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MASTERING MATH SKILLS:

Applying Basic Math & Calculator Skills for Success at All Levels

Kellie Blair Hardt

GED Math Tutor & GEDTS Board Member

GED TESTING SERVICE®

Kellie Blair Hardt

- Kellie's Story-

- Kellie's Coloring Book-

-GED Testing Service Podcast-

- GED Math Tutor & GED Testing Service Board Member
- 20+ years, middle & high school math/science/special education
- 6 years, Hardt2Heart Tutoring Service For Adult Learners
- 3 years, PGCC Adult Education GED Math Instructor
- B.A Psychology, M.Ed Special Ed., PhD candidate
- Honored as the first-ever recipient of the GED Testing Service, Molly Broad Award, 2023, recognizing exceptional contributions to GED education.
- GED GRADUATE!

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Agenda

- **Interactive Session for Educators**

  Strengthen & share math teaching methods.

- **Awareness of Challenging GED Math Skill Gaps**

  Quick review of common nationwide math concept difficulties test takers face.

- **Utilizing the TI-30XS Multiview Calculator**

  To enhance test-taking efficiency and accuracy.

- **Practical Exercises**

  Simplify concepts for learners.

  Explore teaching & test-taking strategies for quadratic equations, factoring, writing and graphing linear equations.

About That Math Exam

As of June 17 2024:
178,651 adult learners have passed 3 of the 4 required GED tests and never finished the final test

142,556 = 80% of these learners need to complete Math

21,895 = 12% of these learners need to complete RLA

5,202 = 3% of these learners need to complete Social Studies

8,998 = 5% of these learners need to complete Science

About That Math Exam

There are about 46 questions on the GED math test. These questions are split into two parts; about 5 questions on the first part (no-calculator) and about 41 questions on the second part (calculator permitted). 115 minutes

Content – 45% - Quantitative Problem Solving · Number operations · Geometric thinking – 55% - Algebraic Problem Solving

Most of the questions will be ***multiple-choice*** with four options (A through D).

Fill-in-the-blank questions will require the learner to type a numerical answer to a problem or to enter an equation, words or phrase.

About That Math Exam

Drop-down questions give the learner an opportunity to click the word "Select" and choose the option that correctly completes the statement.

Drag-and-drop items require the learner to click on an image, number, or symbol and to drag and drop it to a specified location on the computer screen to create an expression, equation, or inequality.

Hot-spot questions are based on a graphic such as a number line, coordinate grid, or geometric figure. The learner will need to click on a specific place or places on the figure.

About That Math Exam:

NOTE: If a concept is not described in the GED Mathematical Reasoning Indicators, then it is not assessed on the GED Mathematical Reasoning test.

- Geometric proofs
- Trigonometry
- Exponential functions
- Two-variable inequalities
- Graphing quadratic equations
- Determining lines of best fit

About That Math Exam:

DID YOU KNOW?

Questions are not individually weighted; each question typically counts the same towards a final score.

The key is to focus on accuracy and efficiency across all question types to maximize scores.

Mastering the TI-30XS Multiview calculator greatly increases accuracy and efficiency.

General Skill Gap for GED Learners

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Algebraic Computations

Indicators:

factoring, computing w/linear expressions
computing w/polynomials
factoring polynomials

Skills:

add/subtract
multiply/divide
multiple operations
quadratic equations

Factor completely.

$$3x^2 + 7x - 6$$

- A. $(x - 6)(3x + 1)$
- B. $(x - 3)(3x + 2)$
- C. $(x + 3)(3x - 2)$
- D. $(x + 6)(3x - 1)$

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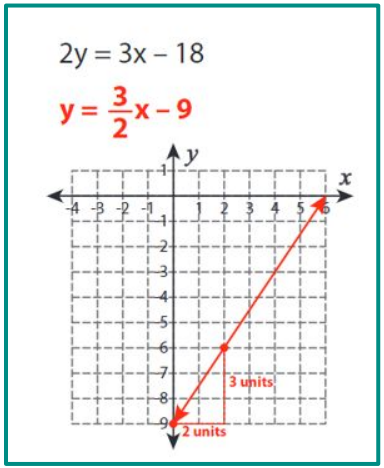
General Skill Gap for GED Learners



Slopes/Graphing/Linear Equations

Indicators

calculate slope from a table, graph or equation
graph a two-variable equation

Related indicators

unit rate as slope
writing equations from points and/or slope; working with parallel and perpendicular slopes

