Another way children can show an understanding of this concept is by counting on (or counting back)–but only if they are aware of the number added on or removed. To understand that one number is part of another number, the child must "see" both numbers when they are combined or separated. When a child counts on (or back) but is not aware of the number added on or taken away, from the child's point of view, the first number has merged into the other number and has "disappeared." This reveals that the child is not yet not fully cognizant of the parts that make up numbers.

Ready to Apply

(A) Adds on a group, or counts on and says how many added; **or** removes a group; **or** counts back and says how many removed 3 (out of 3) times with no errors

Needs Practice

(P+) Adds on a group, or counts on and says how many added; **or** removes a group; **or** counts back and says how many removed 2 (out of 3) times with no errors

(P) Counts on or back 2 or 3 times but does not know how many added or taken away 2 or more times

(P-) Adds some, checks and fixes 2 or 3 times

Needs Instruction

(I) Counts all 2 or 3 times; **or** changes the number correctly at least 2 times but needs to count starting with 1 in order to do it

Needs Prerequisite

(N) Unable to change the number 2 or 3 times; usually makes a new pile or adds on to the total number

Level 2): Describes Number Needed to Change a Number

Focus Question 2: Can the child say how many they added or took away to make the number? If so, do they know how many or do they need to figure it out?

Ready to Apply

(A) Says number added or taken away 3 (out of 3) times with no errors

(A-) Says number added or taken away but checks 1 to 3 times

Needs Practice

(P) Says number added or taken away for all 3, but makes 1 error; **or** figures out number added or taken away 2 or 3 times (may make error)

Needs Instruction

(I) Can say the number added or taken away 1 time only; **or** makes 2 errors

Needs Prerequisite

(N) Unable to tell how many added or taken away; **or** makes 3 errors

Assessment 3: More/Less Trains

Focus Question: Can students use what they know about one quantity to determine another?

Level 1: Using One Train to Determine Another

The instructional levels are by determined by the number of times the student uses one train to determine the other

Ready to Apply

(A) Uses one train to figure out the other train 3 times

(P) Uses one train to figure out the other 2 out of 3 times, may count all 1 time or make an error

Needs Instruction

(I) Uses one train to figure out the other 1 time, usually when the difference is 1

Needs Prerequisite

(N) Uses one train to figure out the other 0 times

Level 2: Finding the Difference between Trains

Focus Question: Can students tell how many more or less one number is than another?

The instructional levels are determined by the number of times the student is able to tell the difference between the trains.

Ready to Apply

(A) Tells how many more or less 3 (out of 3) times with no errors

Needs Practice

(P) Tells how many more or less 2 (out of 3) times

Needs Instruction

(I) Tells how many more or less 1 (out of 3) times

Needs Prerequisite

(N) Tells how many more or less 0 (out of 3) times, usually tells the number in the group with more

Level 3: Finding the Difference between Groups

Ready to Apply

(A) Tells how many more or less 3 (out of 3) times with no errors

Needs Practice

(P+) Tells how many more or less 2 (out of 3 times) and finds out by matching 1 time

(P) Tells how many more or less 2 (out of 3 times) with 1 error; **or** finds out by matching 2 or 3 times

Needs Instruction

(I) Tells how many more or less 1 (out of 3) times; may know the difference or match the cubes to find out

Needs Prerequisite

(N) Tells how many more or less 0 (out of 3) times; usually tells the number in the group with more

Assessment 4: Number Arrangements

Prerequisite: Recognizes Small Groups (groups of 3, 4, 5)

Focus Question: Can the students recognize small groups without counting?

Only those children who are unable to see groups larger than two for the first two cards will be assessed on this section.

Ready to Apply

(A) Recognizes (knows) groups without counting for all 4 cards presented

Needs Practice

(P) Recognizes (knows) groups without counting for 2 or 3 cards

Needs Instruction

(I) Recognizes (knows) a group without counting for 1 card

Needs Prerequisite

(N) Does not recognize (know) any groups without counting; **or** makes 2 or more errors

Level 1: Identifies Parts of Numbers

Focus Question: Can the students see and describe parts of numbers within larger numbers?

