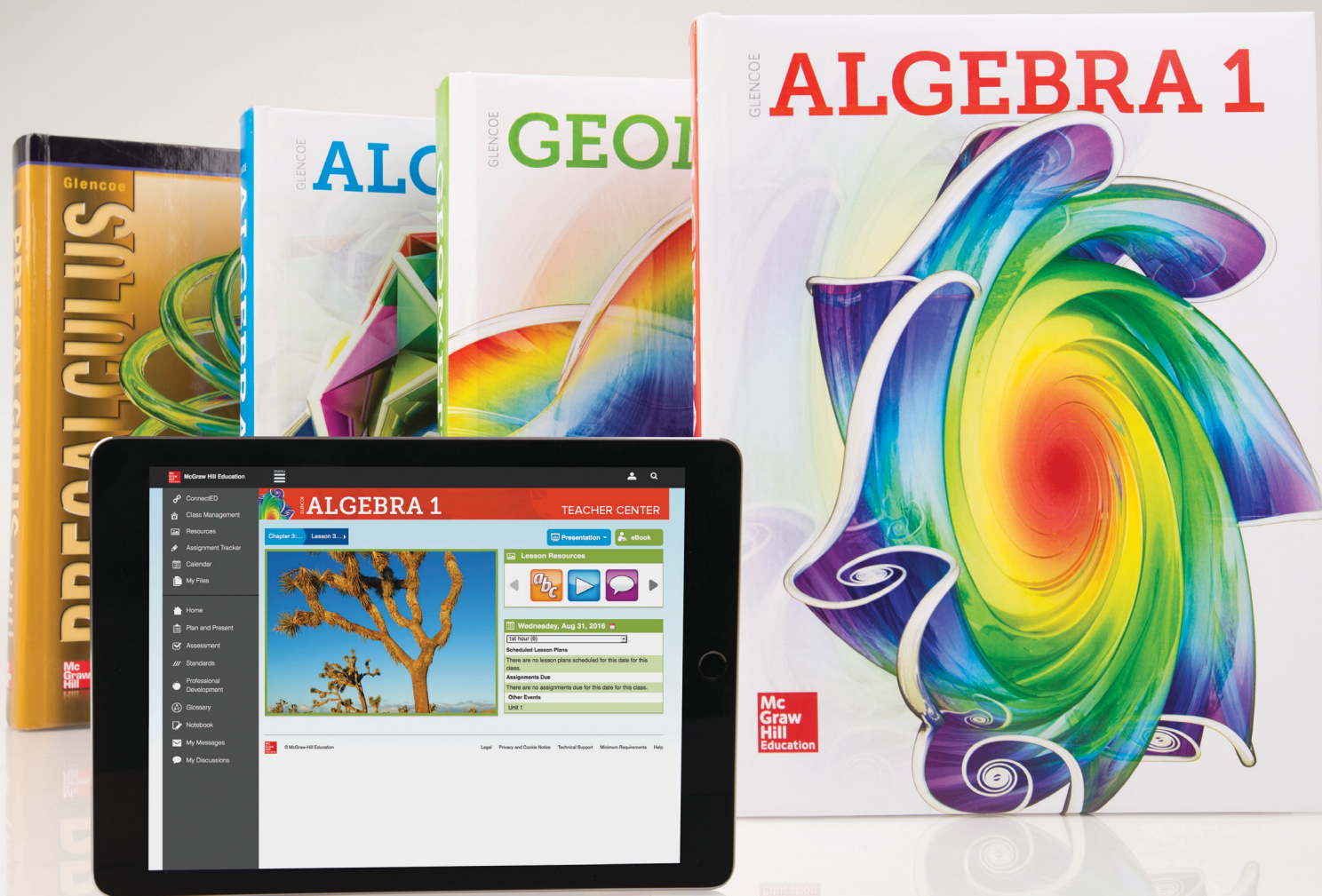




GLENCOE HIGH SCHOOL MATH

PROGRAM OVERVIEW



Connecting math content, rigor, and adaptive instruction for student success.

Program Overview

Connecting math content, rigor, and adaptive instruction for student success.