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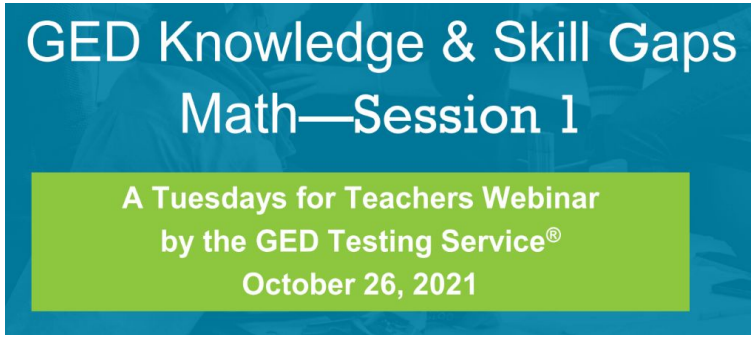
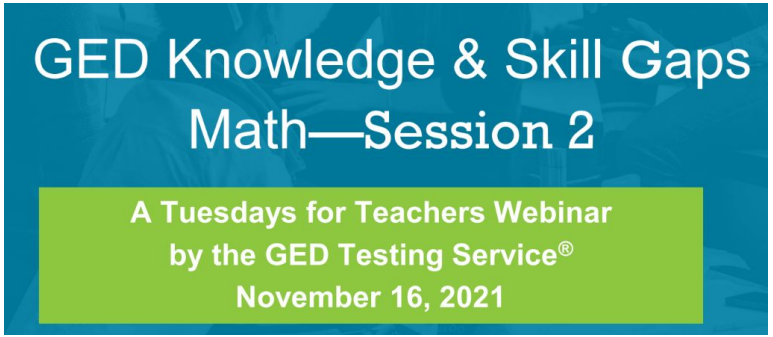
More about GED Knowledge & Skill Gaps



Webinar Slides



Webinar Slides

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About That Math Exam:

DID YOU KNOW?

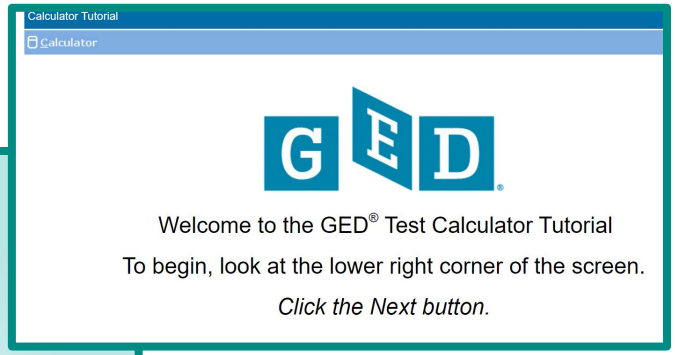
Wrong answers do not count against test-takers on the GED math exam.

The test uses a scoring system where only correct answers contribute to the score. There's no penalty for guessing, so it's beneficial to answer every question, even if unsure of the answer. This way, test-takers have a chance of getting more points without the risk of losing any for incorrect responses.

Did You Know: Your One Stop Source for Resources

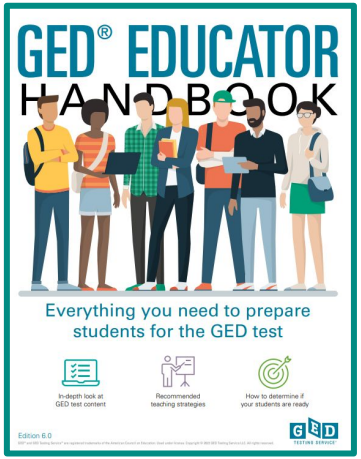
Test Tutorial

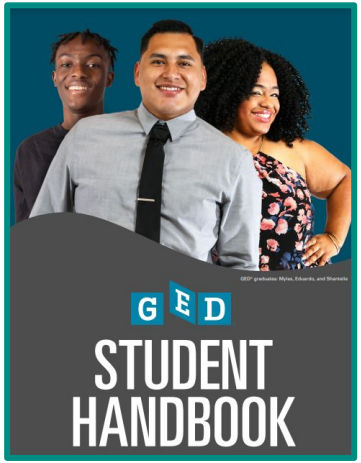
Free practice tests!

