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## Presenters

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Senior Clinical Assessment Consultant



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Clinical Assessment Support Expert



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## Housekeeping Items



A copy of the slide deck is attached to the control panel as a PDF.



Post any questions/comments in the chat/question box



Certificates of Attendance will be emailed out within 3-5 business days

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## Agenda

Obtain a general understanding of dyscalculia

Understand the characteristics of dyscalculia

Gain an understanding of the informal measures that should be collected as part of a comprehensive dyscalculia evaluation

Gain an understanding of how various assessments can be integrated into the comprehensive dyscalculia evaluation

WJ IV Tests

Conducting a Targeted Dyscalculia Assessment using C-SEP

Question & Answers

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## WHAT IS DYSCALCULIA?

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### Definition

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“Developmental dyscalculia” (DD) was coined by the Czechoslovakian psychologist named Ladislav Kosc (1974).

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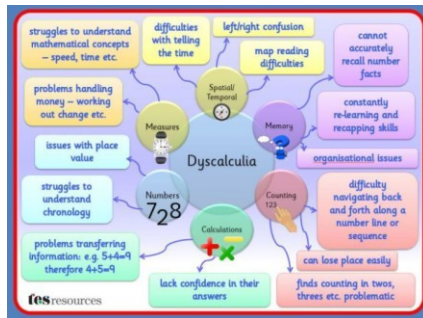
Suggested prevalence of 5-7%.

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Basic definitions states a “child must substantially underachieve on a standardized test relative to the level expected given age, education and intelligence and must experience disruption to the achievement or daily living” (Butterworth, 2005, p. 457).

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## Educational and Clinical Perspectives



- Under the IDEA, students can be eligible for special education services due to a disorder in the processes involved in **mathematical calculations**
- In turn, the DSM-5 recognizes dyscalculia as a disorder *“characterized by academic achievement that is substantially below age expectations in the areas of understanding number concepts, number facts or calculation; and/or mathematical reasoning”* (APA, 2013).

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## Diverse Terminology

- A range of terms for referring to developmental math disability has emerged, along with differing criteria.
  - Geary and colleagues use the term “mathematical disabilities” and include all children who fall below the 30th percentile (Geary, Hoard, & Hamson, 1999) or 35th percentile (Geary, Hoard, & Hamson, 2000) on the Woodcock – Johnson Mathematics reasoning test (Woodcock & Johnson, 2001).
  - Jordan and colleagues (Hanich, Jordan, Kaplan, & Dick, 2001; Jordan, Hanich, & Kaplan, 2003a; Jordan, Kaplan, & Hanich, 2002) refer to “mathematics difficulties”, and include all children below the 35th percentile of the Woodcock–Johnson Broad Mathematics Composite Score.

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## Diverse Understanding

- Several authors refer to “dyscalculia” or “developmental dyscalculia” and use their own tests and more stringent criterion.
  - Shalev, Manor, and Gross-Tsur (1997), who have carried out the most extensive study of this condition, use the criterion of two grades below chronological age.
  - Butterworth’s (2003) Dyscalculia Screener requires scores on two tests to be in the lowest two stanines (11th percentile)

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Butterworth et al. (2011) note that “although the literature is riddled with different terminologies, all seem to refer to the existence of a severe disability in learning arithmetic.”

## UNIFYING CONCEPTUALIZATION

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## CHARACTERISTICS OF DYSCALCULIA

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### What's Dyscalculia?



- Inability to calculate
- Most widely used term for disabilities in mathematics and arithmetic
- Between 3-7% are affected by dyscalculia

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## Basic Characteristics of DD

- Difficulty learning and remembering arithmetic facts
- Difficulty executing calculations (procedures and strategies)
- Use of immature strategies (e.g., counting on fingers)
- Many have problems with basic tasks (such as dot counting or number comparisons)

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## Dyscalculia as Secondary

- Some researchers believe dyscalculia is secondary to more general cognitive deficits
  - Memory, reasoning, spatial abilities
  - One study deduces long-term semantic memory and working memory (speed of processing and rate of decay) influence DD
- However, these explanations are subject to critique

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## Symptoms of Dyscalculia

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Poor understanding of the signs  $+$ ,  $-$ ,  $\times$ ,  $\div$

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Difficulty with addition, subtraction, multiplication, and division

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Poor mental math skills

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Inability to grasp and remember mathematical concepts, rules, formulae, and sequences

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## Causes of Dyscalculia



Hereditary – Genetic



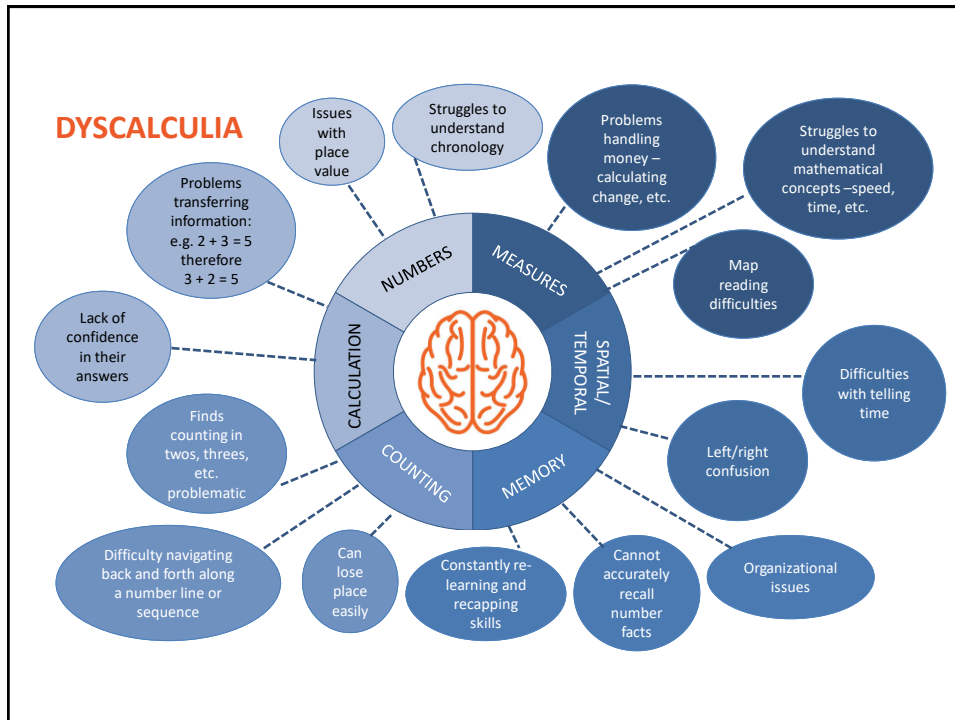
Weak cognitive skills including visual perception, visual memory, and logical thinking



Lacks math skills and knowledge

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## Comorbidity

- There is a high comorbidity between numeracy and literacy disabilities
  - But this relationship has yet to be fully explained
- Some suggest there is an abnormality in the southern hemisphere of the brain
  - Again, evidence here is scant
- ADHD and dyscalculia
- Dyscalculia children generally have a spectrum of secondary conditions, with no clear dominance of pairings

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## **INFORMAL DATA COLLECTION**

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### **Informal Data Collection for Suspected Dyscalculia**

- Math work samples
- Error analysis of math work samples
- Math benchmarks
- Curriculum-Based Measurements (CBM)
  - Computation, Fluency, Problem Solving
- State testing results
- RTI data/software reports
- Observation
- Parent & teacher checklists
- Interviews with teacher, parent, and student

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# SCREENERS

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## Dyscalculia Checklist

Informal Dyscalculia Checklist

Student: \_\_\_\_\_ ID: \_\_\_\_\_ School: \_\_\_\_\_  
 Age: \_\_\_\_\_ DOB: \_\_\_\_\_ Grade: \_\_\_\_\_ Date: \_\_\_\_\_

Dyscalculia is a condition that makes learning and completing math tasks difficult. It can manifest in different signs and symptoms according to the individual and their age. Dyscalculia can equally present early or manifest late.

