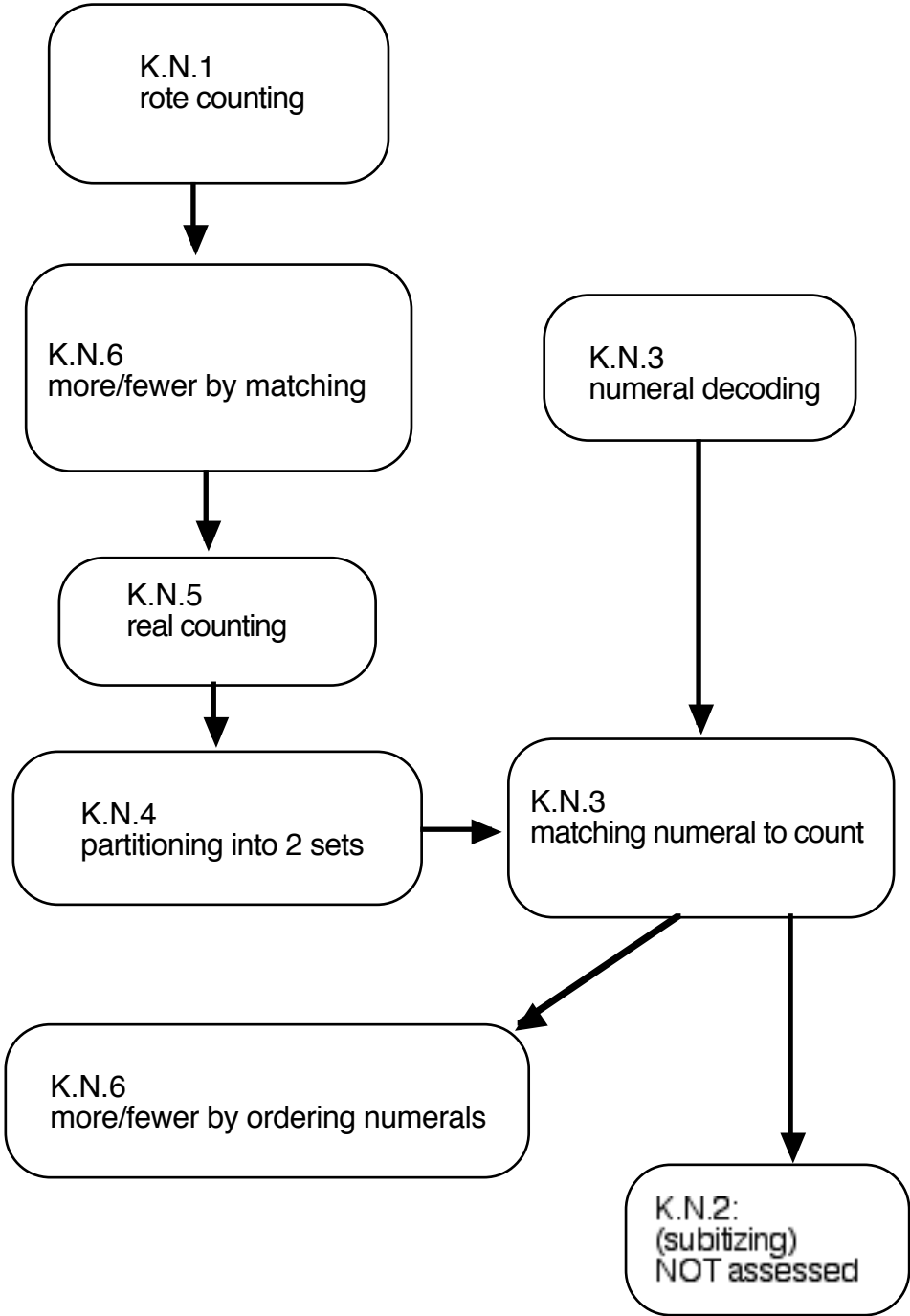# Assessment of Kindergarten Numeracy

The assessment of Kindergarten Numeracy is organized on the basis of a **C**oncepts, **A**lgorithms, **S**kills **H**ierarchy of development (a CASH map). This map lays out a sequence for assessing as well as teaching.

Note that outcome K.N.2 (concerns subitizing) is not assessed for two reasons: (1) not a conceptual matter and (2) not sufficiently critical to numeracy beyond Kindergarten. However, the outcome is included in the CASH map for purposes of teaching.