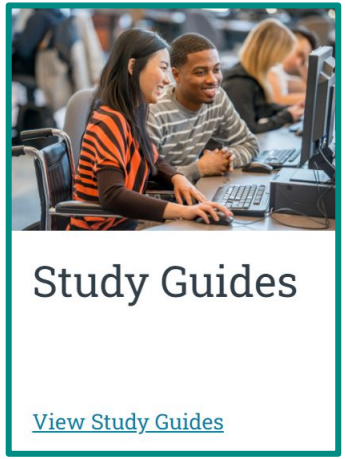


Calculator Tutorial

Did You Know: Your One Stop Source for Resources







- all resources for educators & admin-

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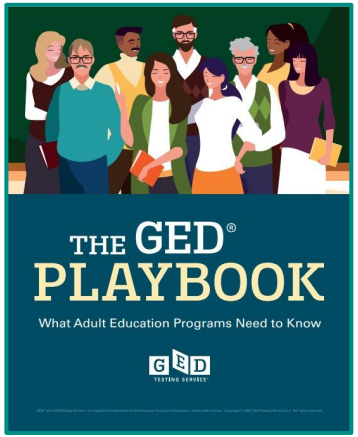
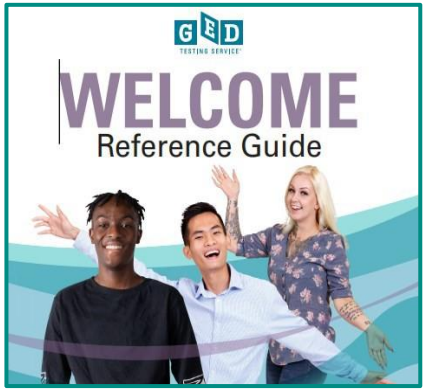
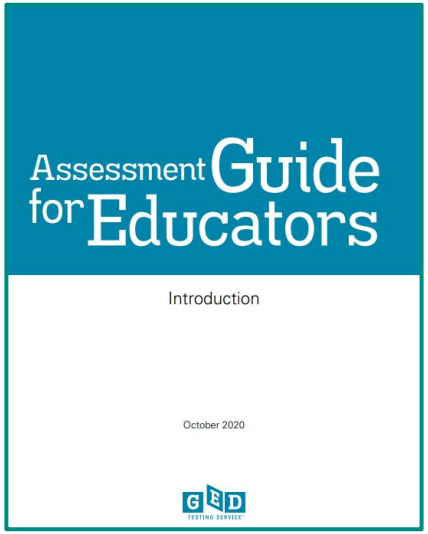
Did You Know: Your One Stop Source for Resources







- all resources for educators & admin-

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Did You Know: Your One Stop Source for Resources

Want to know what your student's scores mean? Find out with these Performance Level Descriptors. Each explains the skills a student demonstrates through scoring into each performance level on the GED® test and the GED Ready® practice test.

- all resources for educators & admin-

Did You Know: Your One Stop Source for Resources

...BUT WAIT.... THERE'S MORE!

Tuesdays for Teachers Webinar Series

Tuesdays for Teachers is a free professional development webinar series designed for educators. This bi-monthly webinar series will take a deeper dive into classroom strategies and techniques for the GED test.

- all resources for educators & admin-

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Strategies for all Levels

Review Tuesday for Teacher's Webinars for additional math support and resources.

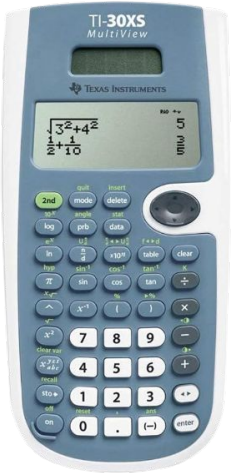
Provide and practice the formula sheet in class often, especially surface area & volume and algebra sections (slopes, quadratic, etc.), no matter content level.

Know how to use CORRECT calculator (TI-30XS Multiview), and promote calculator practice in class, no matter learner level; even during non-calculator practice problems.

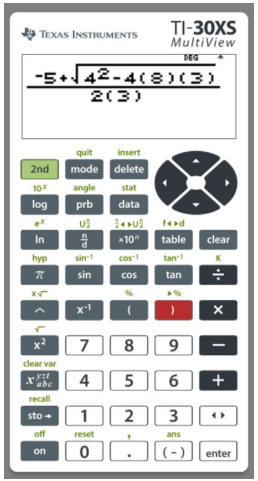
Encourage learners to understand what they need to know by directing them to the learner resources in their GED.com account. Share the "Did You Know" scoring information to prevent them from spending too much time on one question.