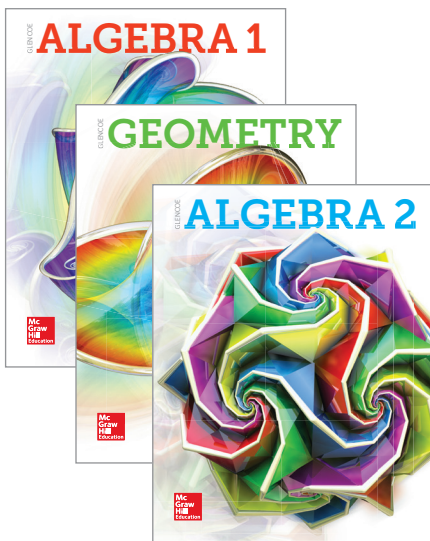
Glencoe High School Math Series

Confidently tailor your instruction with comprehensive materials to meet the individual learning needs of every student.

The accelerated pace of change in education over the last few years has created acute shifts in the delivery, consumption, and evaluation of mathematics education. As a result, educators need relevant content in multiple formats to engage students and focus on developing skills leading to achievement in the classroom and in the real-world.

Helping educators immerse students in math and prepare them for the future is what McGraw-Hill Education is all about. We deliver the most effective, innovative, and inspiring learning experiences for high school mathematics.

Featuring Four Math Programs



The Glencoe High School Math Series includes everything you need to guide your students with materials that lead them to success in the classroom, and creates confidence in their future.





CONTENTS

PROGRAM OVERVIEW

Overview	2–3
Connecting Math and Rigor	4–5
Adaptive and Personalized Instruction	6–7
Bring Math to Life	8–9
Ensure Student Success	10–11
Meeting Needs of All Students	12–13
Open Education Resources	13

DIGITAL RESOURCES GUIDE

Digital Resource Guide	14
Your Digital Dashboard	15–16
Planning & Presentation	17–18
Interactive Classroom	19
eLessons	20
ALEKS® & LearnSmart	21–22
Chapter–Level Resources	23–32
Lesson–Level Resources	33–47
Interactive Student Guide	48–52
Assessment Resources	53–75
Program Resources	77–87
Professional Development	89–90

Connecting Math and Rigor



As your partner, we provide diverse resources focused on Standards for Mathematical Practices and challenge students' critical thinking.

Be Empowered to Teach Confidently

Rigor has a strong emphasis on conceptual understanding for encouraging critical thinking with students, and is embedded throughout the *Glencoe High School Math Series*.

Each chapter starts out with a preview of Performance Tasks. Concepts and skills are built upon throughout each chapter so that by the end students will be able to complete the rich multi-step tasks.

Get Ready for the Chapter

Connecting Concepts

Concept Check
Review the concepts used in this chapter by answering each question below. 1-8 See margin.

- The origin of something is where it begins. How does this definition relate to the origin of the coordinate plane?
- In which quadrant are the x -values negative and y -values positive?
- Point A has coordinates $(2, 3)$. Name another point that has the same y -coordinate.
- What is the inverse operation for subtraction?
- Explain what step you would do first to solve $2x - 5 = 34$.
- What does it mean to solve an equation for a given variable?
- Explain what it means to evaluate an expression.
- What does it mean to find the absolute value of a number?

Performance Task Preview
You can use the skills and skills in this chapter to solve problems about running your own lawn-care business. Understanding linear functions will help you finish the Performance Task at the end of the chapter.

In this Performance Task you will:

- model with mathematics
- construct an argument
- make use of structure

New Vocabulary

English	Spanish
linear equation	ecuación lineal
standard form	forma estándar
constant	constante
x -intercept	intersección x
y -intercept	intersección y
linear function	función lineal
parent function	función padre
family of graphs	familia de gráficas
root	raíz
rate of change	tasa de cambio
slope	pendiente
direct variation	variación directa
constant of variation	constante de variación
arithmetic sequence	sucesión aritmética
inductive reasoning	razonamiento inductivo
deductive reasoning	razonamiento deductivo

152 | Chapter 3 | Linear and Nonlinear Functions

Performance Task Preview

You can use the concepts and skills in this chapter to solve problems about running your own lawn-care business. Understanding linear functions will help you finish the Performance Task at the end of the chapter.

The **Interactive Student Guide*** is an engaging resource that will help students be even more successful, and is included digitally with your *Glencoe High School Math Series*.

