Comprehensive Adult Student Assessment Systems

CASAS Update and Math GOALS Series Overview

March 2019
CASAS GOALS series – NRS status
Test Timing
Math GOALS Overview
Test Blueprint
Sample Test Items
CASAS Summer Institute
New GOALS series and NRS status

for ABE/ASE

- Reading GOALS - approved through 2025
- Math GOALS for ABE/ASE - approved through 2022

for ESL

- Reading GOALS - submitted 2018 – pending approval
- Listening GOALS - will submit in 2019
Reading and Math Test Timing

Intake
• Short Locator (for each modality) -- 15 minutes – eTests only
• Appraisal -- 30 minutes -- Paper (and eTests)

Pre- and posttests
➢ Reading GOALS for ABE/ASE
  • 75 minutes each (60 minutes for Level A)
➢ Math GOALS
  • 60 minutes for Level A/B; 75 minutes for Level C/D

Post-testing
• Administer post-test(s) after 70 -100 hours of instruction but no less than 40 hours

⇒ It takes 2.5 – 3 hours to test in two modalities,
Two forms at each level:
   A/B Level (40 items each form)
   C/D Level (38 items each form)

**Basic calculators** are provided - online and/or by the site

A range of item types is provided, including:
- Situational scenarios that reflect real-world applications
- Word problems (reading complexity and cognitive load are consistent with level-specific expectations)
- Simple to advanced calculation
- Traditional academic contexts

**Formulae are provided** within the item presentation so that focus is on *math concepts and skills*, not memorization.
Overview: Math GOALS Series was built to account for:

- **CASAS Competencies** –
  - provides the context for assessing skills used in academic and employment settings, as well as everyday life-skills

- **Content Standards**
  - CASAS Math Standards
  - CCR Standards for Adult Education
    - Number Sense
    - Algebra
    - Geometry and Geometric Measurement
    - Data, Probability, Statistical Measurement
    - Mathematical Practices

- **NRS Educational Functioning Level (EFL) Descriptors for Math**
## Math GOALS items by CASAS Competency Areas

<table>
<thead>
<tr>
<th>CASAS Competency areas:</th>
<th>A/B Forms</th>
<th>C/D Forms</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Consumer Economics</td>
<td>31%</td>
<td>36%</td>
</tr>
<tr>
<td>2) Community Resources</td>
<td>20%</td>
<td>9%</td>
</tr>
<tr>
<td>3) Health</td>
<td>3%</td>
<td></td>
</tr>
<tr>
<td>4) Employment</td>
<td>34%</td>
<td>47%</td>
</tr>
<tr>
<td>5) Government</td>
<td></td>
<td>1%</td>
</tr>
<tr>
<td>7) Learning +Thinking</td>
<td>13%</td>
<td>7%</td>
</tr>
</tbody>
</table>
Deeper understanding of key mathematical foundations, concepts, procedural fluency, and applications within and outside the classroom;

Coherent progressions within and across levels…build new understanding onto previous foundations; and

Rigorous application of conceptual understanding, procedural skill, and application to real-world contexts…students employ concepts from several perspectives…know more than “how to get the answer”.

In a nutshell, emphasis is now on:

“seeing the bigger picture”

knowing the meaning of answers (not just having numbers)

applying concepts to solve problems
# CASAS and CCR Math Standards

<table>
<thead>
<tr>
<th>CASAS Math Content Areas</th>
<th>CCR Standards*</th>
</tr>
</thead>
<tbody>
<tr>
<td>M1: Number Sense</td>
<td>Number and Ratio</td>
</tr>
<tr>
<td>M2: Algebra</td>
<td>Algebra and Functions</td>
</tr>
<tr>
<td>M3: Geometry</td>
<td>Geometry</td>
</tr>
<tr>
<td>M4: Measurement</td>
<td>Data, Probability and Statistical Measurement</td>
</tr>
<tr>
<td>M5: Statistics, Data Analysis, Probability</td>
<td></td>
</tr>
</tbody>
</table>