Create your own learner account using last name as "CANDIDATE." Take the PRACTICE TEST several times & use GED FLASH in your class!

About the TI-30xs Multiview Calculator

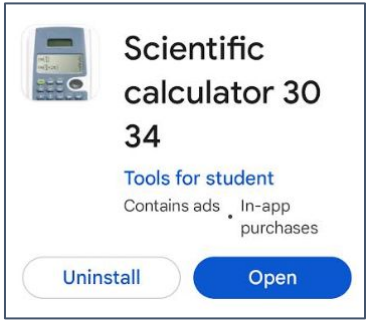


Hand held



Computer

[-TI Emulator-]



Phone App

Phone App

[-calculator reference sheet-]

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BEFORE WE BEGIN PRACTICE: The Calculator Dilemma

Best Practice: Solving Without & With The Calculator

WITHOUT:

Skills Development

Fundamental Understanding

Critical Thinking

WITH:

Error Reduction

Efficiency

Confidence Building

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Roll-up Your Sleeves!

QUADRATIC EQUATIONS

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

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3. Solve the quadratic equation: 3x^2 - 7x - 6 = 0

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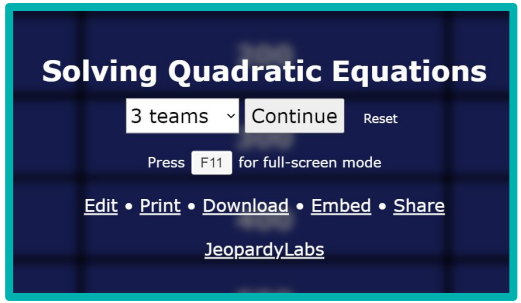
...But Wait, There's More!

QUADRATIC EQUATIONS



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Roll-up Your Sleeves!

FACTORING POLYNOMIALS

$b^2 + 8b + 7$

$(b + 7)(b + 1)$

$2k^2 + 22k + 60$

$2(k + 5)(k + 6)$

$6x^2 + 7x - 49$

$(3x - 7)(2x + 7)$

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4. Factor the quadratic expression: 6n^2 + 11n - 10

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...But Wait, There's More!

FACTORING POLYNOMIALS

Roll-up Your Sleeves!

CONVERTING TO SLOPE-INTERCEPT FORM

$$3y - 15 = -6x$$

$$y = -2x + 5$$

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Rewrite the equation in slope-intercept form: 7x - y = 14

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...But Wait, There's More!

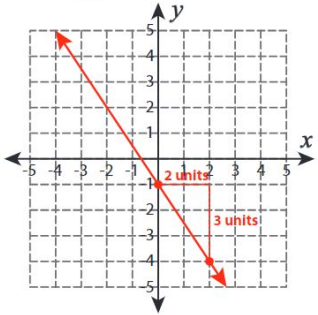
CONVERTING TO SLOPE-INTERCEPT FORM

Roll-up Your Sleeves!

CONVERTING & GRAPHING SLOPE-INTERCEPT FORM

$-3x - 2 = 2y$

$y = -\frac{3}{2}x - 1$



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Rank your comfort level with each step of converting equations to slope-intercept form and then graphing it, with 1 being the most comfortable and 5 being the least comfortable.

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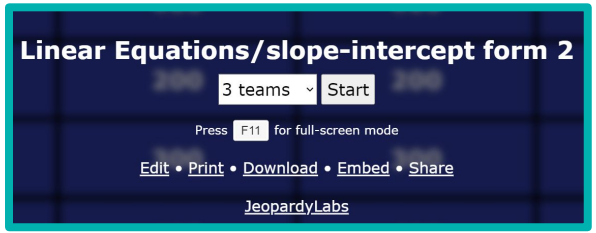
...But Wait, There's More!

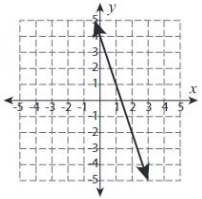
CONVERTING & GRAPHING SLOPE-INTERCEPT FORM



Roll-up Your Sleeves!