By finding out what groups the students recognize, we can determine whether the student is seeing a collection of "ones," is seeing groups of two, or is able to see larger groups. We can also tell if a student always describes the same group or if they are flexible depending on the arrangement.

Ready to Apply

(A) Identifies groups of 4 or more on at least 2 cards, and 3 or more on the rest of the cards

Needs Practice

(P) Identifies groups of 3 on 3 or more cards, may identify a group of 4 on 1 card

Needs Instruction

(I) Identifies groups of 3 or larger on 2 of the 6 cards

Needs Prerequisite

(N) Does not identify groups of 3 or larger

Level 2: Combines Parts

Focus Question: Can the students use the parts they see to determine the total number of dots on a card?

Adding parts and using a related combination are both considered desired responses. Seeing relationships is an important part of understanding the composition of numbers. A child who uses a related combination to determine the total would say, for example, "I know 3 and 3 is 6 so 3 and 4 is 7.

Ready to Apply

(A) Adds parts (or uses a related combination) for 4 or more cards, may count *on* for 2 of the cards but does not count *all* for any of the cards

Needs Practice

(P+) Adds parts (or uses a related combination) for 4 or more cards, counts *on* for 3 of the cards but does not count *all* for any of the cards or make any errors

(P) Counts all of the dots on 1 or 2 of the 6 cards; **or** may make 1 error

(**P-**) Counts all of the dots on 3 out of the 6 cards; **or** may make 2 errors

Needs Instruction

(I) Counts all for 4 of the 6 cards

Needs Prerequisite

(N) Counts all for 5 or 6 out of 6 cards; **or** makes 3 or more errors

Assessment 5: Number Combinations

Focus Questions:

1. What combinations do students know without counting?

2. Can students use combinations they know to figure out combinations they don't know?

Each combination train provides the opportunity to check three different number combinations at three different levels of difficulty. The instructional level is determined by organizing the sums into Numbers to 6, Numbers to 10, and Numbers to 20 and determining the instructional level within each range of numbers.

Numbers to 6	Numbers to 10	Numbers to 20
2 + 2	3 + 4	6 + 7
2 + 3	4 + 4	8 + 8
3 + 3	4 + 5	8 + 9

Ready to Apply

(A) Knows without counting or uses relationships for 3 (out of 3) equations

Needs Practice

(P+) Knows without counting or uses relationships for 2 (out of 3) equations

(P) Knows without counting or uses relationships for 1 (out of 3) equations

(P-) Knows without counting or uses a related combination or counts on for 1 equation; may count all for 1 equation or make 1 error

Needs Instruction

(I) Counts all for 2 (out of 3), may have 1 error

Needs Prerequisite

(N) Counts all for 3 (out of 3) or makes 2 or 3 errors

Assessment 6: The Hiding Assessment

Focus Questions:
1. Can students use what they know about addition to figure out subtraction?
2. Can they tell the missing part of a number (subtract) without having to figure it out?

The goal is for students to know the parts of numbers through 10 so well they do not need to figure them out and can use them in solving problems involving larger numbers. When children have to figure out some of the combinations for a number, they still need practice until they know all the parts with ease. At a certain stage of thinking, children will be able to use a strategy like counting on to determine the missing part for any number and usually get the right answer. However, while this is a sign of growth, it is not an indication that the child knows the combinations. And so it is important that teachers recognize the difference between being able to figure out and actually knowing. If children are figuring out most of the combinations for a number, they need to be guided in their practice to try to think about what is missing before counting to find out.

Hiding Assessment Part One: with Counters

Ready to Apply

(A) Knows all parts quickly, no errors

Needs Practice

(P+) Knows all but 1 part quickly, no errors, no counting all; may count on or back or use relationships for 1 combination

(P) Figures out 2 or more, may have 1 error, may not count all

(P-) May have 1 error, counts all for up to half of the combinations

Needs Instruction

(I) Counts all for more than half of the combinations, may have 2 errors

Needs Prerequisite

(N) Makes 3 or more errors or guesses

Hiding Assessment Part Two: without Counters

Once children identify missing parts of numbers quickly and easily when asked to think about them mentally, we can feel confident they know them and will be able to use them in problem-solving situations and when learning about larger numbers.