* CCRS domains of **Geometry** and **Statistics** include content from CASAS category **M4: Measurement**
Provide examples of the **most critical concepts and skills** to guide assessment and instruction at a particular level;

Do **not** provide a complete or comprehensive delineation of all of the skills at that level;

Are organized in terms of skills needed to exit a particular level;

Represent, within each level, abilities across:

- Mathematical Practices (overarching category)
- Number Sense and Operations
- Algebraic Thinking
- Geometry and Measurement
- Data Analysis, Statistics and Probability
<table>
<thead>
<tr>
<th>NRS EFL Level</th>
<th>NRS EFL for Mathematics</th>
<th>A/B Forms</th>
<th>C/D Forms</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Beginning Literacy</td>
<td>Enter &amp; Complete</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Beginning Basic</td>
<td>Enter &amp; Complete</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Low Intermediate</td>
<td>Enter &amp; Complete</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Middle Intermediate</td>
<td><strong>Entry into Level 4</strong></td>
<td>Enter &amp; Complete</td>
</tr>
<tr>
<td>5</td>
<td>High Intermediate</td>
<td>Enter &amp; Complete</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Adult Secondary</td>
<td></td>
<td><strong>Entry into Level 6</strong></td>
</tr>
</tbody>
</table>
## Old to New NRS EFLs and Scale Score Ranges

<table>
<thead>
<tr>
<th>NRS EFL</th>
<th>Old ABE/ASE EFLs</th>
<th>Life &amp; Work Math Scale Score Ranges</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Beginning Literacy</td>
<td>200 &amp; below</td>
</tr>
<tr>
<td>2</td>
<td>Beginning Basic</td>
<td>201 - 210</td>
</tr>
<tr>
<td>3</td>
<td>Low Intermediate</td>
<td>211 - 220</td>
</tr>
<tr>
<td>4</td>
<td>High Intermediate</td>
<td>221 - 235</td>
</tr>
<tr>
<td>5</td>
<td>Low Adult Secondary</td>
<td>236 - 245</td>
</tr>
<tr>
<td>6</td>
<td>High Adult Secondary</td>
<td>246 &amp; above</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NRS EFL</th>
<th>New ABE/ASE EFLs for Mathematics</th>
<th>Math GOALS Scale Score Ranges</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Beginning Literacy</td>
<td>193 &amp; below</td>
</tr>
<tr>
<td>2</td>
<td>Beginning Basic</td>
<td>194 - 203</td>
</tr>
<tr>
<td>3</td>
<td>Low Intermediate</td>
<td>204 - 214</td>
</tr>
<tr>
<td>4</td>
<td>Middle Intermediate</td>
<td>215 - 225</td>
</tr>
<tr>
<td>5</td>
<td>High Intermediate</td>
<td>226 - 235</td>
</tr>
<tr>
<td>6</td>
<td>Adult Secondary</td>
<td>236 &amp; above</td>
</tr>
</tbody>
</table>
# CASAS Math Blueprint