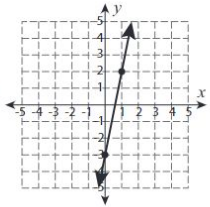
MULTIPLE CHOICE STRATEGIES

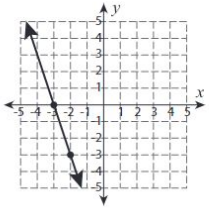
Which of the following equation represents the line on the graph?

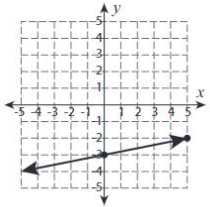


a) $y = x + 4$ b) $y = 2x - 4$ c) $y = -3x + 4$

Which of the following graph represents the equation $y = 5x - 3$?

a) 

b) 

c) 

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1. Which graph represents: $2y = 8 - 8x$?

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1. What is the equation of the given graph?

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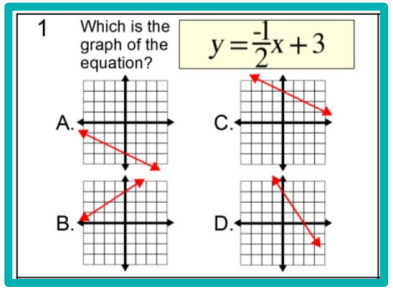
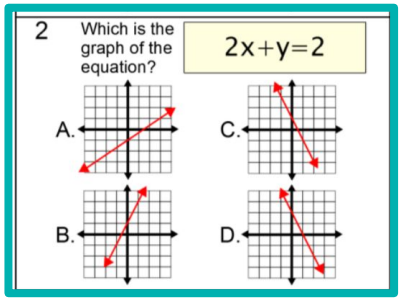
...But Wait, There's More!

MULTIPLE CHOICE STRATEGIES





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Roll-up Your Sleeves!

WRITE THE EQUATION OF A LINE GIVEN TWO POINTS

(–4, –7) and (–6, 9)

$y = -8x - 39$

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3. Find the equation of a line that passes through the points (-3, 7) and (4, -2)

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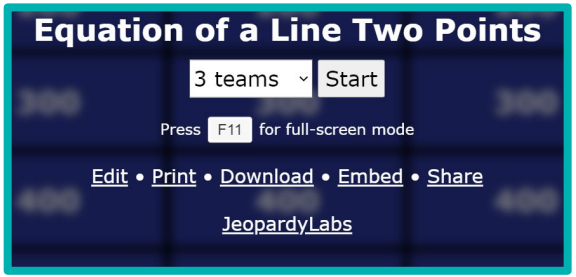
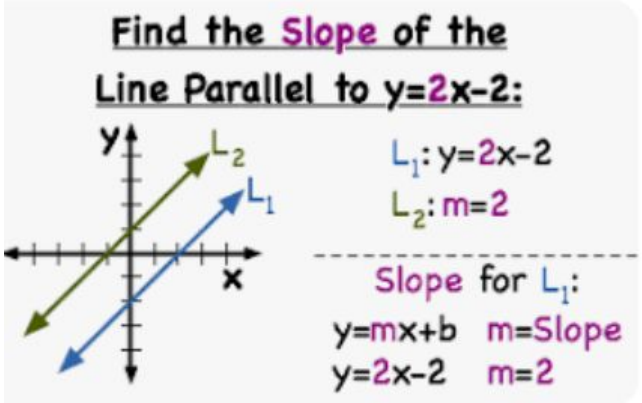
...But Wait, There's More!

WRITE THE EQUATION OF A LINE GIVEN TWO POINTS



Roll-up Your Sleeves!

PARALLEL & PERPENDICULAR LINES IN SLOPE INTERCEPT FORM



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Determine the relationship between the two lines given by the equations: 5x - 2y = 10 and 4x + 10y = 20

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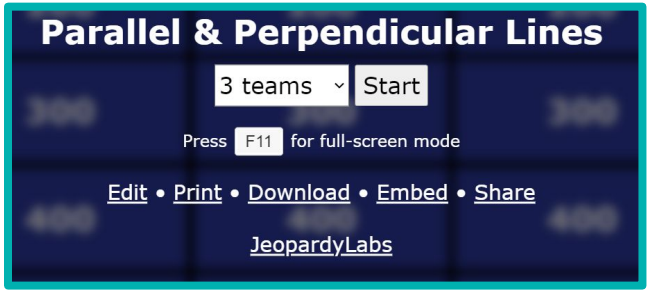
PARALLEL & PERPENDICULAR LINES



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