



Using *CogAT*® Data for Screening AND Instruction

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Using CogAT Data for Screening AND Instruction

- CogAT Overview – Batteries, Options
- Screening
 - WISC/WJ Correlations
 - “Casting a wider net”
 - Equity
- CogAT Supports Instruction
 - *CogAT Ability Profile*™
 - Classroom usage
 - Differentiated Instruction Report



Primary Uses of CogAT

CogAT®

Guide efforts to **adapt instruction (goals, methods, and materials)** to the needs and abilities of students.



Provide an alternative measure of cognitive development for **program placement**.



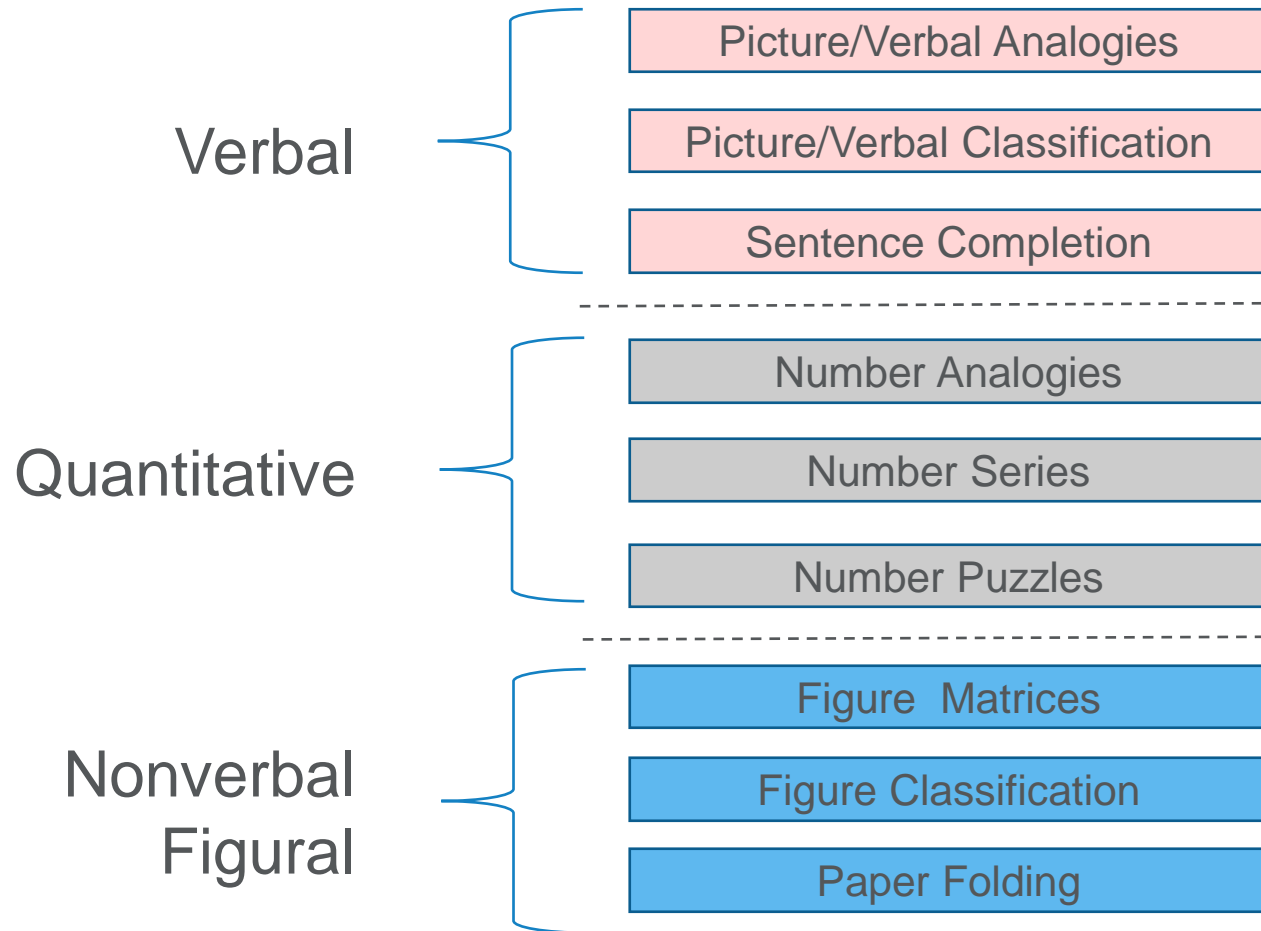
Identify students whose predicted level of achievement are **markedly discrepant** from their observed levels of achievement.



CogAT Batteries

CogAT®

- Assesses three different areas of cognitive reasoning
- Three subtests within each battery
 - Students have the best opportunity to demonstrate reasoning across different tasks
 - Measurement is more robust than is provided by a single item format