| Background  | YES    | NO        |
|---|--------|-----------|
| Is there a family history of dyscalculia, dysgraphia or dyslexia?<br>(If so, who: Mother <input type="checkbox"/> Father <input type="checkbox"/> Sibling <input type="checkbox"/> Other <input type="checkbox"/> |        |           |
| Does the child have a history of struggling with math?  |        |           |
| <b>Early Years and Primary Symptom Identification. The student being evaluated...</b>   |        |           |
|   | Always | Sometimes |
| Has trouble remembering math facts (e.g., time tables)  |        |           |
| Has trouble understanding math logic  |        |           |
| Has trouble hearing to count  |        |           |
| Has difficulty transitioning from counting using aides (fingers, tally) to singularly using numbers   |        |           |
| Must count randomly placed objects to know how many objects there are   |        |           |
| Has trouble understanding the relationship between symbols and words (number "7" and the word "seven" represent the same concept)   |        |           |
| Struggles to understand that 6 is one more than 5, and 7 is one more than 6, etc.   |        |           |
| Has trouble partitioning numbers, or understanding that 5 can be made up of 4 + 1, 2 + 3, or 1 + 1 + 1 + 1 + 1  |        |           |
| Has trouble understanding the relationship between numbers (e.g., that 8 is close in magnitude to 9, while there is a greater difference in magnitude between 2 and 9)  |        |           |
| Mixes numbers when verbally recalling a given sequence  |        |           |
| Has trouble ordering numbers on a number line   |        |           |
| Confuses "teen" and "ty" (e.g., 30 and 13)  |        |           |
| Has trouble remembering numbers while mentally solving problems   |        |           |
| Has difficulty counting backwards   |        |           |
| Has difficulty counting a group of different objects  |        |           |
| Has trouble recognizing patterns  |        |           |
| Has difficulty "counting on" from a number as opposed to start counting from one (e.g., 8 + 3 rather than (start "eight, nine, ten, eleven", they would start from "one, two, three, four, ...")                  |        |           |
| Has difficulty learning odd and even  |        |           |
| Incorrectly remembers number facts  |        |           |
| Is unable to derive from information already known (e.g., if $7 + 2 = 9$ , then $7 + 3$ must be 9)  |        |           |
| Has trouble connecting numbers to quantity (e.g., "5" can refer to three objects)   |        |           |
| Has trouble grasping concepts like target or uncollect  |        |           |
| Has difficulty remembering basic math facts (e.g., $9 - 3 = 6$ )  |        |           |
| Has difficulty remembering math signs (+, -, ×, ÷) and their function   |        |           |
| Has difficulty remembering that you always can represent signs (e.g., "plus" = "+")   |        |           |
|   | A      | S         |
|   |        | N         |
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1 Stephens (2021)

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## Battelle Early Academic Survey (BEAS)



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## What is the BEAS?

Newest addition to the BDI-3 Suite of Assessments

Assesses foundational math and literacy skills for  
ages 3.6-7.11 years

Low qualification level permits a wide range of  
administrators

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## Adding the BEAS to your Testing Portfolio

1. Academic screening in general education settings
  1. **Mathematics (Dyscalculia)**
  2. Literacy
2. Academic screening of children with developmental delays identified by the BDI-3
3. Pre- and post-intervention assessment to determine student growth (RTI)
4. Assessment of students transitioning from preschool to kindergarten
5. Assessment of foundational skills during the early primary school years
6. Development of IEP goals and progress on IEP goals

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## BEAS Subdomain Descriptions

- **Numbers, Counting, and Sets:** Mastering the skills within this subdomain allows children to understand the foundation of computation. Performance in this subdomain reflects the development of a child's number sense.
- **Geometry:** In later years, development in this subdomain relates to working with lines, angles, and their properties. Furthermore, development in this area relates to spatial reasoning skills.
- **Measurement and Data:** Foundational skills precede higher-order abilities related to data representation and data analysis. Skills in this subdomain also serve as a precursor for the measure and estimation of time, mass, length, and volume.
- **Operations and Algebraic Thinking:** Foundation for computation with larger numbers, more advanced problem solving, and connecting real-world applications to mathematical concepts.

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## Alignment of BEAS Subdomains With IDEA and DSM-5

|                                   |   | IDEA | DSM-5 |
|-----------------------------------|---|------|-------|
| Subdomain                         | Criteria  |      |       |
| Numbers, Counting, and Sets       | Calculation or Number Facts; Number Concepts              | ✓    | ✓     |
| Geometry                          | Mathematical Reasoning                                    | --   | ✓     |
| Measurement and Data              | Mathematical Reasoning                                    | --   | ✓     |
| Operations and Algebraic Thinking | Mathematical Reasoning; Calculation (with larger numbers) | ✓    | ✓     |

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Utilization for a Dyscalculia Assessment

## WHAT IS CORE-SELECTIVE EVALUATION PROCESS (C-SEP)

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## C-SEP Definition

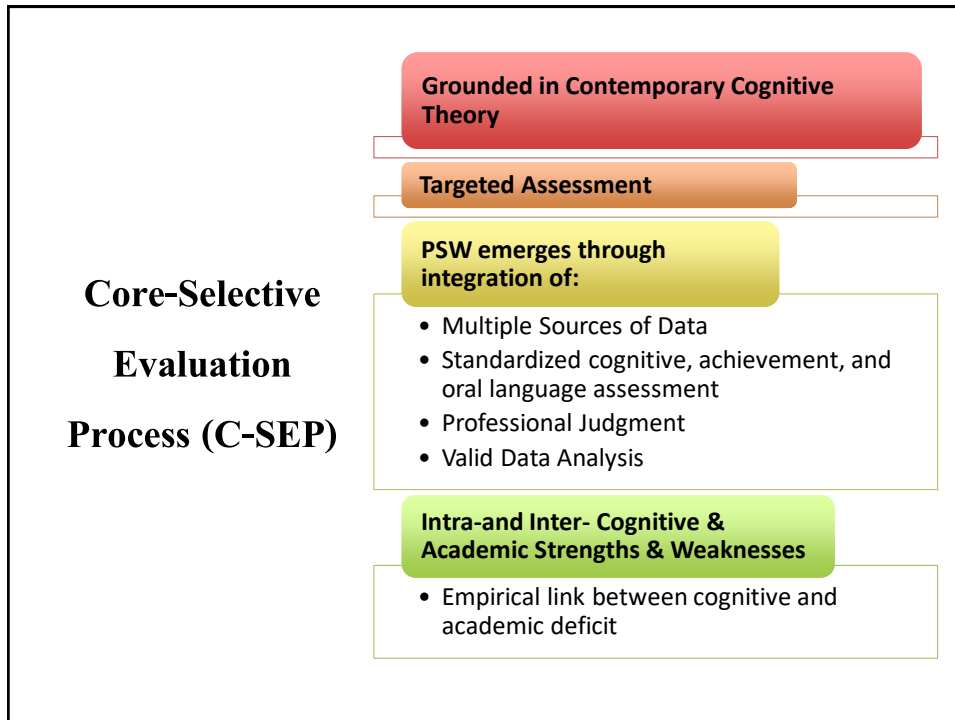
- Targeted and purposeful assessment process that incorporates multiple sources of data (MSD) with norm-referenced testing to determine a pattern of strengths and weaknesses (PSW).



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**C-SEP IS A TARGETED  
ASSESSMENT MODEL NOT A  
TESTING MODEL**

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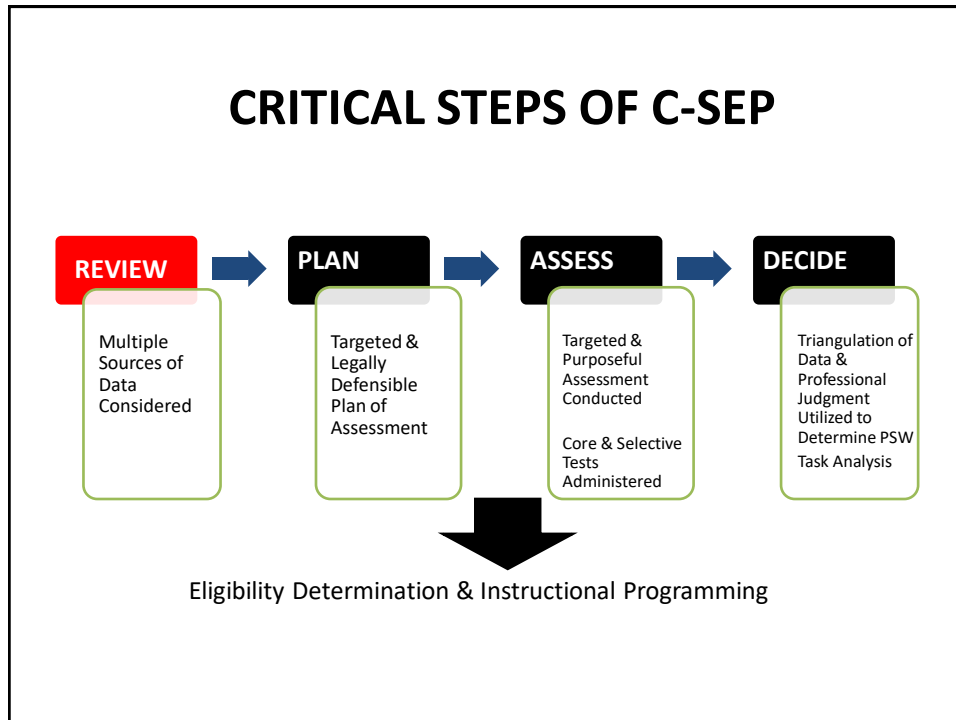
## SLD Eligibility Requirements under C-SEP