K.N.1. Say the number sequence by 1s, starting anywhere from 1 to 30 and from 10 to 1.	K.N.2. (NOT ASSESSED) Subitize and name familiar arrangements of 1 to 6 objects or dots.
K.N.3. Relate a numeral, 1 to 10, to its respective quantity.	K.N.4. Represent and describe numbers 2 to 10 in two parts, concretely and pictorially.
K.N.5. Demonstrate an understanding of counting • indicating that the last number said identifies "how many" showing that any set has only one count.	K.N.6. Compare quantities, 1 to 10, • using one-to-one correspondence by ordering numbers representing different quantities.

Kindergarten CASH map

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┌─────────────────────┐
│  K.N.1              │
│  rote counting      │
└─────────────────────┘
          │
          ▼
┌─────────────────────┐        ┌─────────────────────┐
│  K.N.6              │        │  K.N.3              │
│  more/fewer by      │        │  numeral decoding   │
│  matching           │        └─────────────────────┘
└─────────────────────┘                  │
          │                              │
          ▼                              │
┌─────────────────────┐                  │
│  K.N.5              │                  │
│  real counting      │                  │
└─────────────────────┘                  │
          │                              ▼
          ▼                   ┌─────────────────────┐
┌─────────────────────┐       │  K.N.3              │
│  K.N.4              │─────▶  │  matching numeral   │
│  partitioning into  │       │  to count           │
│  2 sets             │       └─────────────────────┘
└─────────────────────┘          │            │
                                 ▼            ▼
┌─────────────────────┐     ┌─────────────────────┐
│  K.N.6              │     │  K.N.2:             │
│  more/fewer by      │     │  (subitizing)       │
│  ordering numerals  │     │  NOT assessed       │
└─────────────────────┘     └─────────────────────┘
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Summary of results

K.N.1 (rote counting)
_____ Emergent knowledge (total score of 6 or less)
_____ Low level developed knowledge (total score between 7 and 12 inclusive)
_____ Mid level developed knowledge (total score between 13 and 19 inclusive)
_____ High level developed knowledge (total score of 20 or more)

K.N.3 (numeral decoding)
_____ Emergent knowledge (total score of 1 or less)
_____ Low level developed knowledge (total score between 2 and 3 inclusive)
_____ Mid level developed knowledge (total score between 4 and 5 inclusive)
_____ High level developed knowledge (total score of 6 or more)

K.N.3 (matching numeral to count)
_____ Emergent knowledge (total score of 1 or less)
_____ Low level developed knowledge (total score between 2 and 3 inclusive)
_____ Mid level developed knowledge (total score between 4 and 5 inclusive)
_____ High level developed knowledge (total score of 6 or more)

K.N.4 (partitioning into two sets)
_____ Emergent knowledge (total score of 2 or less)
_____ Low level developed knowledge (total score between 3 and 4 inclusive)
_____ Mid level developed knowledge (total score between 5 and 7 inclusive)
_____ High level developed knowledge (total score of 8 or more)

K.N.5 (real counting)
_____ Emergent knowledge (total score of 2 or less)
_____ Low level developed knowledge (total score between 3 and 4 inclusive)
_____ Mid level developed knowledge (total score between 5 and 7 inclusive)
_____ High level developed knowledge (total score of 8 or more)

K.N.6 (more/fewer by matching)
_____ Emergent knowledge (total score of 2 or less)
_____ Low level developed knowledge (total score between 3 and 4 inclusive)
_____ Mid level developed knowledge (total score between 5 and 7 inclusive)
_____ High level developed knowledge (total score of 8 or more)

K.N.6 (more/fewer by ordering numerals)
_____ Emergent knowledge (total score of 2 or less)
_____ Low level developed knowledge (total score between 3 and 4 inclusive)
_____ Mid level developed knowledge (total score between 5 and 7 inclusive)
_____ High level developed knowledge (total score of 8 or more)

Instructions.

- Do as indicated for each task. The order of listing of the assessment items DOES NOT indicate the order of assessing or teaching. Refer to the CASH map for direction on sequencing.

- Ensure that the student understands what you are expecting him/her to do but DO NOT help the student by giving hints or answers to a task.

- For scoring a student response (see example below), write a 0, 1, 2, or 3 (sometimes more than 3) in the appropriate response slot.

  _____ 0: Has errors in saying number words from 5 to 10.
  _____ 1: Says number words without error from 5 to 10.
  _____ 2: Says number words without error from 5 to 20.
  _____ 3: Says number words without error from 5 to 30.