Ready to Apply

(A) Knows all parts quickly, no errors

Needs Practice

(P+) Knows all but 1 part quickly, no errors, no counting all; may count on or back or use relationships for 1 combination

(P) Figures out 2 or more, may have 1 error, may not count all

(P-) May have 1 error, counts all for up to half of the combinations

Needs Instruction

(I) Counts all for more than half of the combinations, may have 2 errors

Needs Prerequisite

(N) Makes 3 or more errors or guesses

Assessment 7: Ten Frames

Focus Questions: Can students combine tens and ones without counting? Can they break apart the number added to make a ten and leftover ones and tell how many altogether without counting?

Part One: Ten Frames – Addition

Level 1: Adds 1 to a Ten (10 + 9, 6 + 10)

Ready to Apply

(A) Knows both 10 + 9 and 6 + 10 without any counting or errors

Needs Practice

(P) Knows either 10 + 9 or 6 + 10 and is able to count on from ten for the other

Needs Instruction

(I) Knows either 10 + 9 or 6 + 10 and counts all for the other, or they make an error

Needs Prerequisite

(N) Is not able to add to 10 so counts all the stars, or makes 2 errors

Level 2: Knows Parts of Numbers

When children add by making a ten and leftovers, they need to know the parts of ten and the parts of the numbers being added to ten. Children may appear to know the parts to 10 when assessed on the Hiding Assessment, but in Ten Frames, they have to apply what they know about parts.

Ready to Apply

(A) Knows 4 (out of 4) parts

Needs Practice

(P+) Knows 3 (out of 4) parts, counts on for 1, no errors

(P) Knows 2 (out of 4) parts, counts 2, no errors; **or** knows 3 or 4 (out of 4) parts with 1 error

(P-) Knows 2 (out of 4) parts, with1 error

Needs Instruction

(I) Knows 1 (out of 4) parts, may have 1 error

Needs Prerequisite

(N) Counts all or guesses, or makes 2 or more errors

Level 3: Makes a Ten and Adds Ones

Children can often add 10 and a number of ones with ease, but find it much more difficult if they have to break up numbers to make the ten with some leftovers. They can't just rely on the pattern of adding 10 and some more but must hold the ten in mind as a unit.

Ready to Apply

(A) Makes a ten and combines with ones for 3 (out of 3) without counting, no errors

Needs Practice

(P+) Makes a ten and combines with ones for 2(out of 3) without counting, and counts on from 10 for 1, with no errors

(P) Makes a ten and combines with ones for 2 (out of 3) without counting, counts on from the

number of stars on the ten frame for 1, no errors; **or** makes a ten and combines with ones for 1 (out of 3) without counting, and counts on from 10 for 2, no errors; **or** makes a ten and combines with ones for 3 (out of 3) without counting, with 1 error

(P-) Combines 2 (out of 3) without counting, makes 1 error or counts all the stars for 1

Needs Instruction

(I) Counts on from 10 for 3 (out of 3); **or** counts on from the number of stars; **or** counts all the stars for 1 or 2 (out of 3)

Needs Prerequisite

(N) Counts all or counts on from the number of stars in the ten frame for 2 (out of 3)

Extension: Recognizes Ten More

This question is designed to see whether children recognize the relationship between "8 + 7" and "18 + 7," and to see whether they use the concept of making tens when adding larger numbers.

Ready to Apply

(A) Adds ten to the previous total

Needs Practice

(P) Does not use previous total but does a "new" problem by making 20 + 3

Needs Instruction

(I) Counts on to determine how many

Needs Prerequisite

(N) Cannot do the task; **or** needs to count all to determine how many

Part Two: Ten Frames – Subtraction

Level 1: Subtracting a Ten from Ones

Before children can use making tens as a strategy for subtracting from numbers to 20, they need to be able to decompose teen numbers into one 10 and some ones without counting.

