



8: Grouping Tens Assessment

Linking Assessment to instruction

The following charts outline suggested activities for each of the instructional levels for the *Grouping Tens* assessment. They refer you to particular activities from the *Developing Number Concepts* (DNC) series of books. The DNC series includes both teacher-directed and independent activities specifically designed to meet the varying needs of students. The suggested activities in each DNC book are coded for easy access. For example, “1:2-23” refers to Book 1, Chapter 2, Activity Number 23.

Please note that these charts provide a quick-overview of activities for instruction. For complete background information, please refer to these other helpful resources:

Math Time: The Learning Environment by Kathy Richardson

Developing Number Concepts by Kathy Richardson

For Professional Development Opportunities

Contact Math Perspectives Teacher Development Center: www.mathperspectives.com

Suggested Reading

For additional information that will support your instruction, read the following sections from *Developing Number Concepts Book Three: Place Value, Multiplication and Division*:

- What You Need to Know About Place Value (p. 2-4)
- Goals for Children’s Learning (p.7-8)
- Meeting the Range of Needs (p. 9)
- Classroom Scenes (p. 10-13)
- About the Activities (p. 14)

Providing Appropriate Instruction

When helping children develop proficiency with numbers composed of tens and ones, it is important to recognize that competency develops over time. Present a variety of activities, allowing children to experience organizing numbers into tens and ones in many different situations over several weeks. This will help them make generalizations and integrate their ideas about the underlying structure of numbers. Let their responses dictate the amount of time you spend before moving on.

- **Teacher-Directed Small Group Work**

Choose 3 or 4 activities and present them in a 10-15 minute small-group session to provide the children with a variety of experiences. Do the same tasks for several days. Occasionally replace one of the tasks

with a new one. Adjust the size of the numbers according to the children’s responses. Usually work with just one group a day so you have time to interact with the children while they work at the Independent Stations.

- **Independent Station Work**

Give children opportunities to choose from among several activities. These choices should be available for several weeks. During this time, the children will be developing proficiency and moving to larger numbers, as they are able. Interact with the children as they work, supporting them and challenging them as needed.

Level 1: Tens and Ones to 20

This section of the assessment determines whether students can decompose numbers from 11 to 19 into 1 ten and some leftover ones, and whether they understand that the 1 in the tens places represents ten objects.

There are 3 responses that determine the instructional level:

1. Number of tens in 17
2. Number of leftover ones in 17
3. Number of objects the 1 in 13 represents

Needs Prerequisite (N)

(N) Knows 0 (out of 3) responses.

Children at this level are unable to answer any of the assessment questions correctly. Focus on teacher-directed experiences asking them to combine one ten with various leftovers. This will help them begin to recognize the pattern that emerges when ten is added to a single-digit number.

*To get more information about the child’s understanding of teen numbers, assess using **Assessment 7: Ten Frames.***

TEACHER DIRECTED ACTIVITIES	
2:3-30	<i>Working with the Ten-Shapes</i>
	<i>Addition: Ten Plus a Number</i>
	<i>Subtraction: Minus Ten</i>
2: 3-31	<i>A Ten-Shape and More: Subtraction (Do the readiness activity described within this activity.)</i>

Needs Instruction (I)

(I) Knows 1 (out of 3) responses

Children who need instruction do not fully understand that teen numbers are made up of one ten and some ones and do not understand what is represented by the symbols. Focus on decomposing numbers from 11 to

19 into 1 ten and the ones that are left over and building quantities to represent the symbols. The following activities use ten frames. Sometimes use connecting cubes to organize cubes into one ten and some ones in addition to ten frames.

TEACHER-DIRECTED ACTIVITIES	
2:3-30	<i>Working with the Ten-Shapes: Addition</i>
2:3-31	<i>A Ten-Shape and More: Subtraction</i>

INDEPENDENT ACTIVITIES	
2:3-34	<i>Two Ten-Shapes: Addition and Subtraction</i>
2:3-35	<i>A Ten-Shape and More: Subtraction Station</i>

Needs Practice (P)

(P) Knows 2 (out of 3) responses

Children are at this stage if they have some understanding of the structure of teen numbers but need more experiences to clarify and strengthen this concept. Focus on predicting the answers before actually building the numbers with the counters. Sometimes use connecting cubes instead of ten frames.