- For observations (see below), deduct .25 or .5 if the student is hesitant in responding to a task. Add .25 or .5 if the student responds with confidence. If the student self-corrects, no point is deducted or added. Use your judgment on deciding this for each task. The matter has to do with what the student does MOSTLY on a particular task.

  ___ Hesitant
  ___ Self-corrects
  ___ Confident

- If there is an additional question indicated for a task, ask it and record the student's answer. Follow the scoring instructions attached to the additional question.

- Record any other observations you deem noteworthy.

- Calculate the total score for assessing a particular outcome by adding the student response values for the tasks and adding/deducting any observation scores. Write the total score in the indicated place at the end of the tasks.

- Use the total score to determine which level (emergent, low level developed, . . .) the student is in for the outcome. Place a check mark in the appropriate slot in the summary page (see example below).

  _____ Emergent knowledge (total score of 2 or less)
  _____ Low level developed knowledge (total score between 3 and 4 inclusive)
  _____ Mid level developed knowledge (total score between 5 and 7 inclusive)
  _____ High level developed knowledge (total score of 8 or 9)

- When determining which level the student is at for an outcome also include any relevant information obtained from 'Other observations' to help determine the level.

Assessment for K.N.1 (rote counting)

ITEM 1:
"*Start at one and say the counting words until I ask you to stop.*"

Note: Stop student at 30 if student gets that far without error. Use the term 'number word' instead of 'counting word' if student is more comfortable with 'number'.

_____ 0: Has errors in saying counting words from 1 to 10. _____ 1: Says counting words without error from 1 to 10. _____ 2: Says counting words without error from 1 to 20. _____ 3: Says counting words without error from 1 to 30.	___ Hesitant ___ Self-corrects ___ Confident

Other observations

ITEM 2:
"*Start at five and say the counting words until I ask you to stop.*"

Note: Stop student at 30 if student gets that far without error.
Note: Deduct 1 point from score if student begins by starting the counting from 1.

_____ 0: Has errors in saying number words from 5 to 10. _____ 1: Says number words without error from 5 to 10. _____ 2: Says number words without error from 5 to 20. _____ 3: Says number words without error from 5 to 30.	___ Hesitant ___ Self-corrects ___ Confident

Other observations

ITEM 3: Stage 1:
Note: DO NOT go past stage 1 if student makes 2 or more errors in stage 1.

ITEM 3: Stage 1:
"*What counting word comes next after 2?* ___ *Next after 6?* ___ *Next after 9?* ___ "

_____ 0: Has 3 errors. _____ 1: Has 2 errors. _____ 2: Has 1 error. _____ 3: Has no errors.	___ Hesitant ___ Self-corrects ___ Confident
Other observations	

ITEM 3: Stage 2:
"*What counting word comes next after 12?* ___ *Next after 15?* ___ *Next after 19?* ___ "

_____ 0: Has 3 errors. _____ 1: Has 2 errors. _____ 2: Has 1 error. _____ 3: Has no errors.	___ Hesitant ___ Self-corrects ___ Confident
Other observations	

ITEM 3: Stage 3:
"*What counting word comes next after 21?* ___ *Next after 24?* ___ *Next after 28?* ___ "

_____ 0: Has 3 errors. _____ 1: Has 2 errors. _____ 2: Has 1 error. _____ 3: Has no errors.	___ Hesitant ___ Self-corrects ___ Confident
Other observations	

ITEM 4:
"Say the counting words backwards starting at ten."

_____ 0: Has 3 or more errors. _____ 1: Has 2 errors. _____ 2: Has 1 error. _____ 3: Has no errors.	___ Hesitant ___ Self-corrects ___ Confident

Other observations

ITEM 5:
"What counting word comes next after the counting word I say.
Nine, eight, seven_____? Four, three, two_____? Seven, six,_____?"

_____ 0: Has 3 errors. _____ 1: Has 2 errors. _____ 2: Has 1 error. _____ 3: Has no errors.	___ Hesitant ___ Self-corrects ___ Confident

Other observations

ITEM 6:
"What counting word comes just before the number I say. Nine ___? Six ___? Four ___?"

