



5: Combination Trains Assessment

Linking Assessment to instruction

The following charts outline suggested activities for each instructional level of the *Combination Trains* 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 varied needs of students. The suggested activities are coded for easy access. For example, “1:2-23” refers to Book 1, Chapter 2, Activity Number 23.

Please note, 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 Two: Addition and Subtraction*:

- Internalizing Number Combinations to 10 (p. 42-44)
- Goals for Children’s Learning (p. 44)
- Meeting the Range of Needs (p. 47)
- Classroom Scenes (p. 48-53)
- About the Activities (p. 54-55)

Providing Appropriate Instruction

When helping children develop an awareness that number combinations are related and that they can use what they know to figure out what they don’t know, it is important to recognize that competency develops over time. Present a variety of activities, allowing children to experience the concepts in many ways over several weeks. This will help them make generalizations and integrate their ideas.

- **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.

COMBINATION TRAINS

The number combinations in this assessment are presented in a way that makes it possible to find out if children are using what they know about one combination to figure out another. The trains are arranged to assess several levels at the same time. For example, the “thirteen train” is arranged so that the child is asked to add $3 + 3$, $3 + 4$, and $6 + 7$. The results will be organized into Numbers to 6, Numbers to 10 and Numbers to 20, and the instructional level will be determined for each range of numbers.

Needs Prerequisite (N)

(N) – Adds by counting all for all 3 combinations within the range assessed or makes 2 or 3 errors.

To get more information about the children’s ability to identify parts of numbers, use *Assessment 4: Number Arrangements*.

Focus on recognizing small groups of objects. Begin with numbers that are small enough for them to see that they can recognize the groups without counting. Move on to activities listed under “Needs Instruction” when they can identify small groups without counting.

TEACHER DIRECTED ACTIVITIES		To 6	To 10	To 20
1:1-13	<i>Tell Me Fast</i>	•	•	
1:1-10	<i>Hunt for It</i>	•	•	
1:1-9	<i>Hide it</i>	•	•	
1:1-12	<i>Find a Match</i>	•	•	
2:3-2	<i>Instant Recognition of Number Arrangements</i>	•	•	•
2:3-3	<i>Instant Recognition of Number Shapes</i>	•	•	•
2:3-4	<i>Instant Recognition of Number Trains</i>	•	•	•
2:3-3 and 2:3-33	<i>Instant Recognition of Number Shapes Combined with Number-Shape Pairs</i>			•

Needs Instruction (I)

(I) – Adds by counting all for 2 of the 3 combinations within the range being assessed. May have 1 error.

Focus on describing the parts of numbers to help the children move from counting all to combining parts.

TEACHER-DIRECTED ACTIVITIES		To 6	To 10	To 20
2: 2-1	<i>Snap It, Level 1 and Extension</i>	•	•	
2: 2-2	<i>The Tub Game, Level 1 and Extension</i>	•	•	
2: 2-3	<i>The Wall Game</i>	•	•	
2: 2-4	<i>Bulldozer</i>	•	•	
2: 2-5	<i>The Cave Game</i>	•	•	•
2: 2-9	<i>Number Shapes: On and Off</i>	•	•	
2: 2-11	<i>Number Trains: On and Off</i>	•	•	
2: 2-7	<i>Finger Combinations</i>	•	•	
2: 3-1	<i>Combining Stacks: Pick It Up</i>	•	•	•
2: 3-4	<i>Instant Recognition of Number Trains</i>	•	•	
2: 3-3	<i>Instant Recognition of Number Shapes</i>	•	•	
2: 3-3 and 2:3-33	<i>Instant Recognition of Number Shapes Combined with Number-Shape Pairs</i>	•	•	•

INDEPENDENT ACTIVITIES				
2: 2-18	<i>Counting Boards: Making Up Number-Combination Stories</i>	•	•	
2: 3-24	<i>The Tub-Game Station</i>	•	•	
2: 3-25	<i>The Snap-It Station</i>	•	•	
2: 3-18	<i>What Numbers Can You Make?</i>	•	•	•
2: 3-17	<i>Describing Shape Puzzles</i>	•	•	•

Needs Practice (P)

(P) – Adds by counting on for 2 or more of the 3 combinations within the range being assessed. May count all once and may have 1 error.

(P+) – Knows total without counting or uses what is known about one combination to figure out another combination for 2 of the 3 combinations within the range being assessed. May have no errors.

Focus on developing an awareness of the combinations they know. Have them predict how many they think the total will be before counting. Begin with number combinations that are small enough for them to see that they can tell how many altogether without counting.

TEACHER-DIRECTED ACTIVITIES				
		To 6	To 10	To 20
2:2-9	<i>Number Shapes: On and Off</i>	•	•	
2:2-11	<i>Number Trains: On and Off</i>	•	•	
2:3-1	<i>Combining Stacks: Pick It Up</i>	•	•	•
2:3-5	<i>Related Combinations: Short Stacks</i>	•	•	•
2:3-28	<i>Related Combinations: Tall Stacks</i>	•	•	•
2:3-29	<i>How Do You See It? Adding Number Shapes</i>			•
2:3-4	<i>Instant Recognition of Number Trains</i>	•	•	
2:3-3	<i>Instant Recognition of Number Shapes</i>	•	•	
2:3-3 and 2:3-33	<i>Instant Recognition of Number Shapes Combined with Number-Shape Pairs</i>			•

INDEPENDENT ACTIVITIES				
		To 6	To 10	To 20
2:2-20	<i>Number Shapes: Using Number Cubes</i>	•	•	
2:2-21	<i>Number Shapes: Using Spinners</i>	•	•	
2:2-23	<i>Number Trains: Using Number Cubes</i>	•	•	
2:2-24	<i>Number Trains: Using Spinners</i>	•	•	
2:2-25	<i>How Many Ways?</i>	•	•	
2:2-26	<i>Number-Train Graph</i>	•	•	
2:3-14	<i>Combination Toss</i>	•	•	
2:3-17	<i>Describing Shape Puzzles</i>	•	•	•
2:3-18	<i>What Numbers Can You Make?</i>	•	•	•
2:3-21	<i>Grab-Bag Addition Station</i>	•	•	•
2:3-36	<i>Roll and Double</i>			

Ready to Apply (A)

(A) – Knows total without counting or uses what is known about one combination to figure out all 3 of the combinations within the range being assessed. May have no errors.

A child may be “Ready to Apply” for numbers to 6, but not for numbers to 10 and 20. Go on to the next level until the children are “Ready to Apply” for Numbers to 20.