TEACHER-DIRECTED ACTIVITIES	
2:3-30	<i>Working with the Ten-Shapes: Addition and Subtraction</i>
	<i>Addition: Nine Plus a Number</i>
	<i>Addition: Eight Plus a Number</i>
	<i>Addition: Mixing Them Up</i>
	<i>Subtraction: Minus Nine</i>
2:3-31	<i>A Ten-Shape and More: Subtraction</i>

INDEPENDENT ACTIVITIES	
2:3-34	<i>Two Ten-Shapes: Addition and Subtraction</i>
2:3-35	<i>A Ten-Shape and More: Subtraction Station</i>

Ready to Apply (A)

(A) Knows 3 (out of 3), no errors.

Children who are "Ready to Apply" understand the number of tens and ones in the "teen" numbers and should move on to work with the structure of numbers as tens and ones to 100 as described in the following section.

Level 2: Tens and Ones to 100

This section of the assessment determines whether the students can tell how many altogether when they know how many tens and ones there are and if they can add ten and subtract ten without counting.

Many of the same activities are used for all the levels, but the way children work with these activities will vary depending on their level of understanding and the interactions the teacher has with them while they are working.

Needs Prerequisite (N)

(N) Counts all to combine tens and ones.

Children are at this level if they do not use the concept of tens and ones to find out how many but instead count all of the counters. Continue to work with Tens and Ones to 20 as long as needed. Also give them experiences learning to count groups and look for patterns. Focus on forming and counting groups.

TEACHER-DIRECTED ACTIVITIES	
3:1-1 to 1-10	<i>The Process of Regrouping (Grouping Games), Discovering Number Patterns, and Pattern in Base Ten, p. 15-34</i>
2:3-31	<i>A Ten-Shape and More: Subtraction</i>

INDEPENDENT ACTIVITIES	
3: 1-17	<i>Recording Various Number Patterns on Strips</i>
3:1-18	<i>Grab and Add</i>

Needs Instruction (I)

(I) Counts by tens to combine tens and ones.

Children who need instruction have some awareness of tens as they are able to count by tens to get to the total number of counters. However, they are not thinking of ten as a unit since they count on to add and take away 10 from 34. Give them experiences learning to count groups and look for patterns. Also give them a variety of experiences organizing tens and ones in many different situations until they see the relationship between the particular number of tens and ones and the total number of objects.

TEACHER-DIRECTED ACTIVITIES	
3:1-1 to 1-10	<i>The Process of Regrouping (Grouping Games), Discovering Number Patterns, and Pattern in Base Ten, p. 15-34</i>

INDEPENDENT ACTIVITIES	
3:1-32	<i>Lots of Lines, Level 1</i>
3:1-33	<i>Paper Shapes, Level 1</i>
3:1-34	<i>Yarn, Level 1</i>
3:1-35	<i>Yarn Shapes</i>
3:1-36	<i>Containers, Level 1</i>
3:1-37	<i>Cover It Up Level 1</i>
3:1-38	<i>Measuring Things in the Room, Level 1</i>
3:1-39	<i>Measuring Myself, Level 1</i>

(continued on next page)

3:1-40	<i>Comparing Myself</i>
3:1-41	<i>Making Trails</i>
3:1-42	<i>Building Stacks</i>
3:1-43	<i>Race to 100</i>
3:1-44	<i>Race to Zero</i>

Needs Practice (P-, P, P+)

Children are at this level when they can combine tens and ones to get a total without counting. However, they do not fully understand that ten is a unit since they need to count to add or take away one ten.

(P-) Combines 3 tens and 4 ones without counting but needs to count to add 10, **and** take 10 away.

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

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

Provide experiences with the Grouping Games if they have not already experienced these. Also give them a variety of experiences organizing tens and ones in many different situations until they can add or take away ten as a unit without needing to count. As they work, occasionally ask them how many there would be if they added 10 or took 10 away.