_____ 0: Has 3 errors. _____ 1: Has 2 errors. _____ 2: Has 1 error. _____ 3: Has no errors.	___ Hesitant ___ Self-corrects ___ Confident

Other observations

TOTAL SCORE _____

Assessment for K.N.3 (numeral decoding)

ITEM 1:
Show each numeral (number) card in turn. Ask student what counting word it says.
Show '3 numeral card'   Show '7 numeral card'   Show '10 numeral card'

_____ 0: Has 3 errors.	
_____ 1: Has 2 errors.	___ Hesitant
_____ 2: Has 1 error.	___ Self-corrects
_____ 3: Has no errors.	___ Confident
Other observations	

ITEM 2:
Provide student with numeral cards. Say a numeral and ask student to hold up numeral card for the word you said.
'Say four"   "Say six"   "Say ten"

_____ 0: Has 3 errors.	
_____ 1: Has 2 errors.	___ Hesitant
_____ 2: Has 1 error.	___ Self-corrects
_____ 3: Has no errors.	___ Confident
Other observations	

TOTAL SCORE _____

Assessment for K.N.3 (matching numeral and count)

ITEM 1:
Show each numeral (number) card in turn. Give student counters. Ask student to count out the number of counters shown by the numeral card.

Show '4 numeral card' _____   *Show '6 numeral card'* _____   *Show '9 numeral card'* _____

_____ 0: Has 3 errors.	
_____ 1: Has 2 errors.	___ Hesitant
_____ 2: Has 1 error.	___ Self-corrects
_____ 3: Has no errors.	___ Confident

Other observations

ITEM 2:
Show dot cards in turn. Provide students with numeral cards (1 through 10). Ask student to hold up numeral card that says how many dots are on the dot card.

Show '2 dot card' _____   *Show '8 dot card'* _____   *Show '5 dot card'* _____

_____ 0: Has 3 errors.	
_____ 1: Has 2 errors.	___ Hesitant
_____ 2: Has 1 error.	___ Self-corrects
_____ 3: Has no errors.	___ Confident

Other observations

TOTAL SCORE _____

Assessment for K.N.4 (partitioning into two sets)

ITEM 1:
Ask student to show you two sets of fingers, one set on each hand.
"Show me 2 and 2" _____ *"Show me 2 and 3"* _____ *"Show me 4 and 5"* _____

_____ 0: Has 3 errors. _____ 1: Has 2 errors. _____ 2: Has 1 error. _____ 3: Has no errors.	___ Hesitant ___ Self-corrects ___ Confident

Other observations

ITEM 2:
Provide student with two sets of dot pictures (e.g. 3 dots and 7 dots). Ask student to say how many dots in each set each time.
"Show 3 dots and 5 dots _____ *"Show 6 dots and 7 dots* _____ *"Show 2 dots and 10 dots"*

_____ 0: Has 3 errors. _____ 1: Has 2 errors. _____ 2: Has 1 error. _____ 3: Has no errors.	___ Hesitant ___ Self-corrects ___ Confident

Other observations

ITEM 3:
- Provide student with 15 counters. Ask student to use some of the counters to make two piles and to tell how many counters in each pile.
- Provide student with 15 counters. Ask student to use some of the counters to make two piles (different from before) and to tell how many counters in each pile.
- Provide student with 15 counters. Ask student to use ALL of the counters to make two piles and to tell how many counters in each pile.

_____ 0: Has error(s) in each task. _____ 1: Has error(s) in two of the three tasks. _____ 2: Has error(s) in one of the three tasks. _____ 3: Has no errors.	___ Hesitant ___ Self-corrects ___ Confident

Other observations

TOTAL SCORE _____

Assessment for K.N.5 (real counting)

ITEM 1:
Show student dot cards in turn. Ask student to count the dots and say how many.
Show '5 dot card' _____ *Show '7 dot card'* _____ *Show '3 dot card'* ___

_____ 0: Has 3 errors. _____ 1: Has 2 errors. _____ 2: Has 1 error. _____ 3: Has no errors.	___ Hesitant ___ Self-corrects ___ Confident

Other observations

ITEM 2:
Provide student with 8 counters.
- *Ask student to begin with any counter he/she wants, count the counters and say how many.*
- *Point to a counter and ask student to count the counters and say how many.*
- *Point to a DIFFERENT counter and ask student to count the counters and say how many.*

_____ 0: Has 3 errors. _____ 1: Has 2 errors. _____ 2: Has 1 error. _____ 3: Has no errors.	___ Hesitant ___ Self-corrects ___ Confident

Other observations

ITEM 3:
Provide student with 10 counters.
- *Ask student to count the counters and say how many.*
- *Rearrange the counters. Ask student to say how many.*
- *Rearrange the counters again. Ask student to say how many.*

___ 0: Student cannot count correctly. ___ 1: Student counts 10 first time and ALWAYS counts to say 10. ___ 2: Student counts 10 first time and then counts ONLY ONCE MORE to say 10. ___ 3: Student counts 10 first time and then DOES NOT count anymore to say 10.	___ Hesitant ___ Self-corrects ___ Confident