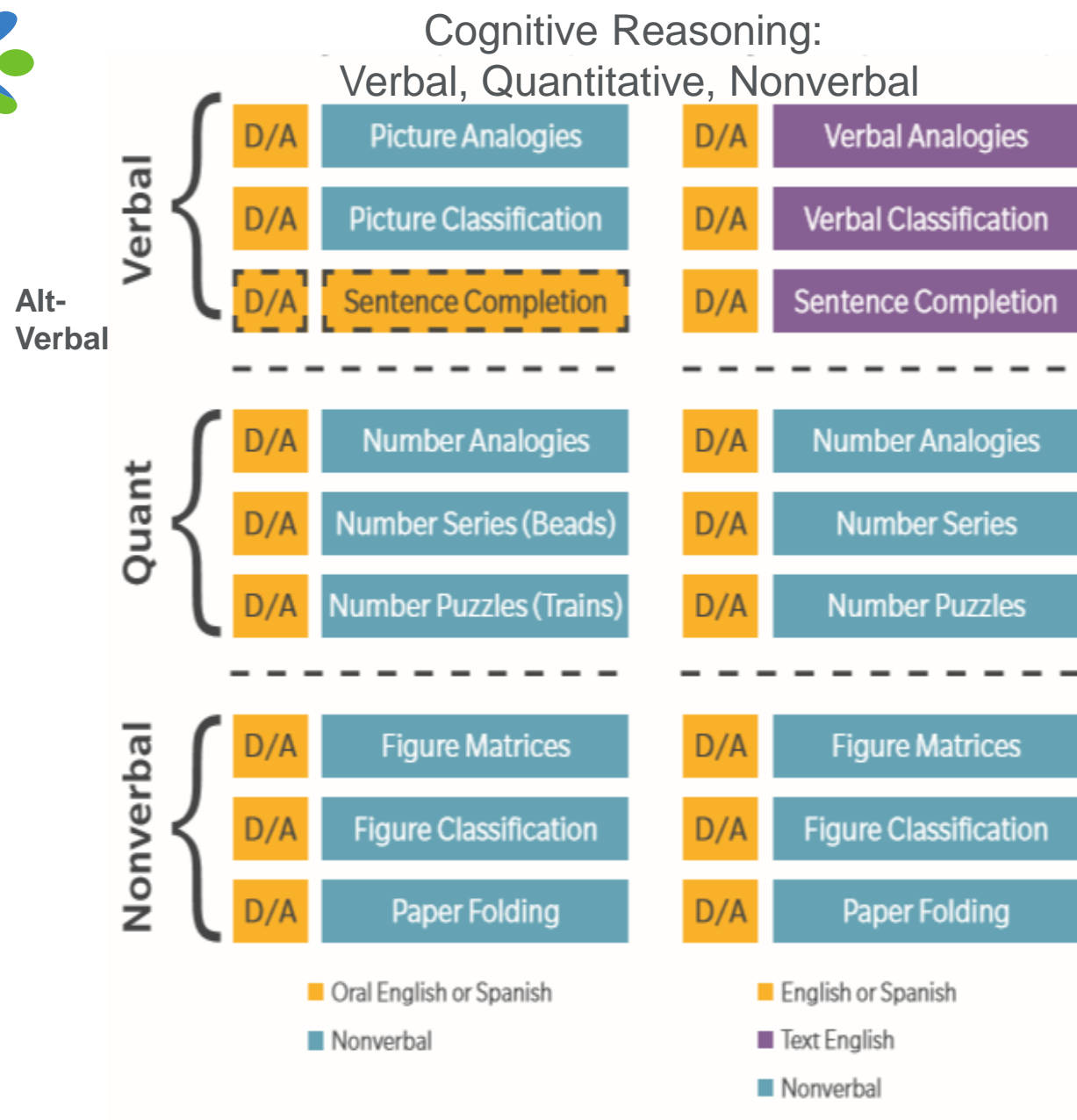




Grade & Test Level Specifications

CogAT®

	<i>CogAT</i> and <i>CogAT</i> Screening Form
Grade K	Level 5/6
Grade 1	Level 7
Grade 2	Level 8
Grade 3	Level 9
Grade 4	Level 10
Grade 5	Level 11
Grade 6	Level 12
Grades 7 & 8	Level 13/14
Grades 9 & 10	Level 15/16
Grades 11 & 12	Level 17/18



- Multiple measures within a single assessment
- Carefully leveled to align with cognitive development
- Pioneered picture-based Verbal and Quantitative measure for young students
- Language independent options at all levels

Primary: Grades Levels 5/6-8

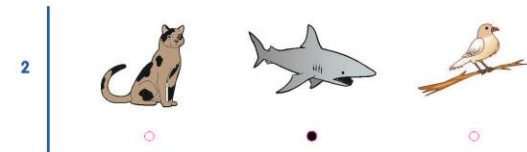
VERBAL

Levels 5/6-8—Verbal Battery—Picture Analogies

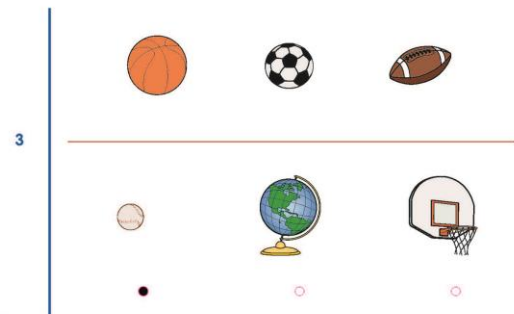


Levels 5/6-8—Verbal Battery—Sentence Completion

Which animal swims in the ocean?



Levels 5/6-8—Verbal Battery—Picture Classification

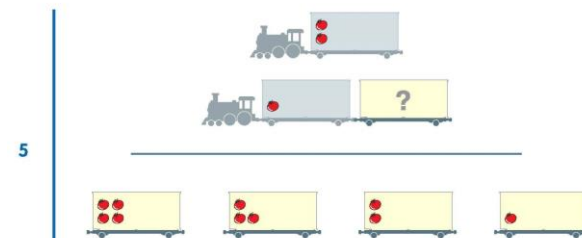


QUANTITATIVE

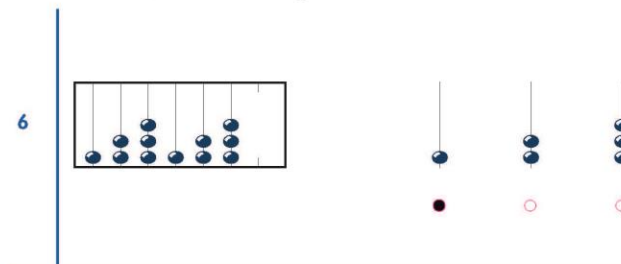
Levels 5/6-8—Quantitative Battery—Number Analogies



Levels 5/6 and 7—Quantitative Battery—Number Puzzles

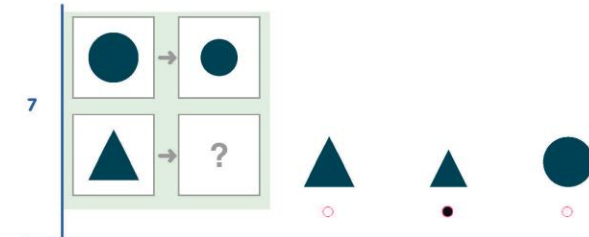


Levels 5/6 and 7—Quantitative Battery—Number Series

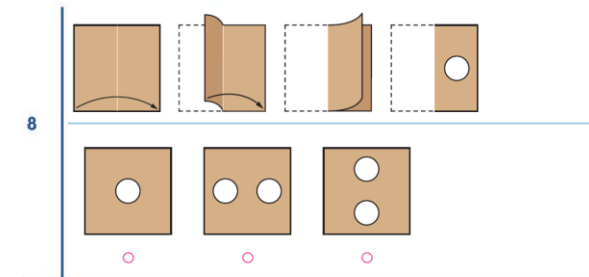


FIGURAL / NONVERBAL

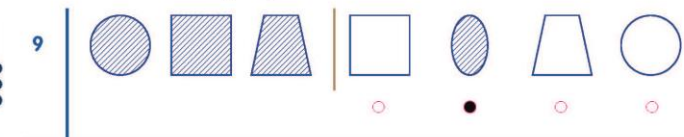
Levels 5/6-8—Nonverbal Battery—Figure Matrices

