



Comprehensive Adult Student Assessment Systems

# **CASAS Update and Math GOALS Series Overview**

**March 2019**

[www.casas.org](http://www.casas.org) • 1-800-255-1036



- **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,**

# *Math* **GOALS** *Series*

The logo for CASAS, featuring a stylized blue and red arrow pointing upwards and to the right, with the word "CASAS" in blue capital letters below it.

# New Math GOALS Features:

**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

<b>CASAS Competency areas:</b>	<b>A/B Forms</b>	<b>C/D Forms</b>
<b>1) Consumer Economics</b>	31%	36%
<b>2) Community Resources</b>	20%	9%
<b>3) Health</b>	3%	
<b>4) Employment</b>	34%	47%
<b>5) Government</b>		1%
<b>7) Learning +Thinking</b>	13%	7%



# CCR Standards Are Focused On:

- ➔ 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

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

\* CCRS domains of **Geometry** and **Statistics** include content from CASAS category *M4: Measurement*

# NRS EFL Descriptors (February 2016)

- ➔ 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*

# EFLs by Math GOALS

<b>NRS EFL Level</b>	<b>NRS EFL for Mathematics</b>	<b>A/B Forms</b>	<b>C/D Forms</b>
<b>1</b>	<b>Beginning Literacy</b>	Enter & Complete	
<b>2</b>	<b>Beginning Basic</b>	Enter & Complete	
<b>3</b>	<b>Low Intermediate</b>	Enter & Complete	
<b>4</b>	<b>Middle Intermediate</b>	<i>Entry into Level 4</i>	Enter & Complete
<b>5</b>	<b>High Intermediate</b>		Enter & Complete
<b>6</b>	<b>Adult Secondary</b>		<i>Entry into Level 6</i>

# Old to New NRS EFLs and Scale Score Ranges



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


NRS EFL	New ABE/ASE EFLs for Mathematics	Math GOALS Scale Score Ranges
1	Beginning Literacy	193 & below
2	Beginning Basic	194 - 203
3	Low Intermediate	204 - 214
4	Middle Intermediate	215 - 225
5	High Intermediate	226 - 235
6	Adult Secondary	236 & above

# CASAS Math Blueprint

CASAS Content Domains	CASAS Level A/B	CASAS Level C/D	College and Career Readiness Standards (CCRS) Covered by CASAS Math Goals Series
<b>M1: Number Sense</b>	29%	16%	<p><b>At the A/B level</b>, use basic concepts of number system, place values, operations of addition, subtraction, multiplication and division, fractions, fraction equivalents, ratios and proportions.</p> <p><b>At the C/D level</b>, use advanced number concepts such as comparing fractions, using operations with rational numbers and exponents.</p>
<b>M2: Algebra</b>	14%	30%	<p><b>At the A/B level</b>, understand and reason with properties of four operations, explain patterns in four operations, solve basic one-variable equations.</p> <p><b>At the C/D level</b>, 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.</p>
<b>M3: Geometry</b>	10%	11%	<p><b>At the A/B level</b>, identify and reason with shapes and their attributes in 2- and 3-dimensions, find area and volume.</p> <p><b>At the C/D level</b>, solve problems of angle, area, congruence, similarity, trigonometry, volumes of cone, pyramids and spheres.</p>
<b>M4: Measurement*</b>	30%	28%	<p><b>At the A/B level</b>, measure with standard units, time intervals, liquid masses and volumes, area, unit conversions, angle measurements.</p> <p><b>At the C/D level</b>, understand/apply Pythagorean theorem, use volume measurements for complex modeling.</p>
<b>M5: Statistics and Probability**</b>	18%	16%	<p><b>At the A/B level</b>, understand categories, identify relevant data in tables, represent data in graphs, understand variability, and describe distributions.</p> <p><b>At the C/D level</b>, understand probability, sampling, draw inferences, summarize and interpret data categorical and quantitative data, draw inferences, investigate associations in bivariate data.</p>

\* 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.


1 of 2 → Practice [Review](#) 

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

- \$20
- \$40
- \$60
- \$120

**Click on icon**

# On-screen calculator in CASAS eTests<sup>®</sup>

1 of 2 → Practice Review 

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

\$20

\$40

\$60

\$120

Calculator ×

0

←	±	√	C	
7	8	9	/	%
4	5	6	*	1/x
1	2	3	-	=
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← Calculator opens and can be moved to any position on the screen.

← Includes only basic functions.