TEACHER-DIRECTED ACTIVITIES	
3:1-1 to 1-10	<i>The Process of Regrouping (Grouping Games), Discovering Number Patterns, and Pattern in Base Ten, p. 15-34 (If not previously experienced.)</i>

NDEPENDENT ACTIVITIES	
3:1-32	<i>Lots of Lines, Level 1</i>
3:1-33	<i>Paper Shapes, Level 1</i>
3:1-34	<i>Yarn, Level 1</i>
3:1-35	<i>Yarn Shapes</i>
3:1-36	<i>Containers, Level 1</i>
3:1-37	<i>Cover It Up Level 1</i>
3:1-38	<i>Measuring Things in the Room, Level 1</i>
3:1-39	<i>Measuring Myself, Level 1</i>
3:1-40	<i>Comparing Myself</i>
3:1-41	<i>Making Trails</i>
3:1-42	<i>Building Stacks</i>
3:1-43	<i>Race to 100</i>
3:1-44	<i>Race to Zero</i>

Children are at this level when they can combine tens and ones and add and take away without counting. However, they are not able to tell the number of tens in a 2-digit number. Give them experiences where they start with a symbolic number and build it with connecting cubes and cups of beans.

Ready to Apply (A)

(A) Knows numbers of tens in estimate; Combines tens and ones without counting; Adds 10 without counting; subtracts 10 without counting; no errors.

Children who are “Ready to Apply” understand the structure of numbers as tens and ones and should move on to work adding and subtracting groups of tens as described in the following section.

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 they take 4 ones away. If children are not “Ready to Apply” adding or subtracting groups of tens, they need to continue working with the activities described for Tens and Ones to 100 with some variations.

Needs Prerequisite (N)

(N) Counts by 1s to add and/or subtract groups of tens OR makes 2 errors when adding and subtracting groups of tens.

At this stage, the children are not able to add groups of tens. Have the children continue to work with Numbers to 20 or Numbers to 100 at the appropriate level according to the assessment.

Needs Instruction (I)

(I) Counts by 10s to add and subtract groups of tens, **or** makes 1 error when adding or subtracting groups of tens.

Needs Practice (P)

(P) Correctly adds groups of tens, **or** correctly subtracts groups of tens without counting.

At this stage, the child who “Needs Instruction (I)” counts by 10s to add and subtract. The child who “Needs Practice (P)” counts by tens to either add or to subtract. These children have not yet fully recognized that adding 10s is like adding 1s if you consider the tens a unit, or they need practice to develop facility.

As they work, occasionally ask them how many there would be if they added groups of tens or took groups of tens away. After they have finished finding out the number of tens and ones in the task they are doing, have them add groups of tens and/or take groups of tens away.

INDEPENDENT ACTIVITIES	
Vary the tasks by having the children add or subtract groups of tens when working with the activities.	
3:1-32	<i>Lots of Lines, Level 1 Vary by adding groups of tens</i>
3:1-33	<i>Paper Shapes, Level 1 Vary by adding groups of tens</i>
3:1-34	<i>Yarn, Level 1 Vary by adding groups of tens</i>
3:1-35	<i>Yarn Shapes Vary by adding groups of tens</i>
3:1-36	<i>Containers, Level 1 Vary by adding groups of tens</i>
3:1-37	<i>Cover It Up Level 1 Vary by adding groups of tens</i>

Ready to Apply (A)

(A) Knows numbers of tens in estimate; combines tens and ones without counting; adds 10 without counting; subtracts 10 without counting; no errors.

These children are ready to begin adding and comparing groups as an extension of what they have been working on before. You can provide a challenge for these children by having them work at Levels 2 and 3 which ask them to compare.

INDEPENDENT ACTIVITIES	
3:1-32	<i>Lots of Lines, Levels 2 and 3</i>
3:1-33	<i>Paper Shapes, Levels 2 and 3</i>
3:1-34	<i>Yarn, Levels 2 and 3</i>
3:1-35	<i>Yarn Shapes, Extension</i>
3:1-36	<i>Containers, Levels 2 and 3</i>
3:3-37	<i>Cover It Up, Levels 2 and 3</i>
3:1-38	<i>Measuring Things in the Room, Levels 2 and 3</i>
3:1-39	<i>Measuring Myself, Levels 2 and 3</i>
3:1-40	<i>Comparing Myself</i>