There are four criteria necessary to meet SLD eligibility under C-SEP (Schultz & Stephens-Pisecco, 2017):

1. Appropriate Instruction- The student must have received appropriate instruction via RTI or another form of supplemental instruction prior to being referred.
2. Multiple Forms of Measurement- Multiple sources of data must indicate that the student does not meet age or grade-level expectations.
3. PSW- Student's functional profile must reveal notable variance among specific areas of cognitive ability, or between specific domains of cognitive and academic functioning. The PSW occurs over time with multiple data points, standard scores are one piece of the data.
4. Rule Outs- Other contributing factors must be ruled out as the *primary cause* of a student's challenges (Stephens et al., 2013). These may include vision, hearing, or other physical impairments; intellectual disability (ID); severe emotional/psychological disturbances; lack of appropriate instruction; etc.

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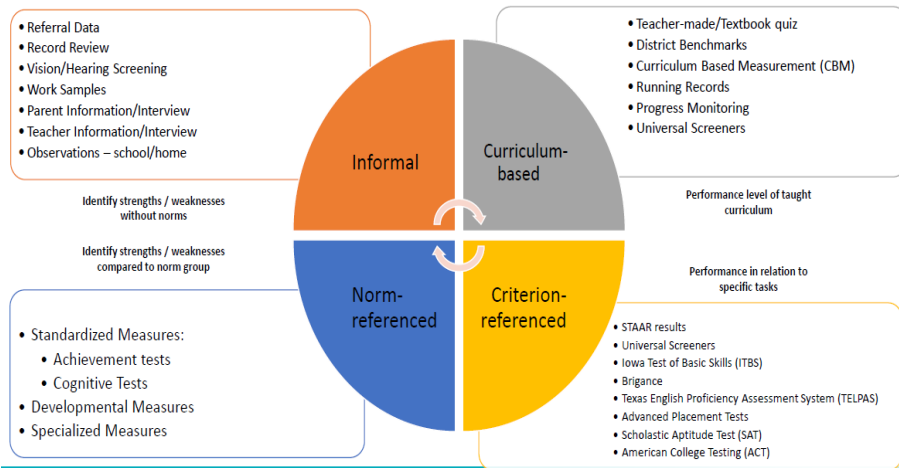


## C-SEP Step One: Review

The first step of C-SEP requires the examiner to:

1. Thorough Review of Educational Records: Examining educational records allows the examiner to determine if preliminary patterns are evident related to the referral concerns
2. Clarify Referral Concerns: The referral concerns guide your assessment, and ideally will be clear. Examiners should clarify with referral sources any unclear/vague concerns and request additional information whenever necessary.
3. Review RTI Effectiveness: Review the student's rate of improvement in RTI.
  - If inadequate progress has been made → investigate SLD
  - If the rate of improvement is rising but performance lags in comparison to peers → consider student has general low achievement.
  - If significant progress is made via RTI → consider if student is an "instructional casualty" rather than one with an SLD.
4. Establish Student's Failure to Meet Standards: Verify that the student has failed to meet standards via careful analysis available data sources.

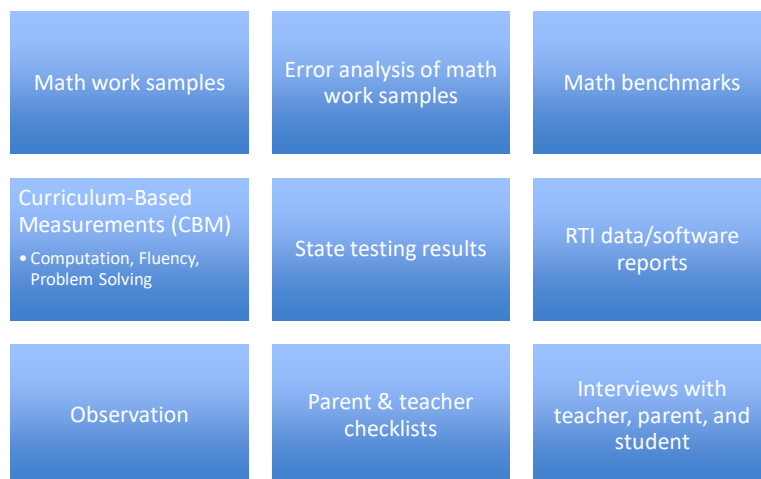
# Multiple Measures of Assessment



Texas Education Agency, 2020

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## Informal Data Collection for Suspected Dyscalculia



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# Multiple Sources of Data Worksheet

|  |   |  |   |   |   |  |   |     |            |               |
|--|---|--|---|---|---|--|---|-----|------------|---------------|
| Student Name:<br>LEP, AT RISK, Other:  |   | DOB/Age:<br>Campus:  |   | Initial/ Re-eval<br>PEIMS Ethnicity:  |   | Area(s) of Eligibility:<br>Grade Level:  |   |     |            |               |
| Retention<br>Never been retained<br>OR<br>Years retained _____<br>Grade(s) repeated:       | Total Days<br>Absent<br><br>Total Days<br>Tardy   | Health Information   |   | Language<br>Home: _____ OLPT Eng.: _____<br>Dominant: _____ OLPT Sp.: _____<br>Instruction: _____   |   | Parent Information<br>Strengths: _____<br>Concerns: _____<br>Family History: Y N   |   |     |            |               |
| STAAR Results  | Reading   |  |   |   | Math  |  |   |     |            |               |
|  | Grade   | DNM/L I  | App   | Meets/L II  | Masters/L III   | Grade  | DNM/L I   | App | Meets/L II | Masters/L III |
|  |   |  |   |   |   |  |   |     |            |               |
|  |   |  |   |   |   |  |   |     |            |               |
| Observation/Interview<br>Notes   |   | Report Card Grades:  |   |   |   |  |   |     |            |               |
| Math: _____<br>Reading: _____<br>Writing: _____<br>Science: _____<br>Social Studies: _____ |   | Math: _____<br>Reading: _____<br>Writing: _____<br>Science: _____<br>Social Studies: _____ |   | Curriculum Assessments:<br>Math: _____<br>Reading: _____<br>Writing: _____<br>DRA: _____<br>ISIP: _____   |   | Other Assessment Results:<br>Writing: _____<br>Science: _____<br>DMA: _____<br>TELPAS: Lis: _____ Sp: _____ Rdg: _____ Wr: _____ Com: _____              |   |     |            |               |
| Teacher<br>Information   | Teacher Concerns  |  |   | 1) Basic Reading/Decoding (1, 2, 3, 4)<br>2) Oral Reading/Fluency (1, 2, 3, 4)<br>3) Reading Comprehension (1, 2, 3, 4)<br>4) Math Calculation (1, 2, 3, 4)<br><small>1=poor, 2=below average, 3=average, 4=above average</small> |   | 5) Math Problem Solving (1, 2, 3, 4)<br>6) Listening Comprehension (1, 2, 3, 4)<br>7) Oral Expression (1, 2, 3, 4)<br>8) Written Expression (1, 2, 3, 4) |   |     |            |               |
| RTI  | Intervention(s) Implemented/Subject:<br>Frequency:<br>Duration:<br>Results:                             |  |   |   | Intervention(s) Implemented/Subject:<br>Frequency:<br>Duration:<br>Results:   |  |   |     |            |               |
| Review of<br>Educational<br>Records  | Outcome of RTI  |  | Strengths/Weaknesses  |   | Exclusionary Factors  |  | Failure to Meet Grade Level<br>Standards  |     |            |               |
|  | Adequate ROI (instructional casualty?)<br>Slow but Rising ROI (general low ach.?)<br>Minimal ROI (SLD?) |  | Reading S W<br>Math S W<br>Writing S W<br>Behavior S W<br>Oral Language S W |   | Visual, hearing, or motor<br>Limited English proficiency<br>Intellectual disability<br>Emotional disturbance<br>Cultural diff. or eco. Disadvantage<br>Inadequate instruction |  | Y N<br>Y N<br>Y N<br>Y N<br>Y N<br>Y N<br>Y N<br>Y N<br>Area(s): _____<br>Hypothesis: |     |            |               |
|  |   |  |   |   |   |  |   |     |            |               |