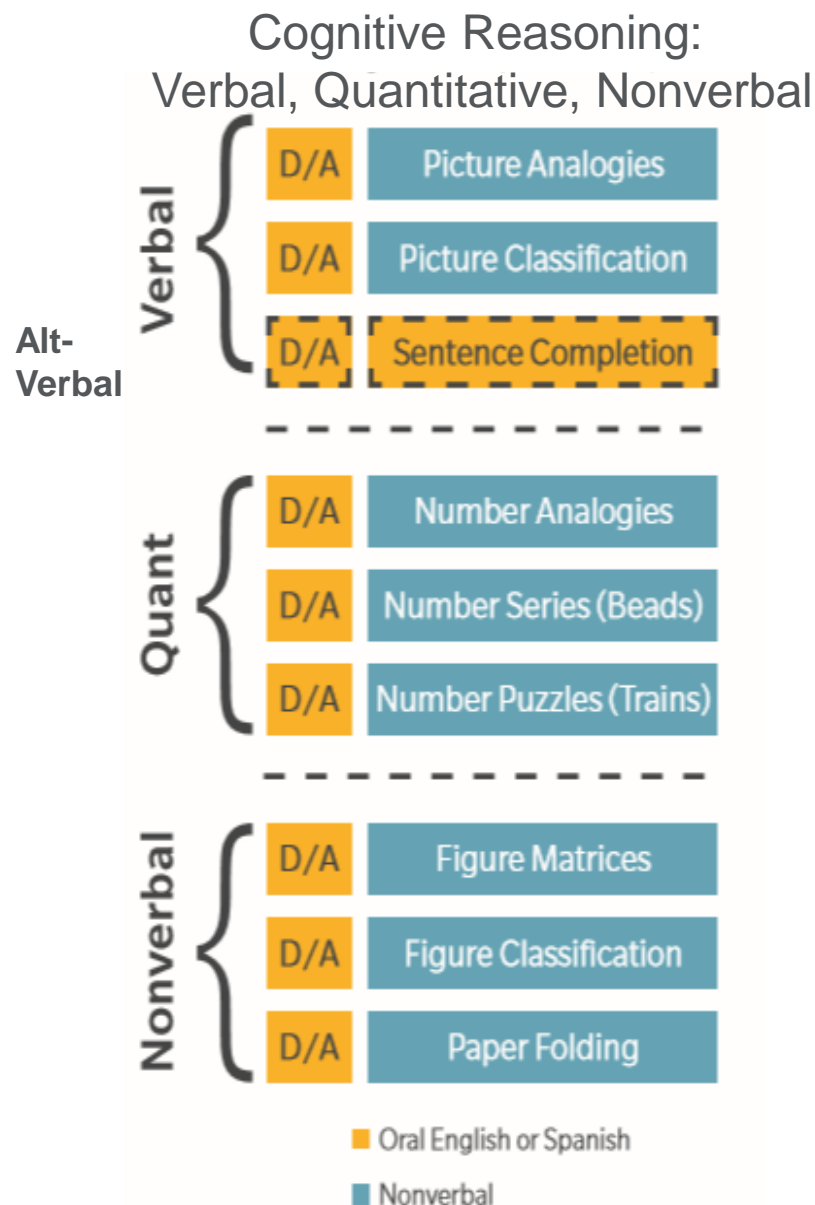


Level 5/6—Nonverbal Battery—Paper Folding



Level 8—Nonverbal Battery—Figure Classification





- Verbal and Quantitative subtests are picture-based for young students
- Directions and item prompts were bilingually developed in English and Spanish
- Or, omit Sentence Completion, the lone subtest with receptive language for an “Alternative Verbal” measure at Levels 5/6-8 for a fully language-neutral administration

Levels 9-17/18 Subtests

VERBAL BATTERY

Levels 9-10—Verbal Battery—Verbal Analogies

- 1 TV → watch : newspaper →
 A deliver B comics C read D magazine E listen

Levels 9-10—Verbal Battery—Sentence Completion

- 2 The fastest runner ___ the race.
 A wins B loses C watches D starts E makes

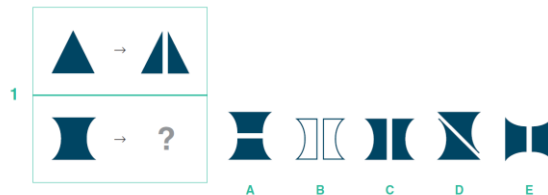
Levels 9-10—Verbal Battery—Verbal Classification

- 3 apple orange pear
 A fruit B carrot C pea D lemon E onion

QUANTITATIVE BATTERY	Number Analogies	[1 → 2] [3 → 4] [5 → ?] A 2 B 4 C 6 D 8 E 12
	Number Puzzles	<div> ? = ♦ + 6 12 = ♦ - ● ● = 5 </div> A 23 B 17 C 13 D 11 E 7
	Number Series	1 2 4 5 7 8 → A 7 B 8 C 9 D 10 E 11

FIGURAL / NONVERBAL

Figure Matrices



Paper Folding

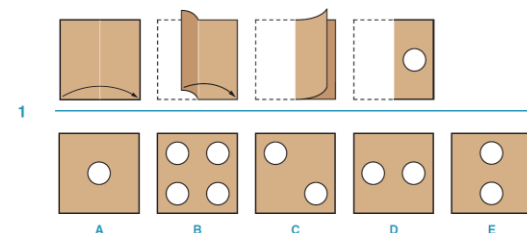
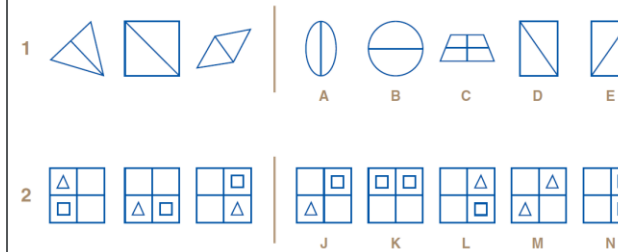