Other observations

TOTAL SCORE _____

Assessment for K.N.6 (more/fewer by matching)

ITEM 1:
- Show student 4 counters. DO NOT tell him/her how many counters are there. Give student counters. Ask student to make a pile of counters that has more counters than in your pile.
- Show student 6 counters. DO NOT tell him/her how many counters are there. Give student counters. Ask student to make a pile of counters that has more counters than in your pile.
- Show student 8 counters. DO NOT tell him/her how many counters are there. Give student counters. Ask student to make a pile of counters that has more counters than in your pile.

_____ 0: Has error(s) in each task. _____ 1: Has error(s) in two of the three tasks. _____ 2: Has error(s) in one of the three tasks. _____ 3: Has no errors.	___ Hesitant ___ Self-corrects ___ Confident

Other observations

ITEM 2:
- Show student 3 counters. DO NOT tell him/her how many counters are there. Give student counters. Ask student to make a pile of counters that has fewer counters than in your pile.
- Show student 5 counters. DO NOT tell him/her how many counters are there. Give student counters. Ask student to make a pile of counters that has fewer counters than in your pile.
- Show student 7 counters. DO NOT tell him/her how many counters are there. Give student counters. Ask student to make a pile of counters that has fewer counters than in your pile.

_____ 0: Has error(s) in each task. _____ 1: Has error(s) in two of the three tasks. _____ 2: Has error(s) in one of the three tasks. _____ 3: Has no errors.	___ Hesitant ___ Self-corrects ___ Confident

Other observations

ITEM 3:
- Show student a pile of 4 counters and a pile of 5 counters. DO NOT tell him/her how many counters are in the piles. Ask student to tell which pile has more/fewer counters or if the piles have the same number of counters by matching counters.
- Show student a pile of 6 counters and a pile of 8 counters. DO NOT tell him/her how many counters are in the piles. Ask student to tell which pile has more/fewer counters or if the piles have the same number of counters by matching counters.
- Show student a pile of 7 counters and a pile of 7 counters. DO NOT tell him/her how many counters are in the piles. Ask student to tell which pile has more/fewer counters or if the piles have the same number of counters by matching counters.

_____ 0: Has 3 errors. _____ 1: Has 2 errors. _____ 2: Has 1 error. _____ 3: Has no errors.	___ Hesitant ___ Self-corrects ___ Confident

Other observations

TOTAL SCORE _____

Assessment for K.N.6 (more/fewer by ordering numerals)

ITEM 1:
- Show student a set of 4 counters. Do not tell student how many counters are in the pile. Ask student to tell how many counters in pile if one more counter is put in the pile.
- Show student a set of 6 counters. Do not tell student how many counters are in the pile. Ask student to tell how many counters in pile if one more counter is put in the pile.
- Show student a set of 9 counters. Do not tell student how many counters are in the pile. Ask student to tell how many counters in pile if one more counter is put in the pile.

_____ 0: Has 3 errors. _____ 1: Has 2 errors. _____ 2: Has 1 error. _____ 3: Has no errors.	___ Hesitant ___ Self-corrects ___ Confident

Other observations

ITEM 2:
- Show student a set of 3 counters. Do not tell student how many counters are in the pile. Ask student to tell how many counters in pile if one counter is removed from the pile.
- Show student a set of 5 counters. Do not tell student how many counters are in the pile. Ask student to tell how many counters in pile if one counter is removed from the pile.
- Show student a set of 8 counters. Do not tell student how many counters are in the pile. Ask student to tell how many counters in pile if one counter is removed from the pile.

_____ 0: Has 3 errors. _____ 1: Has 2 errors. _____ 2: Has 1 error. _____ 3: Has no errors.	___ Hesitant ___ Self-corrects ___ Confident

Other observations

ITEM 3:
Show student a list of three numerals that are not in counting order. Ask student to put the three numerals in counting order, smallest count first. Give student counters if he/she requests them.

"Show 6, 3, 8" _____   *"Show 4, 9, 7"* _____   *"Show 8, 5, 2"* _____

Note: **Deduct .5** if student uses counters.

____ 0: Has 3 errors (an ordering not completed successfully is one error) ____ 1: Has 2 errors. ____ 2: Has 1 error. ____ 3: Has no errors.	___ Hesitant ___ Self-corrects ___ Confident

Other observations

TOTAL SCORE _____