

Cut out, post and use: where you plan—where you teach—where you reconsider the power of your math teaching

A cue card for teachers

Specially-Designed Intervention for Dyscalculia

involves sharpening teaching focus and intensity on:

1. **CONCEPTS** - robust mental models of quantity + quantity relationships w/language links

2. **COUNT SYSTEM** - the starting steps of mental math

It's about developing nimble oral counting, both with physical numberlines and on one's mental numberline. Count-system skills are a set of flexible mental moves, a kind of cognitive acrobatics: counting on, up-&-up, the decades, up-one/down-one, by even twos, by odd twos, by ten from any number, back by ten from any number, etc.

Pitfall: Careful not to encourage relentless 1-by-1 counting—rather, facilitate mature strategic counting.

Includes **READING / WRITING** numerals 1–10, then 1–20, then 1–50, then 1–100+

- In conjunction with nimble counting on the numberline
- With connection to quantities & numberline (the count/number “system”!)

3. **LANGUAGE** - both understanding + using

Name, ask-answer, describe, explain — also, understanding teacher mathtalk

plus, Inter-**CONNECTING** these 3:

- Link physical/mental representations, the number system (numberline) & language
- Keep connections from fading—probing individuals in brief Do-Show-Tell routines

Teaching skills for effective intervention—and for building higher math on this foundation:

TIME + PATIENCE - for developing robust mental representations + strong language links, before proceeding far into written problems or procedures

DIRECT INSTRUCTION - Modeling, scaffolding, feedback & multiple examples for:

- Physical and mental representations (concepts)
- Language links (naming, describing, asking, answering, explaining)
- Basic facts & linking facts

…continuing to stitch math fragments together w/frequent Show-Tell-what-it-means

TASK ANALYSIS looking and probing

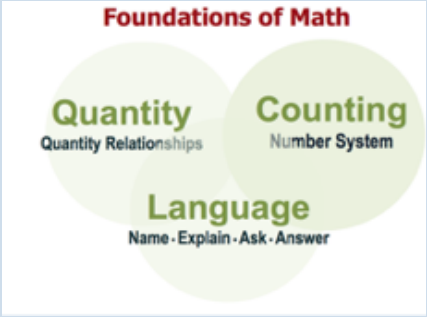
…probing at the curriculum hinge points—for what confuses—& what has not stuck

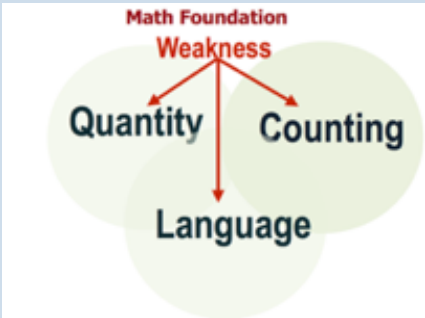
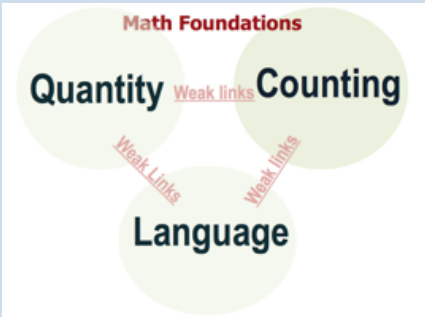
CONFUSION and GLITCHES

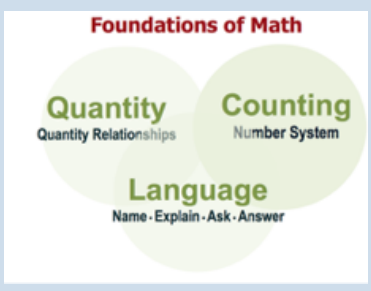

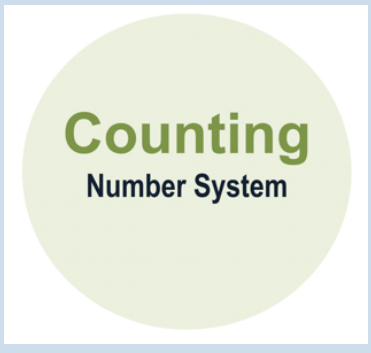

- Use student confusions/glitches as guides for tailoring next-step planning
- Teach thinking/deciding — tie in meaning-minders, check-ins, tie-backs

ENOUGH PRACTICE —more than you would think

- It's crucial for practice to be interactive, supervised and sharply focused
- Practice thinking, practice linking, practice telling, practice asking, practice connections, and do most of it through games and gamelike activities — FUN!
- DO NOT practice ad nauseam or without the mind-in-gear

<p>Conceptualize math foundations as three realms</p>	 <p>Foundations of Math</p> <p>Quantity Quantity Relationships</p> <p>Counting Number System</p> <p>Language Name - Explain - Ask - Answer</p>	<p>Three crucial math foundations, strongly interconnected.</p> <p>Strengthen + Integrate</p>
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<p>Conceptualize math disability as likely weaknesses in any / all of these three</p>	 <p>The diagram features three overlapping light green circles labeled 'Quantity', 'Counting', and 'Language'. Above them, the text 'Math Foundation Weakness' is written in red. Three red arrows point downwards from this text to each of the three circles.</p>	<p>Probe weakness/strength of Quantity Counting & Math language</p> <p>INVEST in STRONG FOUNDATIONS</p> <p><i>Then build on them...</i></p>
<p>Conceptualize math disability as likely weak links among these three</p>	 <p>The diagram features three overlapping light green circles labeled 'Quantity', 'Counting', and 'Language'. Above them, the text 'Math Foundations' is written in red. Three red lines, each labeled 'Weak links', connect the circles: one between Quantity and Counting, one between Quantity and Language, and one between Counting and Language.</p>	<p>Probe disconnects/linkages between Quantity Counting & Math language</p> <p>STRENGTHEN LINKAGES</p>

Math Foundation REALMS	What are you looking for?
 <p>Foundations of Math</p> <p>Quantity Quantity Relationships</p> <p>Counting Number System</p> <p>Language Name · Explain · Ask · Answer</p>	<p>MATH FOUNDATION understandings & skills in 3 realms + inter-connections.</p> <p>The realms are a lens to see more & more clearly as we:</p> <p><i>NOTICE • NOTICE • NOTICE</i></p> <p><i>teach / assess / explore / teach</i></p>
 <p>Quantity Quantity Relationships</p>	<p>What can he show with manipulatives and what does he need help with?</p> <p>What does he see immediately and what requires trials & error to do?</p> <p>What does he seem to catch onto, but forget the next day? Can you pinpoint the breakdown from then to now?</p>
 <p>Counting Number System</p>	<p>What kinds of counting can he do?</p> <p>Where does he get stuck in rote counting?</p> <p>Off-track in the teens? Lost after 29? Does he count 99, 100, 200?</p> <p>Can he count even #s by twos?</p> <p>Can he count the decades?</p> <p>Counting “things”, does he go 1-by-1?</p> <p>His skills with rod/#track explorations?</p>
 <p>Language Name · Explain · Ask · Answer</p>	<p>How does language direct or misdirect his gaze, his actions, his answers?</p> <p>Which terms confuse?</p> <p>Which questions perplex?</p> <p>Does he recall questions, info, directions?</p> <p>How is his labeling, explaining?</p> <p>What characterizes his math explaining?</p>