Figure Classification

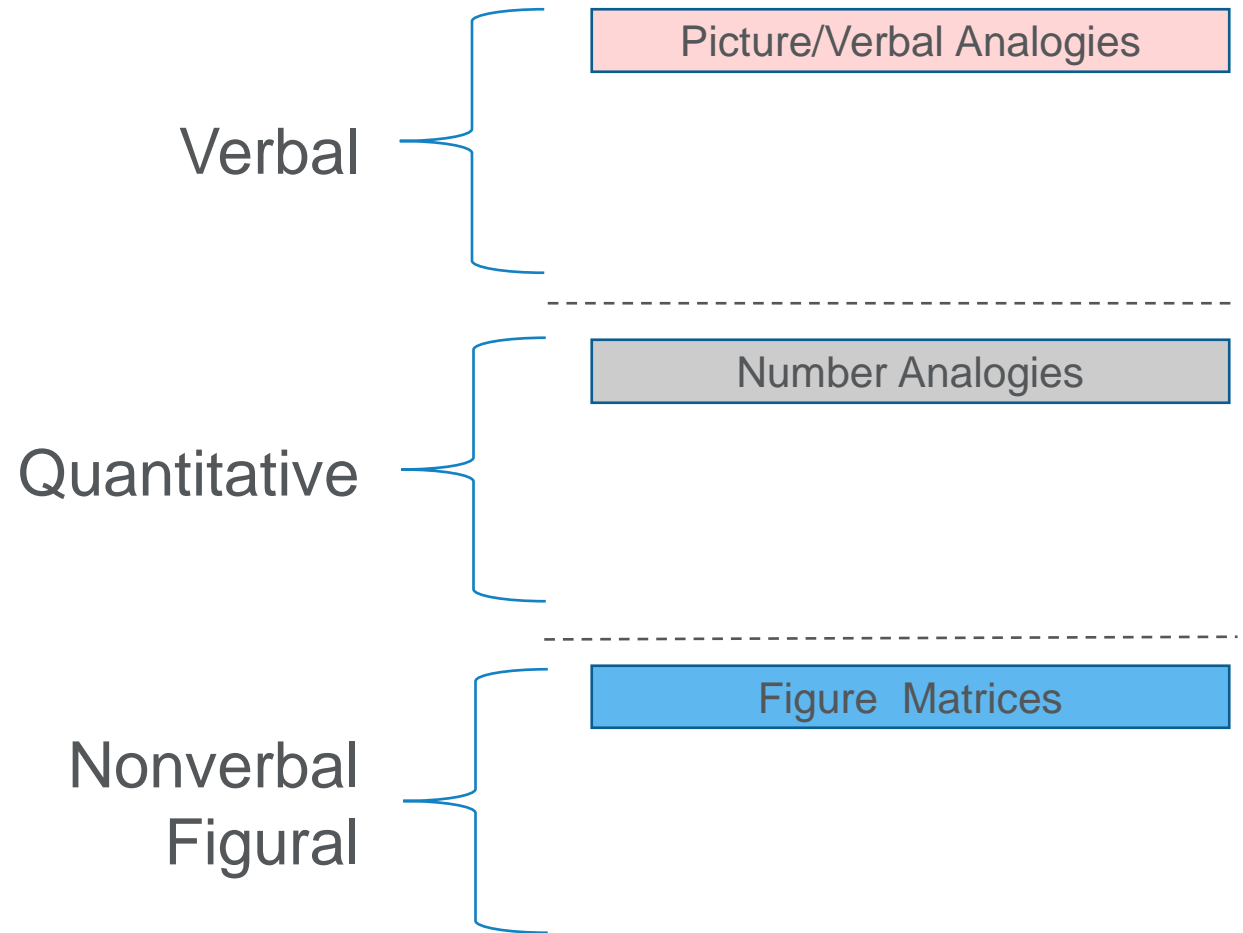




CogAT Screening Form

CogAT®

- Three subtests
- V, Q, N Analogies
- Shorter testing time
- Provides a single *CogAT* Screening Form Composite score





CogAT Post-Screener

- Greater flexibility for screening large groups of students
- Screener-to-complete functionality available for online testing
- Comprised of 6 remaining subtests to complete *CogAT*
- Provides full *CogAT Ability Profile* and all battery and composite scores
- Administer Post-Screener within 30 days of Screening Form

Picture/Verbal Analogies

Picture/Verbal Classification

Sentence Completion

Number Analogies

Number Series

Number Puzzles

Figure Matrices

Figure Classification

Paper Folding



Screening for Gifted

CogAT and WISC IV Correlations



- Matched Case Study as cited in *CogAT Form 7 Research and Development Guide*
 - Means for overall composites very close
 - Expected SD's: 15 for WISC, 16 for *CogAT*

Table 41: Means, Standard Deviations, and Sample sizes for *CogAT 7* and *WISC IV*

CogAT Form 7 SAS scores					WISC IV Indices					
	Verbal	Quant	Nonverbal	VQN Composite		Verbal Comp.	Perceptual Reasoning	Working Memory	Processing Speed	Full Scale IQ
Mean	113.0	111.0	110.6	113.4		108.6	119.6	105.1	101.9	112.8
SD	14.3	17.3	16.0	16.0		13.7	13.3	12.7	13.6	12.8

CogAT and WISC IV Correlations



- VQN Composite Correlations
 - Verbal Comprehension $r = 0.55$
 - **Perceptual Reasoning, $r = 0.80$**
 - Working Memory, $r = 0.53$
 - Processing Speed, $r = 0.27$
 - **Full Scale IQ, $r = 0.76$**
- Other studies had the VQN and FSIQ correlations as high as 0.79
- Structural Equation Modeling showed that the general factors on the two batteries correlated $r = .97$