<table>
<thead>
<tr>
<th>CASAS Content Domains</th>
<th>CASAS Level A/B</th>
<th>CASAS Level C/D</th>
<th>College and Career Readiness Standards (CCRS) Covered by CASAS Math Goals Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>M1: Number Sense</td>
<td>31%</td>
<td>17%</td>
<td>At the A/B level, use basic concepts of number system, place values, operations of addition, subtraction, multiplication and division, fractions, fraction equivalents, ratios and proportions. At the C/D level, use advanced number concepts such as comparing fractions, using operations with rational numbers and exponents.</td>
</tr>
<tr>
<td>M2: Algebra</td>
<td>11%</td>
<td>29%</td>
<td>At the A/B level, understand and reason with properties of four operations, explain patterns in four operations, solve basic one-variable equations. At the C/D level, generate equivalent equations and those with two or more variables, understand radicals, use lines and linear equations, use functions and functional expression, including inequalities, polynomials, quadratics, and exponential models.</td>
</tr>
<tr>
<td>M3: Geometry</td>
<td>9%</td>
<td>12%</td>
<td>At the A/B level, identify and reason with shapes and their attributes in 2- and 3-dimensions, find area and volume. At the C/D level, solve problems of angle, area, congruence, similarity, trigonometry, volumes of cone, pyramids and spheres.</td>
</tr>
<tr>
<td>M4: Measurement*</td>
<td>31%</td>
<td>25%</td>
<td>At the A/B level, measure with standard units, time intervals, liquid masses and volumes, area, unit conversions, angle measurements. At the C/D level, understand/apply Pythagorean theorem, use volume measurements for complex modeling.</td>
</tr>
<tr>
<td>M5: Statistics and Probability**</td>
<td>18%</td>
<td>17%</td>
<td>At the A/B level, understand categories, identify relevant data in tables, represent data in graphs, understand variability, and describe distributions. At the C/D level, understand probability, sampling, draw inferences, summarize and interpret data categorical and quantitative data, draw inferences, investigate associations in bivariate data.</td>
</tr>
</tbody>
</table>

* CCRS domains of **Geometry** and **Statistics** include content from CASAS category **M4: Measurement**
Midtown Gym costs $40 per month to join but is having a half-price special for August.

How much would it cost to join for April, May and June?

- $20
- $40
- $60
- $120
On-screen calculator in CASAS eTests

Calculator opens and can be moved to any position on the screen.

Includes only basic functions.
Sample Items Across Domains and Levels
<table>
<thead>
<tr>
<th>CASAS Content Domain</th>
<th>CASAS Level A/B</th>
<th>CASAS Level C/D</th>
<th>College and Career Readiness Standards Included in CASAS Math Goals Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>M1: Number Sense</td>
<td>29%</td>
<td>16%</td>
<td><strong>At the A/B level</strong>, use basic concepts of number system, place values, operations of addition, subtraction, multiplication and division, fractions, fraction equivalents, ratios and proportions. <strong>At the C/D level</strong>, use advanced number concepts such as comparing fractions, using operations with rational numbers and exponents.</td>
</tr>
</tbody>
</table>
Number Sense
CASAS Math Standard: 1.3.6

Gina is buying a shirt that costs $10.00. The sales tax is 7.5%.

How much will the tax be?

A. $0.07
B. $0.13
C. $0.75
D. $1.30
Number Sense
CASAS Math Standard: 1.4.2

Franco is buying nails for a construction project. Each box of nails costs $14 and contains 225 nails. Franco estimates that he needs 1,800 nails.

How can Franco calculate the total cost of the nails?

A. \[ \frac{14}{225} = \frac{x}{1800} \]

B. \[ \frac{14}{1800} = \frac{x}{225} \]

C. \[ \frac{1800}{225} = \frac{14}{x} \]

D. \[ \frac{1800}{x} = \frac{14}{225} \]
### Domain: Algebra

<table>
<thead>
<tr>
<th>CASAS Content Domain</th>
<th>CASAS Level A/B</th>
<th>CASAS Level C/D</th>
<th>College and Career Readiness Standards Included in CASAS Math Goals Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>M2: Algebra</td>
<td>14%</td>
<td>30%</td>
<td>At the A/B level, understand and reason with properties of four operations, explain patterns in four operations, solve basic one-variable equations. At the C/D level, generate equivalent equations and those with two or more variables, understand radicals, use lines and linear equations, use functions and functional expression, including inequalities, polynomials, quadratics, and exponential models.</td>
</tr>
</tbody>
</table>
Algebra
CASAS Math Standard: 2.2.8

Jackson Elementary will have 120 first grade students next year. Each class can have 24 students. Using the equation $24x = 120$, how many first grade classes will the school need?

A. 4  
B. 5  
C. 6  
D. 7
James is going to plot a line using the information in the chart. What is the equation of the line if the slope is \( \frac{1}{3} \)?