Ready to Apply

(A) Knows the number of leftover ones for 3 (out of 3), no errors

Needs Practice

(P) Knows the number of leftover ones for 2 (out of 3) and counts on 1 (out of 3), no errors

(P-) Knows the number of leftover ones for 2 (out of 3) and counts on 1 (out of 3), with 1 error

Needs Instruction

(I) Knows the number of leftover ones for 1 (out of 3), may have 1 error

Needs Prerequisite

(N) Knows the number of leftover ones for 0 (out of 3); **or** has 2 or more errors

Level 2: Knows Parts of Numbers

When children subtract by breaking up a number in order to take away what is needed to get to ten and what is left to take away, they need to know the parts of the numbers need to get to 10 and what is left to take away. Children may appear to know the parts to 10 when assessed on the Hiding Assessment, but in Ten Frames, they have to apply what they know about parts.

Ready to Apply

(A) Knows parts for 3 (of 3), no errors

Needs Practice

(P) Knows parts for 3 (out of 3) with 1 error; **or** knows parts for 2 (out of 3) and counts 1

(P-) Knows parts for 2 (out of 3), with 1 error

Needs Instruction

(I) Knows parts for 1 (out of 3), may have 1 error

Needs Prerequisite

(N) Knows parts for 0; **or** has 2 or more errors

Level 3: Making a Ten and Subtracting Ones from the Ten

Ready to Apply

(A) Knows remaining parts of ten for 3 (of 3), no errors

Needs Practice

(P) Knows remaining parts of ten 3 (out of 3) times with 1 error; **or** knows remaining parts of ten for 2 (out of 3) times and counts 1

(P-) Knows remaining parts of ten 2 (out of 3) times, with 1 error

Needs Instruction

(I) Knows remaining parts of ten 1 (out of 3) times, may have 1 error.

Needs Prerequisite

(N) Knows remaining parts of ten 0 (out of 3) times; **or** has 2 or more errors

Extension: Recognizing Ten More

This question is designed to see whether children recognize the relationship between "13 - 6" and "23 - 6," and know the problem is the same, except they are starting with one more ten.

Ready to Apply

(A) Adds ten to the previous answer

Needs Practice

(P) Does not relate to previous answer and makes 20 – 3

Needs Instruction

(I) Counts on to determine how many

Needs Prerequisite

(N) Cannot do the task; **or** needs to count all to determine how many

Assessment 8: Grouping Tens

Focus Questions:

Level 1: Can students show the value of the 1 in the tens place? Can students decompose a teen number into a ten and some ones?

Level 2: Can students tell the total amount of a group of objects if they know the number of tens and ones? Can they add ten more without counting? Can they take ten away without counting?

Level 3: Can students add and subtract groups of ten without counting?

Level 1: Decomposing Tens and Ones to 20

There are 3 answers given at this level:

1) 1 in 13 is worth 10
2) 17 has 1 ten
3) 17 has 7 ones

Ready to Apply

(A) Knows 3 (out of 3), no errors
The student knows that the 1 in 13 represents ten; decomposes 17 into 1 ten and leftovers.

Needs Practice

(P) Knows 2 (out of 3) responses
The student does not know how to show what the 1 in number represents or is unable to tell the number of leftovers when ten is taken away from a teen number.

Needs Instruction

(I) Knows 1 (out of 3) responses
The student may know that there is 1 ten in 17 but is unsure of how many ones there are and not know how to show what the 1 in 13 means.

Needs Prerequisite

(N) Knows 0 (out of 3) responses
The student does not show an understanding of teen numbers being made up of one ten and some ones and most likely thinks of these numbers as a group of ones.

Level 2: Composing Tens and Ones to 100

The instructional levels for Level 2 are determined by considering all the responses the children make. These include:

1) Identifies the number of tens in estimate
2) Combines tens and ones
3) Adds 10
4) Subtracts 10

Ready to Apply

(A) Knows number of tens in estimate, combines tens and ones without counting, adds 10 without counting, and subtracts 10 without counting, with no errors.