Table 42: Correlations between CogAT 7 and WISC IV

CogAT 7 SAS Scores	WISC IV Indices				
	Verbal Comp.	Perceptual Reasoning	Working Memory	Processing Speed	Full Scale IQ
Verbal	.49	.68	.47	.19	.65
Quantitative	.54	.72	.42	.22	.69
Nonverbal	.44	.70	.56	.28	.68
VQN Composite	.55	.80	.53	.27	.76



Screening Considerations

CogAT®

- Single Item Type tests....
- How can *CogAT* help to “cast a wider gifted net”?
- How can *CogAT* find students ready for acceleration?
- Live Demo – *CogAT* Complete first, followed by *CogAT* Screening Form



Adapting Instruction with CogAT

CogAT

Measures

Reasoning

Skills

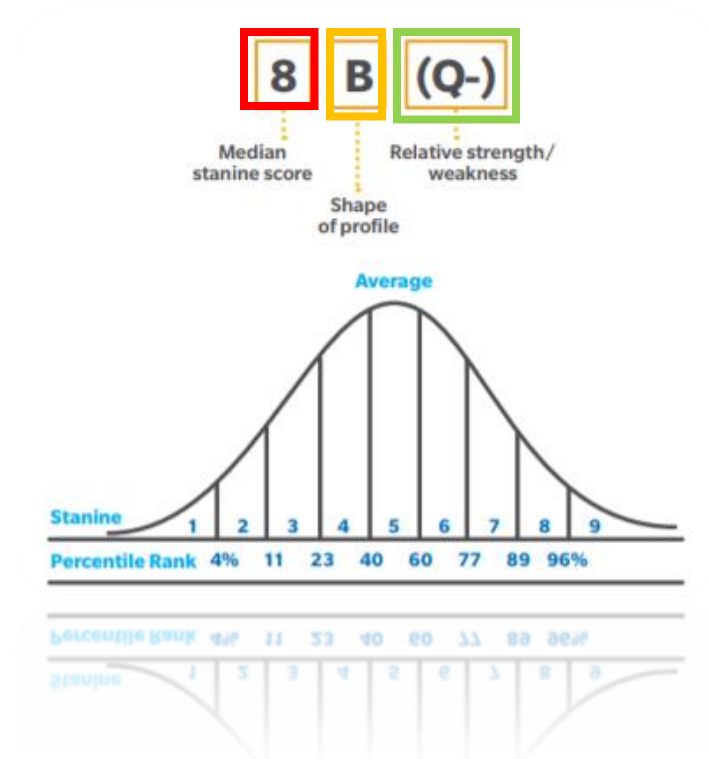


How does the student?

- ❑ Comprehend problem situations
- ❑ Classify & categorize objects, events, & other stimuli
- ❑ Detect similarities & differences
- ❑ Make inferences
- ❑ Make deductions
- ❑ Create and adapt problem-solving strategies
- ❑ Use familiar concepts and skills in new concepts

Ability Profile provides a concise summary

CogAT Ability Profile



1. Overall ability (stanine scale):

Stanine 9Well above average
Stanine 7–8...Above average
Stanine 4–6...Average
Stanine 2–3...Below average
Stanine 1Well below average

2. Shape of profile:

“A” Three battery scores about the sAme level
“B” One score aBove or Below others
“C” Substantial Contrast between two scores (a strength AND weakness)
“E” Extreme difference (> 24 SAS points)

3. Relative strength or weakness:

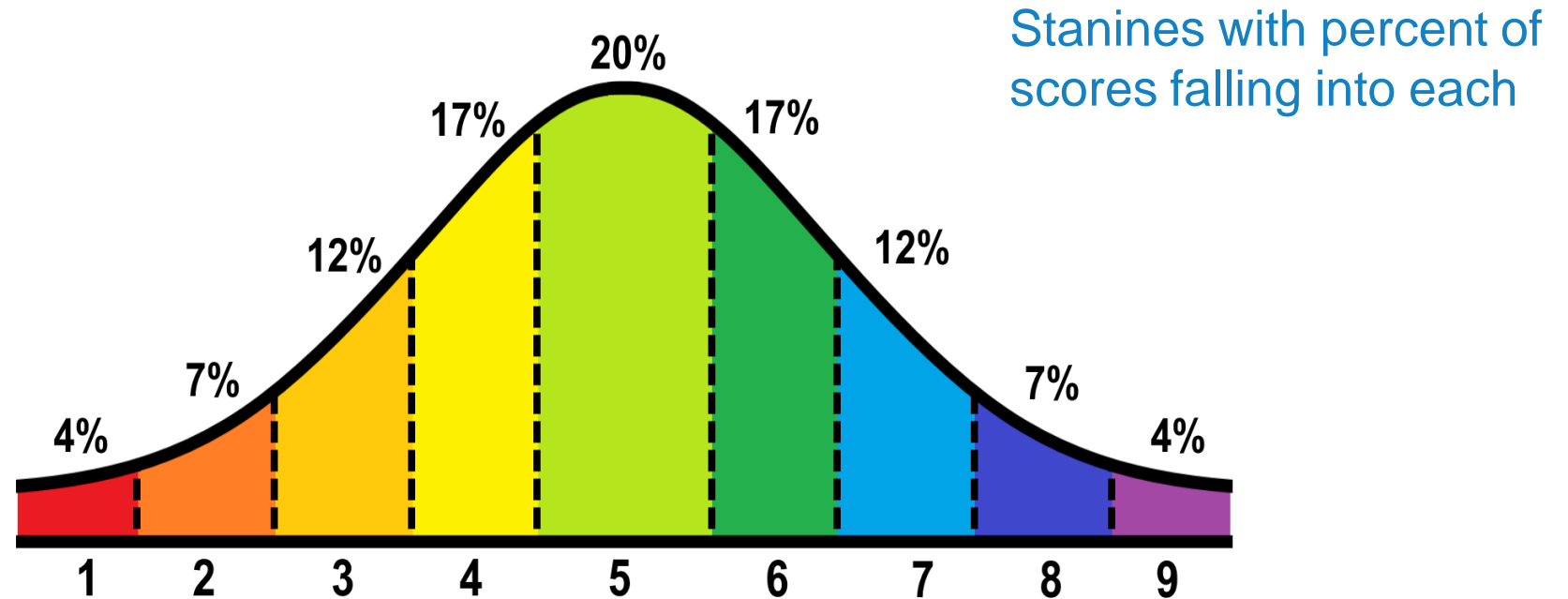
V-/Q-/N- a relatively lower battery score in that area
V+/Q+/N+ a relatively higher battery score in that area



