assessing MATH concepts™

Assessment Goals and Critical Learning Phases

Counting Objects

Topic: *Counting*

Goal: To determine if a child can count and keep track of an unorganized pile of up to 32 counters and can make a pile of up to 18 counters.

Critical Learning Phases:

- Keeps track when counting objects
- Remembers "how many" after counting
- Reacts to estimate and makes a closer estimate
- Knows "one more" without counting
- Knows "one less" without counting
- Interprets and writes numerals to label quantities

Changing Numbers

Topic: *Beginning Number Relationships*

Goal: To determine if a child knows if a number is larger or smaller than another number and can change one quantity to another.

Critical Learning Phases:

When changing one quantity to another:

- Tells whether to take some away or get some more
- Figures out how many to add or take away by counting on or removing extras
- Knows (tells) how many to add or take away

More / Less Trains

Topic: *Comparing Numbers*

Goal: To determine if a child knows if a number is larger or smaller than another number and can change one quantity to another.

Critical Learning Phases:

- Uses what is known about one amount to determine another
- Adds or takes away from one group to make it the same as another group
- Tells how many more when groups are lined up
- Tells how many more when groups are not lined up
- Tells how many less when groups are lined up

Number Arrangements

Topic: *Identifying and Combining Parts*

Goal: To determine if a child can recognize parts of a number and combine these parts without having to count all.

Critical Learning Phases:

- Recognizes groups of numbers to 5 in a variety of configurations
- Recognizes and describes the smaller parts contained in the larger numbers
- Identifies one or more parts and counts the rest (counting on)
- Combines parts of arrangements by knowing

Combination Trains

Topic: *Number Combinations*

Goal: To determine what number combination the child knows. To find out if the child can use related combinations as a strategy for getting answers.

Critical Learning Phases:

- Combines parts by using relationships
- Knows doubles
- Uses doubles plus one
- Uses doubles minus one
- Combines parts by knowing

Hiding Assessment

Topic: *Decomposing Numbers*

Goal: To find out which number combinations a child knows by determining if he/she can tell the missing part of a number without having to figure it out.

Critical Learning Phases:

- Figures out missing parts of numbers when unknown
- Knows missing parts without needing to figure them out
- Uses addition to solve subtraction

Ten Frames

Topic: *Ten and Some More*

Goal: To combine single-digit numbers by reorganizing them into a 10 and leftovers. To use their knowledge of the parts of numbers to 10 to subtract from numbers up to 20.

Critical Learning Phases:

- Describes a 10 as a single entity even though it is composed of 10 single objects
- Organizes numbers into groups of one 10 and leftovers
- Knows 10 plus any number from 1 to 10
- Tells how many needed to make 10
- Tells how many leftovers when removing 10 for numbers from 11 to 20
- Combines quantities by reorganizing into one 10 and leftovers
- Subtracts quantities by breaking numbers apart and recombining whatever is left

Grouping Tens

Topic: *Numbers as Tens and Ones*

Goal: To determine if the child can tell "how many" in a quantity if the number of tens and ones is known, and to determine if the child can add ten and take away ten without counting. To also determine if the child knows that the total number does not change when counted in a different way, what it means to count by 2's or 5's, and how well the child can do this.

Critical Learning Phases:

- Organizes quantities into tens and ones
- Instantly knows total quantity when the number of tens and ones is known
- Knows 10 more for any two-digit number
- Knows 10 less for any two-digit number

Two-Digit Addition & Subtraction

Topic: *Combining and Separating Tens and Ones*

Goal: To determine if a child can add and subtract from two-digit numbers by mentally breaking numbers apart and reorganizing them into tens and leftovers, and to determine how the child solves problems presented symbolically.

Critical Learning Phases:

- Tells how many needed to make the next 10
- Combines numbers by reorganizing them into tens and leftovers when necessary
- Breaks apart tens when necessary and reorganizes what is left into tens and leftovers