Sarah B Holman 9-2019

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# Multiple Sources of Data Worksheet

|  |  |   |     |   |   |   |              |     |            |               |     |
|--|--|---|-----|---|---|---|--------------|-----|------------|---------------|-----|
| Student Name: Sample Student   |  | DOB/Age: 1/23/2010  |     | Initial/ Re-eval Initial  |   | Area(s) of Eligibility: N/A   |              |     |            |               |     |
| LEP, AT RISK, Other: N/A   |  | Campus: Sample School   |     | PEIMS Ethnicity:  |   | Grade Level: 4  |              |     |            |               |     |
| Retention<br>Never been retained<br>OR<br>Years retained _____<br>Grade(s) repeated: N/A | Total Days<br>Absent 1<br><br>Total Days<br>Tardy  | Health Information<br>No health issues reported.<br>Vision and hearing good.<br>No attendance issues reported.              |     | Language<br>Home: English OLPT Eng.: /<br>Dominant: English OLPT Sp.: /<br>Instruction: English   |   | Parent Information Respectful;<br>Strengths: Good sense of humor; Creative;<br>Concerns: Poor grades; Poor math skills;<br>Family History: Y N Gives up easily;<br>No health concerns Easily distracted |              |     |            |               |     |
| STAAR Results  | Reading  |   |     |   | Math  |   |              |     |            |               |     |
|  | Grade  | DNM/L I   | App | Meets/L II  | Masters/L III   | Grade   | DNM/L I      | App | Meets/L II | Masters/L III |     |
|  | 19/20  | NONE  |     |   | COVID-19  | 17/18   | 1372         | Yes | 1247       | No            | --- |
|  | 3  | Common District   | Yes |   | ---   | 3   | Common Dist. | N   |            | ---           |     |
| Observation/Interview<br>Notes   |  | Math Class: Frequently off task; easily distracted; appeared to "zone out"; did not finish; difficulty following directions |     |   |   |   |              |     |            |               |     |
| Report Card Grades: 2019   |  | Report Card Grades: 2018  |     | Curriculum Assessments:   |   | Other Assessment Results  |              |     |            |               |     |
| Math: 73<br>Reading: 89<br>Writing: 91<br>Science: 89<br>Social Studies: 92              |  | Math: 77<br>Reading: 90<br>Writing: 86<br>Science: 88<br>Social Studies: 91   |     | Math: _____<br>Reading: _____<br>Writing: _____<br>DRA: Kinder-2nd - Met EOY<br>ISIP: _____   |   | Struggles with Math<br>Writing: _____<br>Science: _____<br>DMA: _____<br>TELPAS: Lis: N/A Sp: -- Rdg: -- Wr: -- Com: --   |              |     |            |               |     |
| Teacher<br>Information<br>Good at<br>Reading   | Teacher Concerns<br>Persistent academic concerns in Math<br>Puts head down (stays)<br>Poor attention/concentration<br>Difficulty following directions    |   |     | 1) Basic Reading/Decoding (1, 2, 3, 4)<br>2) Oral Reading/Fluency (1, 2, 3, 4)<br>3) Reading Comprehension (1, 2, 3, 4)<br>4) Math Calculation (1, 2, 3, 4)<br><small>1=poor, 2=below average, 3=average, 4=above average</small> |   | 5) Math Problem Solving (1, 2, 3, 4)<br>6) Listening Comprehension (1, 2, 3, 4)<br>7) Oral Expression (1, 2, 3, 4)<br>8) Written Expression (1, 2, 3, 4)<br><small>Frequently off task</small>          |              |     |            |               |     |
| RTI<br>Yes   | Intervention(s) Implemented/Subject: Math - Basic Skills<br>Frequency: 2-3 times per week<br>Duration: 15-20 minutes per session<br>Results: Minimal ROI |   |     |   | Intervention(s) Implemented/Subject: Math - MobyMax<br>Frequency: 4-5 days per week<br>Duration: 30-45 minute sessions<br>Results: Minimal - 25 grade level proficiency |   |              |     |            |               |     |

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## Preliminary Review and Analysis of MSD

What preliminary patterns of strengths emerged?

What preliminary patterns of weaknesses emerged?

Are the strengths and weaknesses supported by multiple sources of data (cross validation)?

What exclusionary factors have been ruled out?

What, if any, additional data is needed to rule out the remaining exclusionary factors?

What additional information do you need to complete a comprehensive evaluation of the student?

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**WHAT PRELIMINARY PATTERNS OF  
STRENGTHS EMERGED???**

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# Preliminary Pattern of Strengths

|  |  |   |                 |   |            |  |          |              |     |            |               |  |
|--|--|---|-----------------|---|------------|--|----------|--------------|-----|------------|---------------|--|
| Student Name: Sample Student<br>LEP, AT RISK, Other: N/A                                       |  | DOB/Age: 1/23/2010<br>Campus: Sample School   |                 | Initial/ Re-eval Initial<br>PEIMS Ethnicity:  |            | Area(s) of Eligibility: N/A<br>Grade Level: 4  |          |              |     |            |               |  |
| <b>Retention</b><br>Never been retained<br>OR<br>Years retained: N/A<br>Grade(s) repeated: N/A |  | <b>Total Days Absent</b> 1<br><b>Total Days Tardy</b> No<br><b>Health Information</b><br>No health issues reported.<br>Vision and hearing good.<br>No attendance issues reported. |                 | <b>Language</b><br>Home: English<br>Dominant: English<br>Instruction: English<br>OLPT Eng.: /<br>OLPT Sp.: /  |            | <b>Parent Information</b> Respectful;<br>Strengths: Good sense of humor; Creative;<br>Concerns: Poor grades; Poor math skills;<br>Family History: Y/N Gives up easily;<br>No health concerns Easily distracted |          |              |     |            |               |  |
| <b>STAAR Results</b>   |  | <b>Reading</b>  |                 |   |            | <b>Math</b>  |          |              |     |            |               |  |
|  |  | Grade   | DNM/L I         | App   | Meets/L II | Masters/L III  | Grade    | DNM/L I      | App | Meets/L II | Masters/L III |  |
|  |  | 19/20   | NONE            |   |            |  | COVID-19 |              |     |            |               |  |
|  |  | 17/18   | 1372            |   | Yes        | 1247   | No       |              |     |            |               |  |
|  |  | 3   | Common District |   | Yes        |  | 3        | Common Dist. | N   |            |               |  |
| <b>Observation/Interview Notes</b>   |  | Math Class: Frequently off task; easily distracted; appeared to "zone out"; did not finish; difficulty following directions   |                 |   |            |  |          |              |     |            |               |  |
| <b>Report Card Grades: 2019</b>  |  | <b>Report Card Grades: 2018</b>   |                 | <b>Report Card Grades: 2017</b>   |            | <b>Curriculum Assessments:</b>   |          |              |     |            |               |  |
| Math: 73<br>Reading: 89<br>Writing: 91<br>Science: 89<br>Social Studies: 92                    |  | Math: 77<br>Reading: 90<br>Writing: 86<br>Science: 88<br>Social Studies: 91   |                 | Math: 82<br>Reading: 88<br>Writing: 80<br>Science: 94<br>Social Studies: 95   |            | Other Assessment Results<br>Struggles with Math<br>Math: _____<br>Reading: _____<br>Writing: _____<br>Science: _____<br>Drama: _____<br>ISIP: _____<br>TELPAS: Lis: N/A Sp: -- Rdg: -- Wr: -- Com: --          |          |              |     |            |               |  |
| <b>Teacher Information</b><br>Good at Reading  |  | <b>Teacher Concerns</b><br>Persistent academic concerns in Math<br>Puts head down (stays)<br>Poor attention/concentration<br>Difficulty following directions                      |                 | 1) Basic Reading/Decoding (1, 2, 3, 4)<br>2) Oral Reading/Fluency (1, 2, 3, 4)<br>3) Reading Comprehension (1, 2, 3, 4)<br>4) Math Calculation (1, 2, 3, 4) |            | 5) Math Problem Solving (1, 2, 3, 4)<br>6) Listening Comprehension (1, 2, 3, 4)<br>7) Oral Expression (1, 2, 3, 4)<br>8) Written Expression (1, 2, 3, 4)   |          |              |     |            |               |  |
| <b>RTI</b><br>Yes  |  | Intervention(s) Implemented/Subject: Math - Basic Skills<br>Frequency: 2-3 times per week<br>Duration: 15-20 minutes per session<br>Results: Minimal ROI                          |                 |   |            | Intervention(s) Implemented/Subject: Math - MobyMax<br>Frequency: 4-5 days per week<br>Duration: 30-45 minute sessions<br>Results: Minimal - 25 grade level proficiency  |          |              |     |            |               |  |