Ability Profile Level

CogAT®

- Overall level is obtained from the median (middle) age stanine of V, Q, and N
- 6, 5, 6 = 6
- 4, 6, 5 = 5
- 2, 9, 9 = 9
- 3, 2, 9 = 3

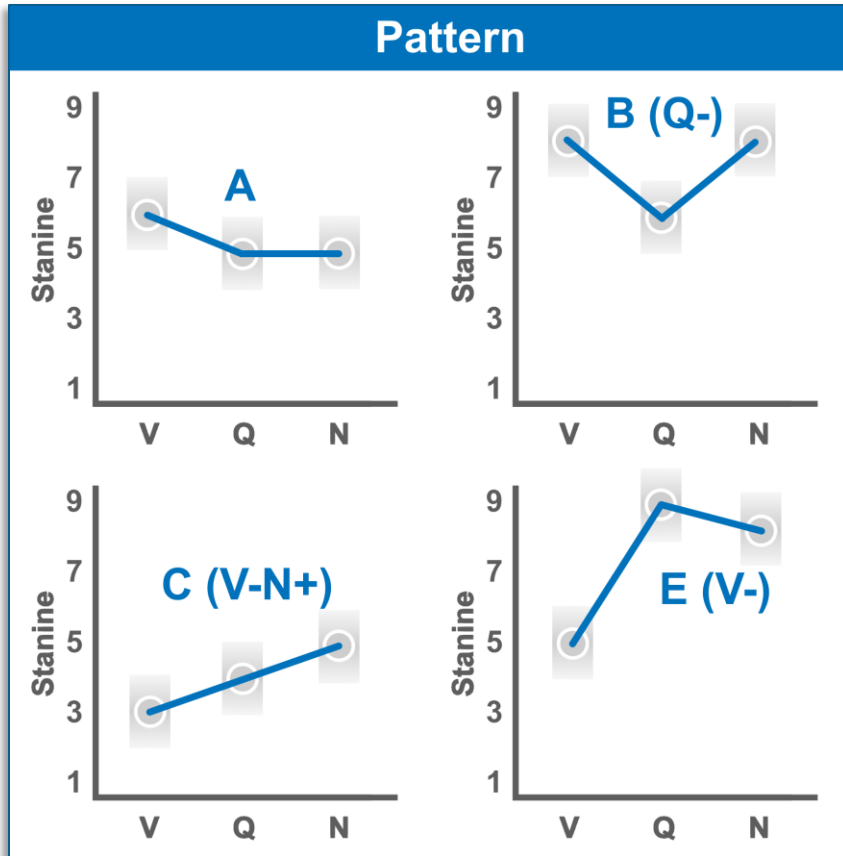




Ability Profile Summarizes Relative Strengths and Areas of Opportunity

CogAT®

8 B (Q-)



V+

Verbal

V-

Q+

Quantitative

Q-

N+

Nonverbal

N-



Ability Profile Pattern

CogAT®

CogAT Ability Profile frequencies for students overall in K-12 population and for students with two stanine scores of 9

- 9th stanine students are more likely to have an area of relative weakness

Measuring the pattern

- **“A” profiles:** Confidence bands overlap for all three scores. Scores are at roughly the sAme level
- **“B” profiles:** One score is aBove or Below the other two scores, which do not differ (≥ 10 SAS)
- **“C” profiles:** Two scores Contrast (≥ 10 SAS)
- **“E” profiles:** Extreme B or C profiles (≥ 24 SAS)

Profile	Percent in K-12 population	Percent in Stanine = 9 group
<u>sAme</u>	33	37
B	42	27
B+ <u>aBove</u>	(21)	(6)
B – <u>Below</u>	(22)	(21)
<u>Contrast</u>	18	17
<u>Extreme</u>	7	19
E+	(4)	(3)
E -	(3)	(16)

37%

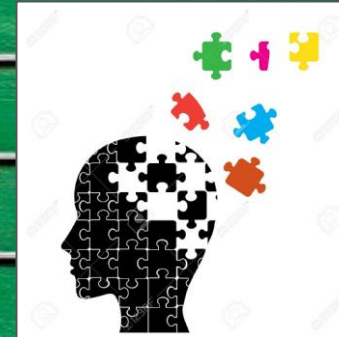
Students with poorly developed reasoning abilities

Stanine of 1-3



Build on their Strengths

- ❑ Identified Strength from the CogAT
- ❑ Look for strengths in terms of their specific interests and achievements



Focus on Working Memory

- ❑ Eliminate the need to remember ideas when possible

Scaffold Wisely

- ❑ Provide very specific directions
- ❑ Provide a structured learning environment
- ❑ Avoid verbal centered explanations of task .



Students with Very Able Reasoning Abilities

Stanine of 7-8

Build on their Strengths

- ☐ Benefit from guided discovery learning
- ☐ Challenge them .
- ☐ Encourage direct expression and communication

Focus on Working Memory

- ☐ Temporarily off load self-monitoring
- ☐ Teach them how to monitor their own thinking

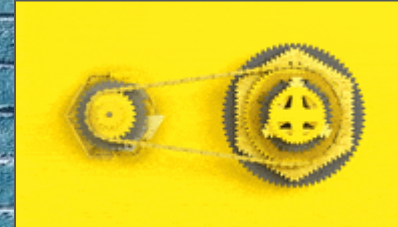


Students with Very Able Reasoning Abilities

Stanine of 7-8

Encourage Strategic Thinking

- ☐ Encourage use of Alternate Strategies



When Grouping Aim for Diversity

- ☐ Structured Groups



Adapt Instruction Using Relative Strengths



Strength	Example adaptations
V +	Avoid pitfalls in math: Students with relatively strong verbal abilities often find it easier to memorize formulas than to build more abstract conceptual systems . These abstract systems lead to the ability to transfer mathematical knowledge to unfamiliar domains.
Q +	Provide opportunities for these students to contribute at high levels to group projects that require math skills. Group projects provide an avenue for building better verbal and spatial reasoning abilities.
N +	Encourage students to create drawings when solving problems in mathematics , concept maps when taking notes, or mental models of a scene when reading a text.