A. \( y = \frac{1}{3}x + 0 \)
B. \( y = 3x + 1 \)
C. \( y = \frac{1}{3}x + 1 \)
D. \( y = 3x + 0 \)

**Equation of a line:** \( y = mx + b \)

\( m \) = slope, \( b \) = y-intercept
### Domain: Geometry

<table>
<thead>
<tr>
<th>CASAS Content Domain</th>
<th>CASAS Level A/B</th>
<th>CASAS Level C/D</th>
<th>College and Career Readiness Standards Included in CASAS Math Goals Series</th>
</tr>
</thead>
</table>
| **M3: Geometry**     | 10%            | 11%            | **At the A/B level**, identify and reason with shapes and their attributes in 2- and 3-dimensions, find area and volume.  
At the C/D level, solve problems of angle, area, congruence, similarity, trigonometry, volumes of cone, pyramids and spheres. |
Which best describes Line QR and Line ST?

A. They are equal in length.
B. They are intersecting lines.
C. They are perpendicular lines.
D. They are parallel lines.
Geometry
CASAS Math Standard: 3.2.3

Angle A, at the intersection of Pine Street and 5th Avenue, is 60 degrees. What is the measure of angle B?

A. 60 degrees
B. 90 degrees
C. 120 degrees
D. 180 degrees
<table>
<thead>
<tr>
<th>CASAS Content Domain</th>
<th>CASAS Level A/B</th>
<th>CASAS Level C/D</th>
<th>College and Career Readiness Standards Included in CASAS Math Goals Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>M4: Measurement*</td>
<td>30%</td>
<td>28%</td>
<td><strong>At the A/B level</strong>, measure with standard units, time intervals, liquid masses and volumes, area, unit conversions, angle measurements. <strong>At the C/D level</strong>, understand/apply Pythagorean theorem, use volume measurements for complex modeling.</td>
</tr>
</tbody>
</table>
A piece of string is 144 inches long. How many feet is the string?

A. 8 feet  
B. 10 feet  
C. 12 feet  
D. 14 feet
Measurement
CASAS Math Standard: 4.3.7

Jeremy’s Patio

What is the approximate area of Jeremy’s patio?

A. 160
B. 164
C. 184
D. 308

(A = \pi r^2; \pi \approx 3.14)
## Domain: Statistics and Probability

**CCRS combines content areas** *M4: Measurement* and *M5: Statistics* **into one content domain:** *Measurement and Data.*

<table>
<thead>
<tr>
<th>CASAS Content Domain</th>
<th>CASAS Level A/B</th>
<th>CASAS Level C/D</th>
<th>College and Career Readiness Standards Included in CASAS Math Goals Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>M5: Statistics and Probability*</td>
<td>18%</td>
<td>16%</td>
<td>At the A/B level, understand categories, identify relevant data in tables, represent data in graphs, understand variability, and describe distributions. <strong>At the C/D level,</strong> understand probability, sampling, draw inferences, summarize and interpret data categorical and quantitative data, draw inferences, investigate associations in bivariate data.</td>
</tr>
</tbody>
</table>
According to the graph, about how many people ordered from the lunch cart on Tuesday?

A. 35
B. 45
C. 60
D. 70
Celia rides the downtown trolley three times every day. There are five trolleys that run on the loop downtown.

What is the probability that Celia will ride the #2 trolley on all three trips today?

A. 3/25  
B. 1/15  
C. 3/5  
D. 1/125
CASAS is conducting cooperative studies with GED Testing Service and ETS HiSET

- Will provide programs with information about an adult learner’s performance on CASAS reading and math assessments and their readiness to take either the GED or the HiSET

States and local programs interested in being a part of this study should contact CASAS

- To participate in CASAS field testing and research studies, send an email to: fieldtesting@casas.org
Join us at the 2019 CASAS Summer Institute

When?

➡️ National Consortium and Certified Trainer Meeting on Monday, June 10
➡️ Training and Workshops: June 11 - 13, 2019

Where?

➡️ Hyatt Regency, Orange County, CA