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## WHAT PRELIMINARY PATTERNS OF WEAKNESSES EMERGED???

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# Preliminary Pattern of Weaknesses

|  |  |   |                 |   |            |   |             |              |     |            |               |
|--|--|---|-----------------|---|------------|---|-------------|--------------|-----|------------|---------------|
| Student Name: Sample Student<br>LEP, AT RISK, Other: N/A   |  | DOB/Age: 1/23/2010<br>Campus: Sample School   |                 | Initial/ Re-eval Initial<br>PEIMS Ethnicity:  |            | Area(s) of Eligibility: N/A<br>Grade Level: 4   |             |              |     |            |               |
| <b>Retention</b><br>Never been retained<br>OR<br>Years retained: N/A<br>Grade(s) repeated: N/A   |  | <b>Total Days Absent</b> 1<br><b>Total Days Tardy</b> No<br><b>Health Information</b><br>No health issues reported.<br>Vision and hearing good.<br>attendance issues reported.                                  |                 | <b>Language</b><br>Home: English OLPT Eng.: /<br>Dominant: English OLPT Sp.: /<br>Instruction: English  |            | <b>Parent Information</b> Respectful;<br>Strengths: Good sense of humor; Creative;<br>Concerns: Poor grades; Poor math skills;<br>Family History: Y N Gives up easily;<br>No health concerns Easily distracted    |             |              |     |            |               |
| <b>STAAR Results</b>   |  | <b>Reading</b>  |                 |   |            |   | <b>Math</b> |              |     |            |               |
|  |  | Grade   | DNM/L I         | App   | Meets/L II | Masters/L III   | Grade       | DNM/L I      | App | Meets/L II | Masters/L III |
|  |  | 19/20   | NONE            |   |            |   | COVID-19    |              |     |            |               |
|  |  | 17/18   | 1372            | Yes   |            | 1247  | No          |              |     |            |               |
|  |  | 3   | Common District | Yes   |            |   | 3           | Common Dist. | N   |            |               |
| <b>Observation/Interview Notes</b>   |  | <b>Math Class:</b> Frequently off task; easily distracted; appeared to "zone out"; did not finish; difficulty following directions  |                 |   |            |   |             |              |     |            |               |
| <b>Report Card Grades: 2019/2020</b><br>Math: 73<br>Reading: 89<br>Writing: 91<br>Science: 89<br>Social Studies: 92  |  | <b>Report Card Grades: 2018</b><br>Math: 77<br>Reading: 90<br>Writing: 86<br>Science: 88<br>Social Studies: 91  |                 | <b>2017</b><br>Math: 82<br>Reading: 88<br>Writing: 80<br>Science: 94<br>Social Studies: 95  |            | <b>Other Assessment Results</b><br><b>Struggles with Math</b><br>Math: _____<br>Reading: _____<br>Writing: _____<br>Science: _____<br>DMA: _____<br>YELPAS: Lis: N/A Sp: -- Rdg: -- Wr: -- Com: --<br>ISIP: _____ |             |              |     |            |               |
| <b>Teacher Concerns</b><br>Persistent academic concerns in Math<br>Puts head down (stays)<br>Poor attention/concentration<br>Difficulty following directions |  | 1) Basic Reading/Decoding (1, 2, 3, 4)<br>2) Oral Reading/Fluency (1, 2, 3, 4)<br>3) Reading Comprehension (1, 2, 3, 4)<br>4) Math Calculation (2, 3, 4)<br>1=good, 2=below average, 3=average, 4=above average |                 | 5) Math Problem Solving (1, 2, 3, 4)<br>6) Listening Comprehension (1, 2, 3, 4)<br>7) Oral Expression (1, 2, 3, 4)<br>8) Written Expression (1, 2, 3, 4)<br>Frequently off task |            |   |             |              |     |            |               |
| <b>Teacher Information</b><br>Good at Reading  |  | <b>Intervention(s) Implemented/Subject:</b> Math - Basic Skills<br>Frequency: 2-3 times per week<br>Duration: 15-20 minutes per session<br>Results: Minimal ROI   |                 | <b>Intervention(s) Implemented/Subject:</b> Math - MobyMax<br>Frequency: 4-5 days per week<br>Duration: 30-45 minute sessions<br>Results: Minimal - 25 grade level proficiency  |            |   |             |              |     |            |               |
| <b>RTI</b><br>Yes  |  |   |                 |   |            |   |             |              |     |            |               |

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ARE PRELIMINARY PATTERNS OF  
STRENGTHS & WEAKNESSES  
SUPPORTED BY MULTIPLE DATA  
POINTS?

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## WHICH EXCLUSIONARY FACTORS HAVE BEEN PRELIMINARILY RULED OUT? DO WE NEED ADDITIONAL DATA?

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## Completion of MSD Analysis

|   |  |  |  |   |  |  |  |
|---|--|--|--|---|--|--|--|
| Student Name: Sample Student<br>LEP, AT RISK, Other: N/A  |  | DOB/Age: 1/23/2010<br>Campus: Sample School  |  | Initial/ Re-eval Initial<br>PEIMS Ethnicity:  |  | Area(s) of Eligibility: N/A<br>Grade Level: 4  |  |
| <b>Retention</b><br>Never been retained<br>On: _____<br>Years retained: _____<br>Grade(s) repeated: N/A   |  | <b>Total Days Absent</b> 1<br><b>Total Days Tardy</b> No attendance issues reported.   |  | <b>Health Information</b><br>No health issues reported.<br>Vision and hearing good.   |  | <b>Language</b><br>Home: English OLPT Eng.: /<br>Dominant: English OLPT Sp.: /<br>Instruction: English   |  |
|   |  |  |  | <b>Parent Information</b> Respectful;<br>Strengths: Good sense of humor; Creative;<br>Concerns: Poor grades; Poor math skills;<br>Family History: Y( ) Gives up easily;<br>No health concerns Easily distracted |  |  |  |
| <b>STAAR Results</b><br>Grade DNM/L I App Meets/L II Masters/L III<br>19/20 NONE 1247 No<br>17/18 1372 Yes<br>3 Common District Yes   |  | <b>Reading</b><br>Grade DNM/L I App Meets/L II Masters/L III<br>19/20 NONE 1247 No<br>17/18 1372 Yes<br>3 Common District Yes  |  | <b>Math</b><br>Grade DNM/L I App Meets/L II Masters/L III<br>19/20 NONE 1247 No<br>17/18 1372 Yes<br>3 Common District Yes  |  |  |  |
|   |  |  |  |   |  |  |  |
|   |  |  |  |   |  |  |  |
|   |  |  |  |   |  |  |  |
| <b>Observation/Interview Notes</b><br>Math Class: Frequently off task; easily distracted; appeared to "zone out"; did not finish; difficulty following directions                                       |  | <b>Report Card Grades: 2019/2020</b><br>Math: 73 2020<br>Reading: 89 math<br>Writing: 91 math<br>Science: 89 charts<br>Social Studies: 92  |  | <b>Report Card Grades: 2018/2019</b><br>Math: 77 2018<br>Reading: 90 math<br>Writing: 86 math<br>Science: 88 charts<br>Social Studies: 91   |  | <b>Other Assessment Results</b><br>Curriculum Assessments:<br>Math: _____<br>Writing: _____<br>Science: _____<br>DMA: _____<br>ISIP: _____<br>TELPAS: Lis: N/A Sp: --- Rldg: --- Wr: --- Com: ---  |  |
| <b>Teacher Information</b><br>Good at Reading<br>Teacher Concerns:<br>Persistent academic concerns in Math<br>Puts head down (stays)<br>Poor attention/concentration<br>Difficulty following directions |  | <b>Intervention(s) Implemented/Subject:</b> Math - Basic Skills<br><b>Frequency:</b> 2-3 times per week<br><b>Duration:</b> 15-20 minutes per session<br><b>Results:</b> Minimal ROI |  | <b>Intervention(s) Implemented/Subject:</b> Math - MobyMax<br><b>Frequency:</b> 4-5 days per week<br><b>Duration:</b> 30-45 minute sessions<br><b>Results:</b> Minimal - 25 grade level proficiency             |  | <b>Exclusionary Factors</b><br>Visual, hearing, or motor Y ( )<br>Limited English proficiency Y ( )<br>Intellectual disability Y ( )<br>Emotional disturbance Y ( )<br>Cultural diff. or eco. Disadvantage Y ( )<br>Inadequate instruction Y ( ) |  |
| <b>Review of Educational Records</b><br>Adequate ROI (instructional casualty?)<br>Slow but Rising ROI (general low ach.?)<br>Minimal ROI (SLD?)<br>Math   |  | <b>Strengths/Weaknesses</b><br>Reading (S) W<br>Math (S) W<br>Writing (S) W<br>Behavior (S) W<br>Oral Language (S) W   |  | <b>Failure to Meet Grade Level Standards</b><br>Y ( ) N Area(s): Math<br><b>Hypothesis:</b><br>Sample has a disability in the area of Math calculation & problem solving skills                                 |  |  |  |