Adapt Instruction to Develop Relative Weaknesses



Weakness	Example adaptations
V -	Acquaint students with unfamiliar ways of conversing and writing by providing opportunities to imitate the speaking and writing styles of individuals they admire. Drama, poetry, and storytelling are particularly useful in this regard.
Q -	If the difficulty is a lack of experience or the presence of anxiety , provide greater structure, reduce or eliminate competition, reduce time pressures, and allow students greater choice in the problems they solve. Experiencing success will gradually reduce anxiety; experiencing failure will cause it to spike.
N -	Provide simple drawings that encapsulate the essential features of the visual mental model required by the problem. Then give students time to examine the drawing and to label it or coordinate it with the text.

Students with Exceptional Reasoning Abilities

Stanine of 9

Build on their Strengths

- ☐ Provide discovery learning opportunities
- ☐ Provide academic challenges that meet their strengths

Emphasize Strategies

- ☐ Teach self reflection and alternate views

Scaffold Wisely

- ☐ Provide instruction that encourages development of academic skills

When Grouping Aim for Diversity

- ☐ Create groups that allow them to be leaders and learners





Classroom Profiles

Stanine	1-2	3-4	5-6	7-8	9
sAme	Ro 2A	Susan 4A	Liza 5A Ralf 6A	Chris 7A	Pat 9A Rita 9A
aBove +	Cindy 2B V+		Ann 6B N+	Eva 8B N+	
Below -		Sam 4V N-	Todd 6B V- Dev 5B V-	Isa 7B N-	Joe 9B Q-
Contrast			Sara 6C Q+N- Art 5C V-Q+	Mika 8C V-N+	
Extreme	Lee 1E Q+	Torv 3E V+	Aria 6E V-N+		Ria 9E N-



Another way to organize

Stanine 1-3	Verbal	Quantitative	Nonverbal	Stanine 4-6	Verbal	Quantitative	Nonverbal
Names	+ for strength, - for weakness			Names	+ for strength, - for weakness		
Stanine 7-8	Verbal	Quantitative	Nonverbal	Stanine 9	Verbal	Quantitative	Nonverbal
Names	+ for strength, - for weakness			Names	+ for strength, - for weakness		



Profiles 4B (N+), 5B (N+), 6B (N+)

Differentiated Instruction Report:



Profiles 4B (N+), 5B (N+), 6B (N+)

Differentiated Instruction Report:

Grade/Level: Grade 3 / Level 9

Test Date: 02/14/2020 - CogAT DB Spring 2020

Class: ELSA G

School: ANDRE

District: ITASCA

Students

Class: KNIIGHTON

ABRO, SERGIO
JARJOSA, SCARLETT
SALMO, SAVANNAH

Class: TAHMOUCH

KASSAB, NICHOLAS

Recommendations

Profile Explanation

Students with these profiles have a relative strength in nonverbal (spatial) reasoning. Their median age stanine for all three CogAT batteries is in the low-average (stanine 4), average (stanine 5), or high-average (stanine 6) range.

Characteristics of Students with These Profiles

Overall, the reasoning abilities of thinking (using visual mental models) are strong. These students require a lot of visual information to understand a problem.

For other students, however, it is not the case. They are not as strong in nonverbal reasoning as these students. They show a relatively higher or lower level of achievement on the Nonverbal Battery. Additional Information:*)

Students with a relatively high achievement level on the Nonverbal Battery. At the elementary level, they perform well on the science subtests. At the middle level, they perform well on the usage/expression subtests.

Instructional Suggestions

For most students, the N+ profile when they can readily connect each new concept or relationship with a mental or physical model (e.g., a schematic drawing) of the situation. For young children, comprehension improves markedly when the text contains detailed illustrations. The tendency to rely on pictures and illustrations emerges whenever these individuals cannot readily envision a mental model of the situation or the problem. This commonly occurs when material is presented verbally at a rapid or inflexible rate (as, for example, in a video presentation). Allowing the student to control the rate at which verbal information is presented by a mechanical device is helpful. It also occurs when the student has no clear mental model of the situation. In all areas of the curriculum, but especially in science and mathematics, metaphors and analogies that allow the student to connect unfamiliar, abstract concepts to a more familiar physical system will not only enable them to understand but will greatly facilitate retention and transfer.

Although students with these scores often have to work at the limits of their capacity when problems are complex or abstract. Students who score in the low-average range (stanine of 4) will experience this more frequently than individuals whose levels of verbal and quantitative reasoning abilities are in the high-average range (stanine of 6). Students who also have difficulties with spelling, grammar, and tasks such as writing and speaking that require verbal fluency will more frequently experience these frustrations as well.

Whenever students must work with complex or abstract problems, they will benefit from strategic concept maps when taking notes. Encourage this by a perhaps using computer image descriptive rather than narrative them examples of good descriptions.

Finally, it is important to encourage abilities. At all ages, they will be previously been experienced with.

The implications for instruction are that students with these profiles are not necessarily inventing new ways to solve problems. The student also shows lower scores on the Nonverbal Battery will be turn, are generally somewhat better. Understanding the reasons for investigation.

General Instructional or 6

Build on Strength. These students often display high levels of interest and achievement in particular domains. At all ages, but especially in adolescence, students strive to achieve individually. One route is through recognition of excellence from peers and adults. Although such recognition is commonly attained through nonacademic activities such as sports, music, and other extracurricular activities, teachers should find ways to encourage student's particular academic accomplishments. Students who have average levels of reasoning ability can be recognized for their high levels of knowledge in particular domains. Sometimes they excel in other ways, such as in leading.

Profile Explanation

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Instructional Suggestions for Profiles 4B (N+), 5B (N+), 6B (N+)

For most students, the N+ profile reflects a strength in spatial reasoning. Learning is easiest for these students when they can readily connect each new concept or relationship with a mental or physical model (e.g., a schematic drawing) of the situation. For young children, comprehension improves markedly when the text contains detailed illustrations. The tendency to rely on pictures and illustrations emerges whenever these individuals cannot readily envision a mental model of the situation or the problem. This commonly occurs when material is presented verbally at a rapid or inflexible rate (as, for example, in a video presentation). Allowing the student to control the rate at which verbal information is presented by a mechanical device is helpful. It also occurs when the student has no clear mental model of the situation. In all areas of the curriculum, but especially in science and mathematics, metaphors and analogies that allow the student to connect unfamiliar, abstract concepts to a more familiar physical system will not only enable them to understand but will greatly facilitate retention and transfer.

