Understanding the Cognitive Abilities Test™ (CogAT®)

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What is the **CogAT**?

- **Cognitive Abilities Test**
- Appraises general abstract reasoning abilities
- Appraises capacity to apply abilities to Verbal, Quantitative & Non Verbal tasks
What is CogAT?

• Not IQ test!
• Measures learned reasoning abilities
• Focus on specific areas of reasoning linked to school success
Measures reasoning skills:

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

- Adapt instruction to needs & abilities of students
- Alternative measure of cognitive development for program placement
- Identify students with discrepancies between observed & actual levels of achievement
Norm Referenced Tests (NRT) & Scores

- Scores show comparison (norm group)

- CogAT shows abilities

- Iowa Tests of Basic Skills ® (ITBS® shows achievement)

- Percentile Ranks do **not** show growth from year to year
  - show rank & status against a norm
Measurement Terms

Raw Score - # items answered correctly

Universal Scale Score (USS) - provides a continuous growth scale of cognitive development

Percentile Rank (PR) - percentage of scores in a specified distribution that fall at or below the point of a given score

Standard Age Score (SAS) - normalized standard scores

Stanine (S) - “Standard-nine” scale

Standard Age Scores - SAS

- **Very High**: 128 - 150
- **Above Average**: 112 - 127
- **Average**: 89 - 111
- **Below Average**: 73 - 88
- **Very Low**: 50 - 72

Refer to test manuals for information regarding standard deviation and standard error of measurement.
Stanine Interpretations

- Stanine  9  =  Very High
- Stanine 7-8  =  Above Average
- Stanine 4-6  =  Average
- Stanine 2-3  =  Below Average
- Stanine  1  =  Very Low
Figure 1-1: Relationship of Stanines, Percentile Ranks, and Standard Age Scores
CogAT Score Profiles

- Students differ in level & pattern of cognitive abilities
- Instruction adapted to capitalize on strengths or compensate for weaknesses
ABC Profiles:

- **A profiles:** Confidence bands overlap; Scores are the same level
- **B profiles:** Score above or below the other two scores, which are the same
- **C profiles:** Two scores contrast
- **E profiles:** Extreme B or C profiles (>=24)
### A Profile

<table>
<thead>
<tr>
<th>SAS</th>
<th>PR</th>
<th>1</th>
<th>25</th>
<th>50</th>
<th>75</th>
<th>99</th>
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<td>120</td>
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<tr>
<td>Q</td>
<td>116</td>
<td>84</td>
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<tr>
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<td>94</td>
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</table>

- **A profiles:** Bands overlap for all 3 scores; scores at same level
### B Profiles

<table>
<thead>
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<th>SAS</th>
<th>PR</th>
<th>1</th>
<th>25</th>
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<tr>
<td>N</td>
<td>100</td>
<td>50</td>
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</tr>
</tbody>
</table>

- **N-**
  - V: 89
  - Q: 84
  - N: 50

- **N+**
  - V: 38
  - Q: 31
  - N: 73

**B profiles:** One score above or below other 2 scores; shows relative strength or weakness.
### C Profiles

<table>
<thead>
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<th>PR</th>
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<tbody>
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<td>Q</td>
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</tbody>
</table>

- **V** and **N** scores are shown with a graph indicating a contrast between the two scores.

**C profiles**: Two scores Contrast

*Image and text content.*
**E Profiles**

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<th>PR</th>
<th>1</th>
<th>25</th>
<th>50</th>
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<tbody>
<tr>
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</table>

\[ \text{SAS Max - SAS Min} = 28 \]  \( \text{E (V+ N-)} \)

- **E profiles:** Extreme B or C profiles (\( \geq 24 \))
CogAT Ability Profile Score

Stanine → 7C (V+ Q-) ← Relative Weakness

Profile

Relative Strength
## Ability Profile System

- Locate individual ability profile score

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**CogAT™**

**PROFILE NARRATIVE FOR MARTIN GRANT**

Cognitive Abilities Test™ (CogAT 7B)

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### Scores for Martin Grant:

Martin was given the Cognitive Abilities Test in September 2003. At the time of testing, he was in second grade at Lockwood Elementary in Port Charles, CA.

Different students bring different patterns and levels of abilities to learning tasks. We often use the Cognitive Abilities Test to help find out about his reasoning abilities. Martin was tested in all three areas: verbal, quantitative, and nonverbal abilities.

Martin’s national percentile rank of 16 on verbal reasoning ability means that, compared with other students his age nationally, Martin scored higher than 16 percent. Martin’s national percentile rank is 31 in quantitative ability and 23 in nonverbal ability.

Martin’s composite score is derived from results from the three batteries. Martin’s composite national percentile rank of 35 is a general statement of his reasoning ability.

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Enter the score profile at: http://www.cogat.com
Ability Profile System

View instructional strategies
## Case Study: Sam

<table>
<thead>
<tr>
<th>No. of Items</th>
<th>Number Attempted</th>
<th>Raw Score</th>
<th>USS</th>
<th>Age Scores</th>
<th>Grade Scores</th>
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<td>27</td>
</tr>
</tbody>
</table>

### Profile 4B (N+)

![Graph showing the profile 4B (N+) with V, Q, and N in the 25-50 range]
Profiles 4B (N+), 5B (N+), and 6B (N+)

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
- Instructional Suggestions for Profiles 4B (N+), 5B (N+), and 6B (N+)
- General Instructional Suggestions for All Students with a Median Stanine of 4, 5, or 6
- For Additional Information

Characteristics of Students with These Profiles

Overall, the reasoning abilities of these students fall in the average range. However, for most, their preferred mode of thinking (using visual mental models) often runs counter to the predominately linear and verbal mode of thinking required at school.
Narrative Highlights

- Strength in spatial reasoning
- Learn by connecting new concepts with a mental or physical model
- Comprehension improves with illustrations
- Use metaphors & analogies to connect abstract concepts
- Difficulty with spelling, grammar & writing, & speaking tasks
CogAT Normative Update

- Updated in 2005
- Recalibrates grade & age norms
- Reflects US student population in the 5 years since the standardization
- Bootstrap Sampling Procedure
- Considered a demographic update
Common Misunderstandings

- Scores are precise & absolutely accurate
  - Test scores are estimates
  - Representing a range of ability rather than a precise point
- Percentile rank vs. percent correct
  - Norm group consists of a particular classroom or school
- Items are biased
  - Screened for bias
    - Authors, Riverside staff, and by a panel of minority educators
  - National try-outs
    - Statistical analysis
    - Items found to be biased are removed