## Sample Items Across Domains and Levels

## Domain: Number Sense

CASAS Content Domain	CASAS Level A/B	CASAS Level C/D	College and Career Readiness Standards Included in CASAS Math Goals Series
<b>M1: Number Sense</b>	29%	16%	<p><b>At the A/B level</b>, use basic concepts of number system, place values, operations of addition, subtraction, multiplication and division, fractions, fraction equivalents, ratios and proportions.</p> <p><b>At the C/D level</b>, use advanced number concepts such as comparing fractions, using operations with rational numbers and exponents.</p>

## 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

CASAS Content Domain	CASAS Level A/B	CASAS Level C/D	College and Career Readiness Standards Included in CASAS Math Goals Series
<b>M2: Algebra</b>	14%	30%	<p><b>At the A/B level</b>, understand and reason with properties of four operations, explain patterns in four operations, solve basic one-variable equations.</p> <p><b>At the C/D level</b>, 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.</p>

## Algebra

CASAS Math Standard: 2.2.8

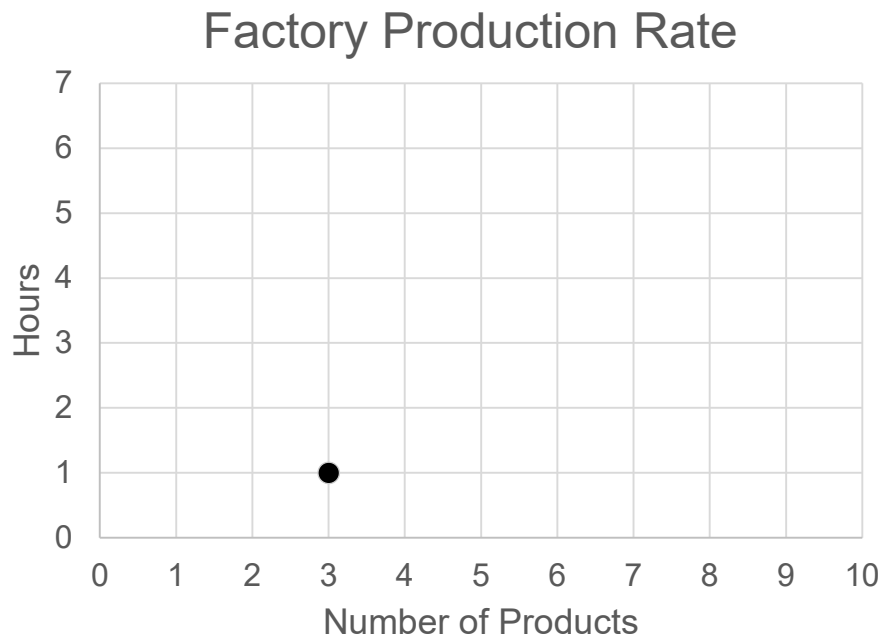
Jackson Elementary will have 120 first grade students next year. Each class can have 24 students.

Using the equation  $24x = 120$ , how many first grade classes will the school need?

- A. 4
- B. 5**
- C. 6
- D. 7

## Algebra

### CASAS Math Standard: 2.3.10



Equation of a line:  $y = mx + b$

$m$  = slope,  $b$  = y-intercept

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.  $y = 3x + 0$

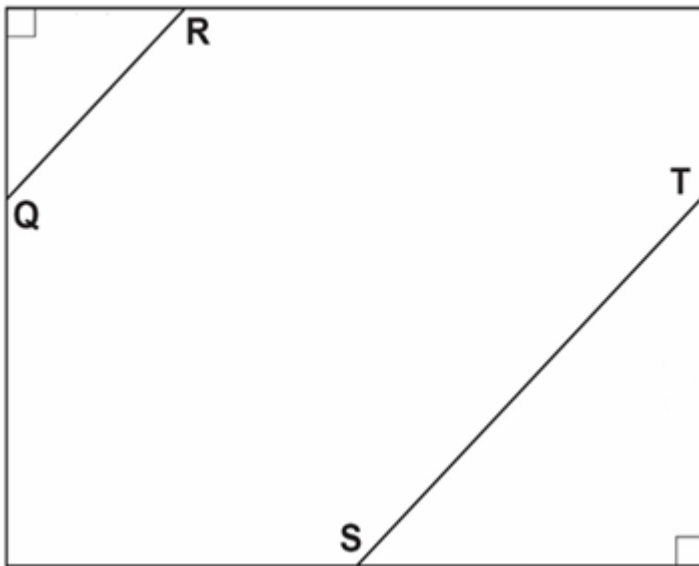
## Domain: Geometry

CASAS Content Domain	CASAS Level A/B	CASAS Level C/D	College and Career Readiness Standards Included in CASAS Math Goals Series
<b>M3: Geometry</b>	10%	11%	<p><b>At the A/B level</b>, identify and reason with shapes and their attributes in 2- and 3-dimensions, find area and volume.</p> <p><b>At the C/D level</b>, solve problems of angle, area, congruence, similarity, trigonometry, volumes of cone, pyramids and spheres.</p>