Although students with these score profiles have resources that are adequate for learning, they will nonetheless often have to work at the limits of their capacity when problems are complex or abstract. Students who score in the low-average range (stanine of 4) will experience this more frequently than individuals whose levels of verbal and quantitative reasoning abilities are in the high-average range (stanine of 6). Students who also have difficulties with spelling, grammar, and tasks such as writing and speaking that require verbal fluency will more frequently experience these frustrations as well.



Profiles 7C (Q+ V-), 8C (Q+ V-), 9C (Q+ V-)

Differentiated Instruction Report:



Profiles 7C (Q+ V-), 8C (Q+ V-), 9C (Q+ V-)

Differentiated Instruction Report:

Grade/Level: Grade 3 / Level 9

Test Date: 02/14/2020 - CogAT DB Spring 2020

Students

Class: KNIGHTON

GERGIS, CHRISTIA
KINIA, LANDEN
SHINA, ANNABELL
THOMAS, HUDSON

Class: TAHMOUCH

AJJO, ELI
FERNANDEZ, CRISTIAN
LOUSIA, NOAH
POOTA, ASHTON
THOMAS, GREYSON
YALDO, LUKE
YONO, AMELIA

Recommendations

Profile Explanation

Students who obtain these profiles have generally above-average scores with a relatively higher score in quantitative reasoning and a relatively lower score in verbal reasoning. They have a median age stanine for the

Characteristics

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Instructional Implications

The instructional implications of these profiles are quite different for the primary grades than for the elementary and secondary levels. In the primary grades, it is helpful to initiate activities that build the student's vocabulary knowledge. One useful strategy is to help them attend to subtle differences in the meanings of related words. This can be especially helpful in writing. Look for instances in which the student uses a general word, such as *dog*, when a more specific word, such as *collie*, would communicate more precisely.

At the elementary and secondary levels, however, the relatively lower score in verbal reasoning is more general and, therefore, more difficult to strengthen. Students at all levels improve their verbal reasoning skills by participating in challenging reading, writing, and speaking activities in which there is extensive dialog and constructive feedback.

The student's strength in quantitative reasoning should be emphasized, especially if these strengths go beyond a relative superiority in computation skills. These students may even benefit from enrichment activities or, if quantitative reasoning scores and mathematics achievement are very high, from acceleration. Encourage students to use these abilities in ways that will also help them develop their verbal reasoning skills as well. For example, create situations that require these students to discuss and explain math problems to other students. A curriculum that requires students to solve math problems embedded in verbal contexts and that requires verbal presentation of the proposed solutions helps students develop their verbal as well as their quantitative reasoning abilities.

General Instructional Implications for Grade 3 or 9

Build on Strengths: Encourage students to use their strengths in quantitative reasoning to develop their verbal reasoning skills. Encourage students to use their strengths in quantitative reasoning to develop their verbal reasoning skills. Encourage students to use their strengths in quantitative reasoning to develop their verbal reasoning skills.

Focus on Work: Encourage students to use their strengths in quantitative reasoning to develop their verbal reasoning skills. Encourage students to use their strengths in quantitative reasoning to develop their verbal reasoning skills. Encourage students to use their strengths in quantitative reasoning to develop their verbal reasoning skills.

Because these students have a relative superiority in quantitative reasoning, it is helpful to initiate activities that build the student's vocabulary knowledge. One useful strategy is to help them attend to subtle differences in the meanings of related words. This can be especially helpful in writing. Look for instances in which the student uses a general word, such as *dog*, when a more specific word, such as *collie*, would communicate more precisely.

sequence of their thoughts.

Encourage Strategic Thinking. Above-average students benefit from (1) opportunities to use newly acquired skills for difficult learning tasks and problems, (2) instruction that helps them plan their use of different strategies in different contexts, and (3) work with more able peers, particularly on difficult problems or learning tasks. These

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Instructional Suggestions for Profiles 7C (Q+ V-), 8C (Q+ V-), 9C (Q+ V-)

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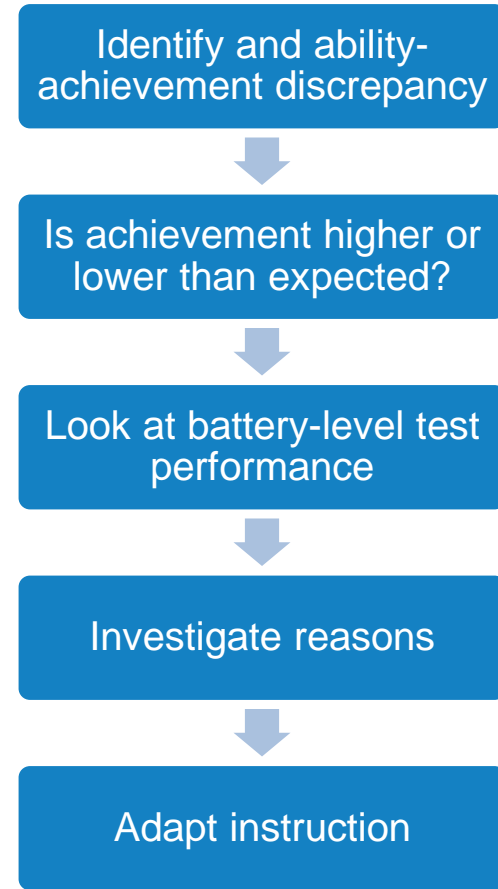
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Compare Scores and Performance

- Rank performance as above average, average, or below average
- Compare ability estimate with composite SAS ranges

Ability Estimate	SAS Range	Composite Age Stanine
Well above average	120 or higher	8-9
Average	89-111	4-6
Far below Average	80 or lower	1-2



Thank you!

Joni's Spatial Learning Tomorrow



- Please see the following resources for more information:
- [Getting to Know CogAT](#)
- [Getting to Know CogAT for Parents](#)
- [Getting to Know CogAT Ability Profiles](#)
- [Getting to Know CogAT for Differentiation](#)
- [The CogAT Dashboard for District Administrators](#)
- [The CogAT Dashboard for Gifted Coordinators](#)
- [The CogAT Dashboard for Teachers](#)
- [Riverside Insights Blog](#)



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