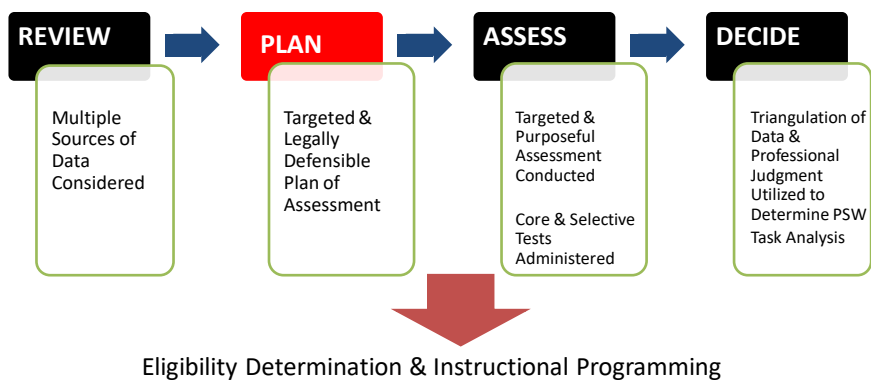
Sarah B Holman 9-2019

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**WHAT OTHER DATA DO YOU NEED TO BETTER UNDERSTAND THE LEARNER AND PLAN YOUR TARGETED TESTING PLAN?**

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## CRITICAL STEPS OF C-SEP



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## C-SEP Step Two: Plan

The second step of C-SEP requires the examiner to:

1. Informal Data Analysis: Categorize informal data for ease of analysis in order to search for patterns.
2. Formulate a Working Hypothesis and a Focused Referral Question (FRQ): Utilize referral data and garnered informal data to inform initial impressions regarding the cause of your student's underachievement.
3. Determine what Additional Data is Needed: Based on what additional information you perceive you need, an examiner must-
  - Generate a formal testing plan by selecting norm-referenced tests that allow for a comprehensive review of cognitive, linguistic, and academic abilities.
  - Engage in careful observation to assess language demands, classroom demands, and demands within the testing environment.

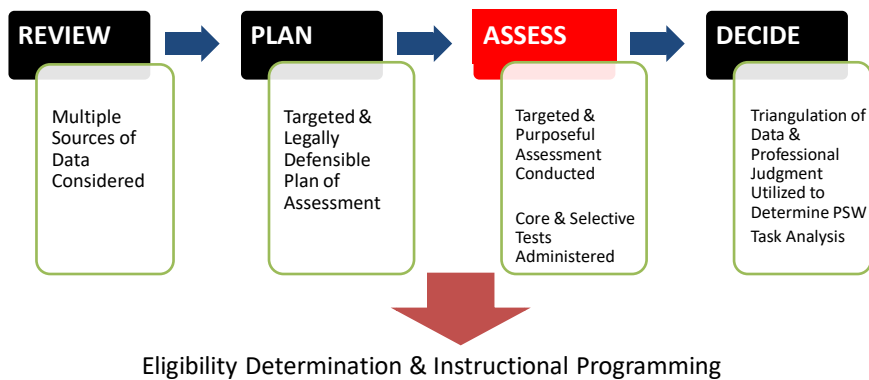
49

## Targeted Testing Plan for Dyscalculia

C-SEP

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## CRITICAL STEPS OF C-SEP



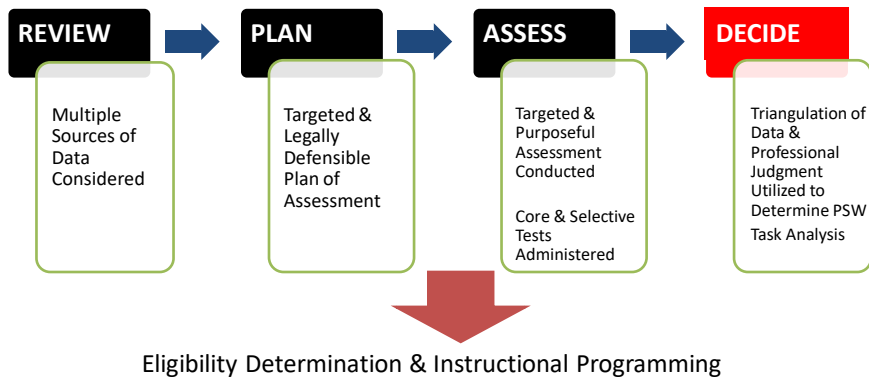
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## C-SEP Step Three: Assess

1. Measure Core Cognitive Abilities: Tests 1-7
2. Measure Core Language Abilities: Tests 1-4
3. Measure Core Academic Achievement: Tests 1-6
4. Review core testing results to determine areas of strengths, and weaknesses (which warrant additional investigation)
5. "Selectively" test/administer additional tests in the areas of weakness and in areas of interest related to the referral concern(s)
6. Observe the student within the classroom in the subjects related to the referral questions.
7. Administer informal assessments as needed (e.g., CBM, informal inventories)
8. Document additional data (e.g., "testing the limits", behavioral observations).

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## CRITICAL STEPS OF C-SEP



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## C-SEP Step Four: Decide

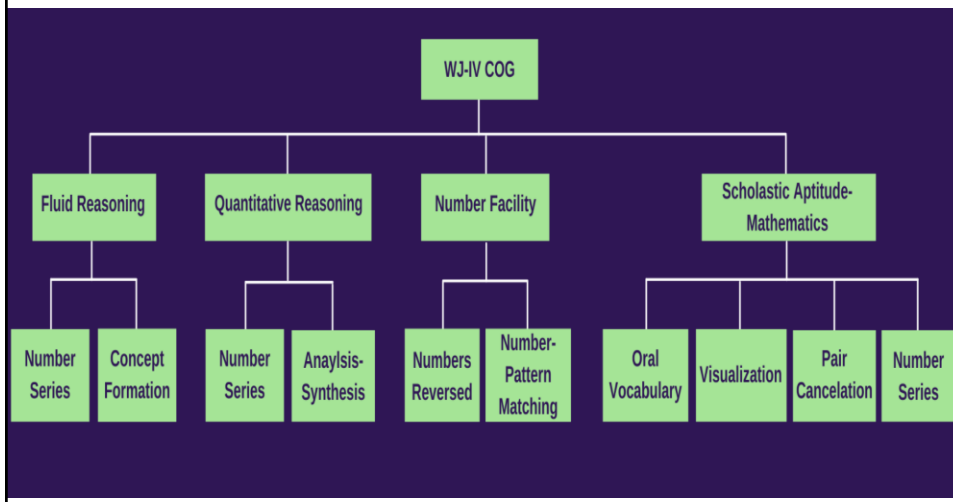
1. Organize, Sort, and Visually Analyze Data: Examiners must do a comprehensive review of their data, integrating it whenever possible to find patterns and connections. Visualizing the data may support conceptualization.
2. Utilize PSW Guidelines- Question whether the student has a PSW in any of the domains administered. If so, describe the pattern via age- or grade-standards, or in terms of cognitive processes (e.g., intra-variation procedures).
3. Apply Data to PSW Policy- Consider whether the PSW suggests notable variance among specific cognitive functions and/or between specific areas of cognitive functioning and academic achievement.
4. Report Findings: Results of the evaluation should be provided to the IEP committee. The IEP committee will work conjointly to determine eligibility and the educational needs of the student.