Needs Practice

(P+) Does not correctly tell the number of tens in the estimate, knows all other responses

(P) Combines tens and ones without counting, but needs to count to either add 10, or take 10 away

(P-) Can combine tens and ones without counting, but needs to count both to add 10 and to take 10 away

Needs Instruction

(I) Counts by tens to combine tens and ones

Needs Prerequisite

(N) Counts all to combine tens and ones

Level 3: Adds/Subtracts Groups of Tens

This section of the assessment determines whether the students can add and subtract groups of tens without counting. If they are able to think of tens as units, they will be able to add 3 tens as easily as 3 ones and take away 4 tens as easily as 4 ones.

Ready to Apply

(A) Correctly adds groups of tens, and subtracts groups of tens without counting

Needs Practice

(P) Can correctly add groups of tens; **or** subtract groups of tens without counting

Needs Instruction

(I) Counts by tens to add and subtract groups of tens; **or** makes 1 error when adding or subtracting groups of tens

Needs Prerequisite

(N) Counts by ones to add and/or subtract groups of tens; **or** makes 2 errors when adding and subtracting groups of tens

Assessment 9: Two-Digit Addition and Subtraction

Focus Question: Can students use their knowledge of tens and ones to add and subtract two-digit numbers without counting?

The instructional levels are determined in the same way for both Part One: Addition and Part Two: Subtraction. This assessment is intended to find out if students understand what happens to the numbers when they add and subtract by making and breaking up tens.

Level 1 allows them to use the model as a referent, but they should not move it, touch it, or use it in any way to figure out the answer. If they need to move it, they are not thinking about what is happening and need more experiences before doing this assessment.

Level 2 determines whether the students can imagine what is happening to the numbers when no part of the model is visible but the tens and ones are still represented by concrete objects.

Level 3 determines whether the students can solve a problem when no physical model is present and then, whether they can use a model to show the way they solved it.

Level 1: Solving Problems Using a Model

Addition: (28 + 16, 26 + 27)
Subtraction: (33 - 14, 53 - 27)

Ready to Apply

(A) Knows the number combinations needed to make tens and left over ones for 2 (out of 2) problems, without error

Needs Practice

(P+) Uses tens and ones, but counts to figure out the parts for 1(out of 2) problems
(P) Uses tens and ones but counts to figure out the parts for 2 (out of 2) problems
(P-) Ignores the tens and ones represented by the model and visualizes the problem as though it were written for 2 (out of 2) problems, or for 1 problem with an error

Needs Instruction

(I) Counts for 1 (out of 2) problems; **or** touches/moves model for 1 out of 2 problems

Needs Prerequisite

(N) Unable to solve problems using tens and ones, counts to arrive at the answer; **or** touches or moves the model to solve both problems

Level 2: Solving Problems with Model Covered

Addition: (36 + 25)
Subtraction: (41 - 26)

Ready to Apply

(A) Solves the problem using known combinations, without uncovering model, without counting, and without errors

Needs Practice

(P) Solves the problem without uncovering the model but needs to count to make or break up the tens

(P-) Ignores the tens and ones and tries to solve the problem by visualizing it as though it were written on paper

Needs Instruction

(I) Uncovers the model in order to solve the problem

Needs Prerequisite

(N) Uncovers the model and touches or moves it to solve the problem

Level 3: Solves Symbolic Problem

The goal is for students to understand the structure of numbers as tens and ones and to use that knowledge to solve problems with understanding. If they use the traditional algorithm, they need to demonstrate an understanding of what is happening to the numbers when they add and subtract.

Ready to Apply

(A) Uses tens and ones without counting or uses a standard algorithm and can show with a model how the process they used works

Needs Practice

(P) Uses tens and ones, but counts to figure out the parts they need in order to make or break up tens for 2 (out of 2) problems

(P-) Able to solve the problem and can show what they did with the model but make an error

Needs Instruction

(I) Can get the correct answer but can't model the process they used

Needs Prerequisite

(N) Gets the answer wrong and is unable to model the process they used