## Geometry

CASAS Math Standard: 3.2.1

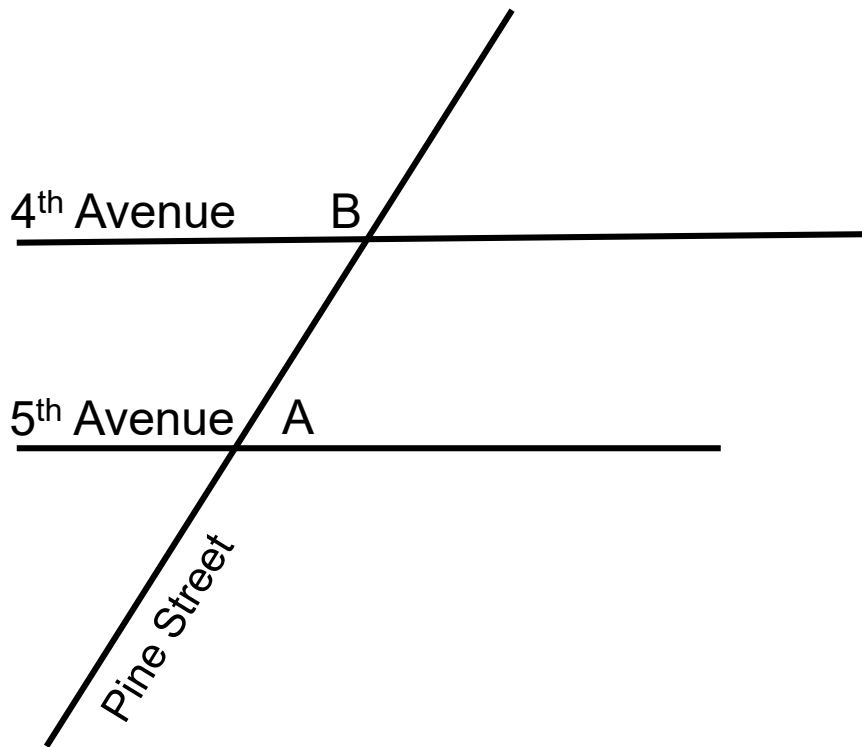


Which best describes *Line QR* and *Line ST*?

- 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 5<sup>th</sup> Avenue, is 60 degrees. What is the measure of angle B?

- A. 60 degrees
- B. 90 degrees
- C. 120 degrees**
- D. 180 degrees

## Domain: Measurement

CASAS Content Domain	CASAS Level A/B	CASAS Level C/D	College and Career Readiness Standards Included in CASAS Math Goals Series
<b>M4: Measurement*</b>	30%	28%	<p><b>At the A/B level,</b> measure with standard units, time intervals, liquid masses and volumes, area, unit conversions, angle measurements.</p> <p><b>At the C/D level,</b> understand/apply Pythagorean theorem, use volume measurements for complex modeling.</p>

## Measurement

CASAS Math Standard: 4.2.1

1 foot = 12 inches

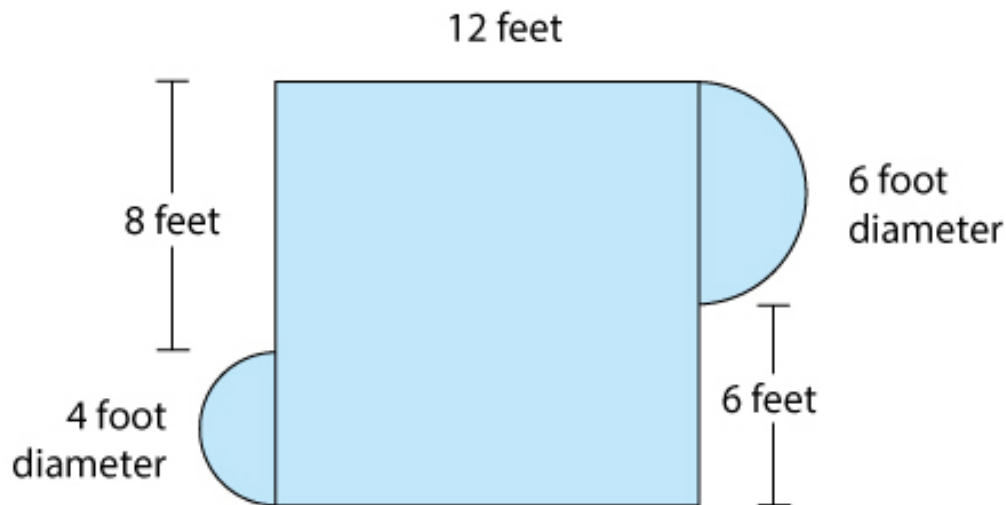
A piece of string is 144 inches long. How many feet is the string?

- A. 8 feet
- B. 10 feet
- C. 12 feet**
- D. 14 feet

## Measurement

CASAS Math Standard: 4.3.7

### Jeremy's Patio



$$(A = \pi r^2; \pi \approx 3.14)$$

What is the approximate area of Jeremy's patio?

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

## Domain: Statistics and Probability

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

CASAS Content Domain	CASAS Level A/B	CASAS Level C/D	College and Career Readiness Standards Included in CASAS Math Goals Series
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# Math GOALS Level A/B

## Statistics

CASAS Math Standard: 5.1.1



According to the graph, about how many people ordered from the lunch cart on Tuesday?

- A. 35**
- B. 45
- C. 60
- D. 70

## Statistics

CASAS Math Standard: 5.3.3

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](mailto:fieldtesting@casas.org)

## When?

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

## Where?

- ➔ Hyatt Regency, Orange County, CA