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## DOMAINS & TESTS OF INTEREST FOR DYSCALCULIA ASSESSMENT

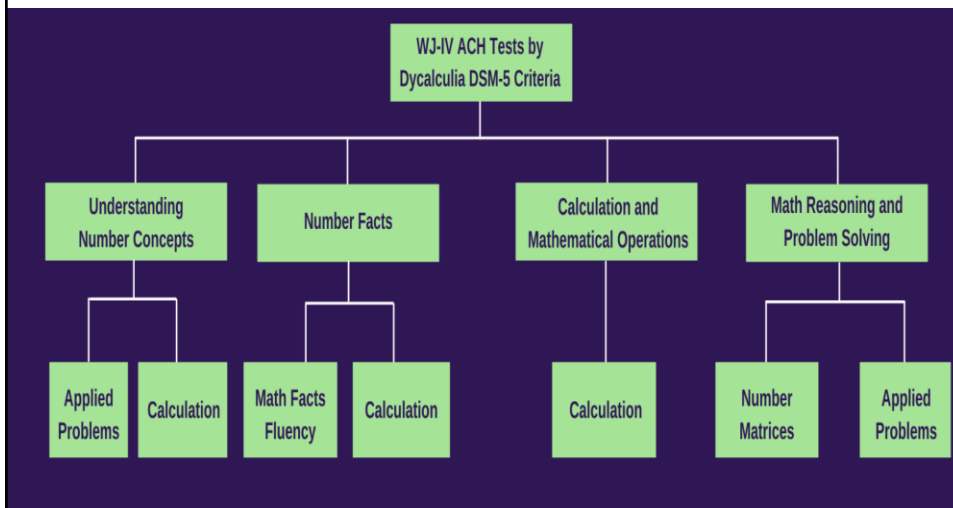
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### WJ IV COG Tests for Dyscalculia



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## WJ IV ACH Tests for Dyscalculia



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## Comprehensive Assessment Planning: WJ IV Suite of Assessments

The *WJ IV Tests of Cognitive Abilities* (WJ IV COG) and *WJ IV Tests of Achievement* (WJ IV ACH) allow the examiner to investigate various latent and applied abilities related to pertinent aspects of mathematical achievement.

Application of the *WJ IV* Core-Selective Evaluation Process (C-SEP).

- A Pattern of Strengths and Weaknesses (PSW) approach to SLD identification Aligns with Special Education policy (IDEA, 2004)
- Involves four steps: Review, Plan, Assess, and Decide
- Requires the administration of the core tests within each applicable battery
  - WJ IV COG: Tests 1 – 7
  - WJ IV ACH: Tests 1 – 6
  - WJ IV OL: Tests 1 – 4



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## WJ IV Clusters and Tests of Interest for Dyscalculia Assessment

### WJ IV COG

- Fluid Reasoning
- Quantitative Reasoning
- Number Facility
- Scholastic Aptitude Cluster- Mathematics



### WJ IV ACH

- Applied Problems
- Calculation
- Math Facts Fluency
- Number Matrices



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## WJ IV Tests of Cognitive Abilities: Fluid Reasoning (*Gf*)

Tests in the **Fluid Reasoning cluster** assess:

- Drawing inferences
- Identifying and forming concepts
- Identifying relationships

Supports flexible thinking and the ability to apply knowledge across domains.

*Tests:*

**Number Series**  
**Concept Formation**



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## *WJ IV Tests of Cognitive Abilities:* Quantitative Reasoning (RQ)

### **Quantitative Reasoning:**

- Ability to understand and reason using mathematical concepts.
- Derived as an extension of the Fluid Reasoning cluster.

### *Tests:*

**Number Series**

**Analysis-Synthesis**



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## *WJ IV Tests of Cognitive Abilities:* Number Facility (N)

**Number Facility:** Speed, fluency, and accuracy in working with numbers.

- Manipulating numbers held within short-term working memory
- Comparing number patterns
- Addressing simple arithmetic

### *Tests:*

**Numbers Reversed**

**Number-Pattern Matching**



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## *WJ IV Tests of Cognitive Abilities:* Scholastic Aptitude- Math

Tests within each Scholastic Aptitude Cluster are evidence-based to predict specific aspects of academic achievement.

Examiners can compare Scholastic Aptitude to Academic Achievement.

*Tests:*

**Oral Vocabulary**

**Visualization**

**Pair Cancellation**

**Number Series**



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## *WJ IV Tests of Achievement:* Math Skills Measured

| Skill                        | Tests              | Stimulus                          | Task Demands                                | More Complex |
|------------------------------|--------------------|-----------------------------------|---|--------------|
| Problem-Solving and Concepts | Applied Problems   | Printed problems presented orally | Analyzing and solving practical problems    |              |
|                              | Number Matrices    | Rectangular array of numbers      | Analyzing numerical relationships           |              |
| Skills                       | Calculation        | Printed items for computation     | Simple to complicated calculations          |              |
| Automaticity                 | Math Facts Fluency | Printed math facts (+, -, and x)  | Quickly calculating single-digit math facts |              |
| Basic Math Facts             | Calculation        | Single-digit calculations         | Calculating single-digit facts              |              |
| Motoric Input                | Calculation        | Orally presented numbers          | Writing individual numbers                  |              |
|                              |                    |                                   |   | Less Complex |

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*WJ IV Tests of Achievement:*  
Understanding Number Concepts



Difficulties in learning number-related concepts can be assessed via two tasks of the *WJ IV ACH*.

*Tests:*  
**Applied Problems**  
**Calculation**

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*WJ IV Tests of Achievement:*  
Number Facts

Number facts relate to basic calculations that students should be able to recall with relative ease. These facts commonly fall in the domains of addition, subtraction, multiplication, and division.

*Tests:*  
**Math Facts Fluency**  
**Calculation**



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***WJ IV Tests of Achievement:***  
**Calculation and Mathematical Operations**



Calculation skills involve an individual's ability to accurately address a range of mathematical computations (from addition to geometry and trigonometry).

Understanding and awareness of other concepts (e.g., whole numbers, negative signs, fractions), also is needed for successful calculation.

*Tests:*

**Calculation**

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***WJ IV Tests of Achievement:***  
**Math Reasoning and Problem-Solving**



Math reasoning and problem-solving can be defined as a higher-order skill. It requires quantitative and fluid reasoning and demands greater use of executive functioning skills (planning, organization, etc.).

*Tests:*

**Number Matrices**

**Applied Problems**

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## WJ IV EARLY CHILDHOOD TESTS OF INTEREST FOR DYSCALCULIA ASSESSMENT

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### Early Childhood Assessment Planning: WJ IV ECAD

The *WJ IV Tests of Early Cognitive and Academic Development* (WJ IV ECAD) is a quick-to-administer and developmentally appropriate measure adapted from trusted Woodcock-Johnson IV tests. It serves as a holistic measure of early childhood functioning.

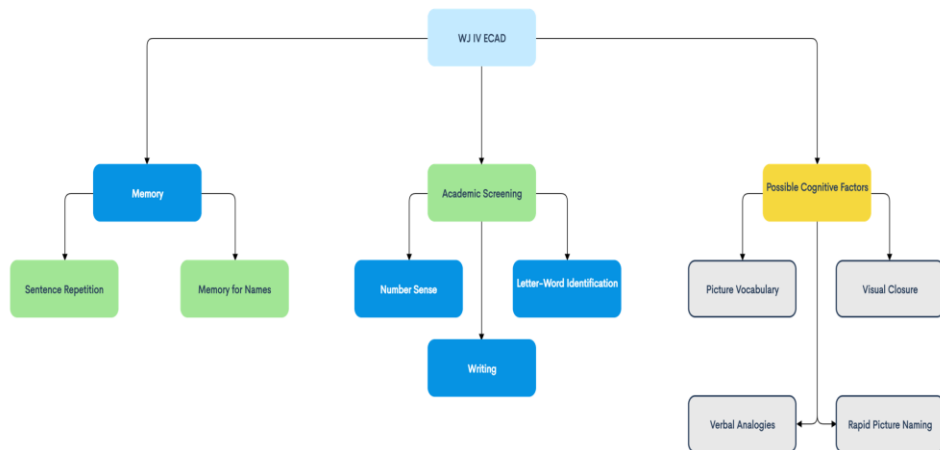
Through the administration of the WJ IV ECAD, an examiner can investigate all the following domains within approximately one hour needed for a full battery assessment:

- Cognitive Functions
- Early Academic Skills
- Expressive Language



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## WJ IV ECAD Tests for Dyscalculia



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## WJ IV ECAD Tests of Interest for Dyscalculia Assessment

Academic Skills:

**Number Sense**

Writing

Letter-Word Identification (Early Form)

Cognitive Processes

**Memory:**

Memory for Names

Sentence Repetition

**Other Possible Cognitive Contributors:**

Visual Closure

Picture Vocabulary

Rapid Picture Naming

Verbal Analogies



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## WJ IV ECAD: Academic Skills

The ECAD yields an Early Academic Skills Composite, which is comprised of measures assessing foundational reading, writing, and mathematics skills.

### Tests:

Letter-Word identification  
(including print awareness)

Number Sense

Writing (which includes pre-writing and spelling)



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## WJ IV ECAD: Possible Contributing Memory Factors



The ECAD is comprised of two tasks which respectively demand Short-Term Working Memory and Long-Term Storage and Retrieval.

### Tests:

Memory for Names

Sentence Repetition

These tasks do not involve numeracy-related concepts allowing the examiner to assess their examinee's memory in a non-math related context.

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## WJ IV ECAD: Possible Contributing Cognitive Factors

The ECAD also assesses a breadth of cognitive abilities which may impact a student's academic achievement.

### Tests:

Picture Vocabulary (Comprehension-Knowledge)

Visual Closure (Visual Processing)

Rapid Picture Naming (Processing Speed)

Verbal Analogies (Comprehension-Knowledge and Fluid Reasoning)



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## WJ IV ECAD: Other Cognitive Factors

The ECAD also contains a measure of auditory processing.

### Test:

Sound Blending

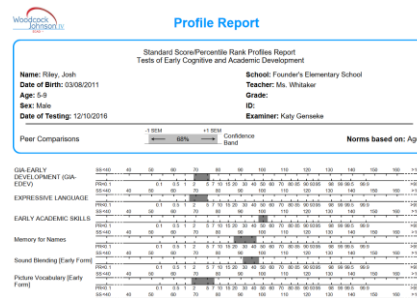


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## WJ IV ECAD: Special Developmental Scores

The ECAD offers a range of unique scores available for reporting:

- Developmental Zone (unique application of the RPI)
- Delay Scores (required in some jurisdictions/agencies for eligibility purposes):
  - Months Delay
  - Percentage Delay
  - Standard Deviation Delay



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## Recommendations

- Screen early mathematics skills to ensure children become competent.
- Witzel and Mize (2018) describe the following empirically-validated teaching strategies for dyscalculia:
  - Utilize explicit instruction (Gersten et al., 2009)
  - Engage in task analysis (breaking down tasks into manageable units and prompting student on each step; Browder et al., 2012).
  - Concrete-to-representational-to-abstract (CRA) Sequence of Instruction (Witzel, 2016)
  - Field-dependent approaches/learning (Browder et al, 2012)

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## Recommendations via the WIIP

- Designed to help examiners create [comprehensive psychological and educational reports](#)
- Facilitates report writing to increase focus on interpretation and program planning
- **Links WJ IV results to hundreds of evidence-based (COG, ACH, OL, ECAD) and formative interventions (ACH)** that can be included in your reports
- Provides criterion-referenced checklists for documenting and integrating direct observations, self-reports, teacher-reports, and parent-reports.



The WJ IV Interpretation and Instructional Interventions Program™ (WIIP™)

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## Sample ACH WIIP Recommendation

### ***ACH Sample: John, Age 17-1***

| Cluster/Test       | SS | PR |
|--------------------|----|----|
| Math Facts Fluency | 70 | 2  |

John needs interactive and intensive practice to master his math facts. It is best to use distributed practice, presenting smaller, but frequent, practice sessions. Also, focus on a few facts at a time, rather than on all the facts. Emphasize reverses or turnarounds, such as  $6 + 4$  and  $4 + 6$  or  $3 \times 2$  and  $2 \times 3$ . Teach the zero facts and rules. Computer programs and games also are good ways to provide additional practice.

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80



## Sample COG WIIP Recommendation

***COG Sample: John, Age 17-0***

| Cluster/Test    | SS | PR |
|-----------------|----|----|
| Fluid Reasoning | 65 | 1  |

Teach John to analyze number patterns that require multiplying by a specific number to obtain the next number in the sequence. Begin with a simple pattern that requires multiplying by 2. For example, write 2, 4, 8, \_\_\_\_ on the board and ask John to provide the next number. Help him discover that the rule is multiply by 2. Tell him that any number can be used as the multiplier in a pattern. Have John try one more pattern by writing 1, 3, 9, \_\_\_\_ and asking him to tell you the next number. Help John discover that the rule is multiply by 3. Provide additional practice in analyzing number patterns requiring multiplication.

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## Sample ECAD WIIP Recommendation

***ECAD Sample: McClaine, Age 5-1***

| Cluster/Test | SS | PR |
|--------------|----|----|
| Number Sense | 55 | <1 |

Help McClaine develop early number competencies and a sense of numbers. He should learn to read, write, and understand numerals and should be able to match the numerals to quantities through counting. McClaine should learn to count to 10, determine how many objects are included in small sets, learn that each object in a collection is counted only once, understand that counting words are always used in the same sequence (e.g., 1, 2, 3, 4, etc.), and recognize that the last number in the sequence always denotes the number of objects included in the set. Use games to reinforce ideas and procedures that were previously introduced to McClaine.

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## Summary

Dyscalculia involves core deficits in calculation/number facts, reasoning, and/or math concepts.

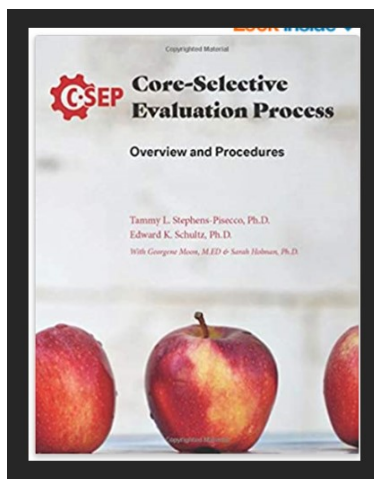
Dyscalculia assessment requires **both** informal and formal measures of mathematical achievement.

Targeted Dyscalculia assessment can be achieved via C-SEP .

Recommendations should be evidence-based and selected based on the student's pattern of strengths and weaknesses.

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## Want to Learn More about C-SEP?? C-SEP Manual - Amazon



[www.csep.online](http://www.csep.online)

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**Riverside Score:**  
2 ASBs focusing on C-SEP

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## Resources

[Assessment Plan Blog Post: A Guide for Evaluating for Dyscalculia](#)

[Assessment Service Bulletin #8: The WJ IV Core-Selective Evaluation Process Applied to Identification of a Specific Learning Disability](#)

[Assessment Service Bulletin #11: Using the Core-Selective Evaluation Process \(C-SEP\) With the Woodcock-Johnson IV: From Theory to Practice](#)

[Orientation to the WJ IV Core-Selective Evaluation Process \(C-SEP\)](#)

[Amplify your Data-Driven Approach to SpEd Instruction](#)

[Ready to Take Your Evaluations to the Next Level? The CHC Theory is Your Answer](#)

[CSEP.Online](#)

[Facebook C-SEP Beyond the Score](#)

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