The **Interactive Student Guide** is standard-aligned and emphasizes on conceptual understanding and rigor.

Expand Mathematical Connections:

- Students can reflect on comprehension and application
- Internalize concepts to develop “second nature” recall
- Develop higher-order thinking skills
- Self-correct and discuss math concepts
- Demonstrate concept mastery

MP Standards for Mathematical Practice

The goal of the **Standards for Mathematical Practice** is to help develop students to use critical thinking, procedural fluency and conceptual understanding.

- Teaching strategies for the Mathematical Practices are incorporated in each chapter of the Teachers Edition
- Mathematical Practice Study Tips are embedded in the margins of the Student Edition
- Questions throughout are labeled with a Mathematical Practice logo to help students make the correlations to those practices

To find the y-intercept, let $x = 0$.

$$2x + 4y = 16 \quad \text{Original equation}$$

$$2(0) + 4y = 16 \quad \text{Replace } x \text{ with } 0$$

$$4y = 16 \quad \text{Simplify}$$

$$y = 4 \quad \text{Divide each side by } 4$$

The y-intercept is 4. This means the graph intersects the y-axis at $(0, 4)$.

Plot these two points and then draw a line through them.

Graph each equation by using the x- and y-intercepts.

4A. $x + 2y = 3$ 4B. $y = -2$

Study Tip
Reasonable Equations
 Reasoning: Reasonably solving for y you make it equal to the constant.
 $-x + 2y = 3 \rightarrow y = \frac{3+x}{2}$

Example 5 Graph by Making a Table

Graph $y = \frac{1}{2}x + 2$. Then, at the domain in all real numbers, $D = \{x \mid x \in \mathbb{R}\}$, make a table. Create the range in all real numbers, $R = \{y \mid y \in \mathbb{R}\}$.

x	y
-4	-1
-2	0
0	2
2	2.5
4	3
6	3.5

Study Tip
Sense-Making When the x-coefficient is a fraction, select numbers from the domain that are multiples of the denominator. It will simplify your calculations.

Guided Practice
 Graph each equation, identify the x- and y-intercepts, and label the graph.

5A. $2x - 3y = 7$

56. AMUSEMENT PARKS An amusement park charges \$70 for admission before 6 P.M. and \$25 for admission after 6 P.M. On Saturday, the park took in a total of \$28,000.

a. Write an equation that represents the number of admissions that stop have been sold. Let x represent the admissions sold before 6 P.M., and let y represent the admissions sold after 6 P.M.

b. Graph the equation.

c. Find the x- and y-intercepts of the graph. What does each intercept represent? Find the x-intercept and y-intercept of the graph of each equation.

57. $5x + 2y = 15$ 58. $2x - 7y = 14$ 59. $2x - 3y = 5$

54. $6x + 2y = 8$ 55. $y = \frac{2}{3}x - 3$ 56. $y = \frac{2}{3}x + 1$

57. APEXAMS The percent of high school graduates who scored 3+ on AP Exams can be modeled by $x = 26,811 + 24t,402$, where x is the number of high school students and represents time in years since 2000.

a. Graph the equation and identify the x- and y-intercepts of the graph.

b. Use the graph to estimate the number of students receiving 3+ on the AP Exams in 2022.

58. MULTIPLE REPRESENTATIONS In this problem, you will explore x- and y-intercepts of graphs of linear equations.

a. Graphical If possible, use a straightedge to draw a line on a coordinate plane with each of the following characteristics.

x- and y-intercept	no x-intercept	no y-intercept	exactly 2 x-intercepts	no x-intercept	exactly 2 y-intercepts
--------------------	----------------	----------------	------------------------	----------------	------------------------

b. Analytical For which characteristics were you able to create a line and for which characteristics were you unable to create a line? Explain.

c. Verbal What must be true of the x- and y-intercepts of a line?

59. MP REGULARITY Copy and graph a linear relationship. Explain.

Side Length	Perimeter
1	
2	
3	

60. REASONING Compare and contrast the graphs of $y = 2x + 3$ and $y = -2x + 3$.

OPEN ENDS Give an example of a condition. Then describe the graph.

61. $x = 0$ 62.

64. WRITING IN MATH Explain how to graph a line.

Adaptive and Personalized Instruction

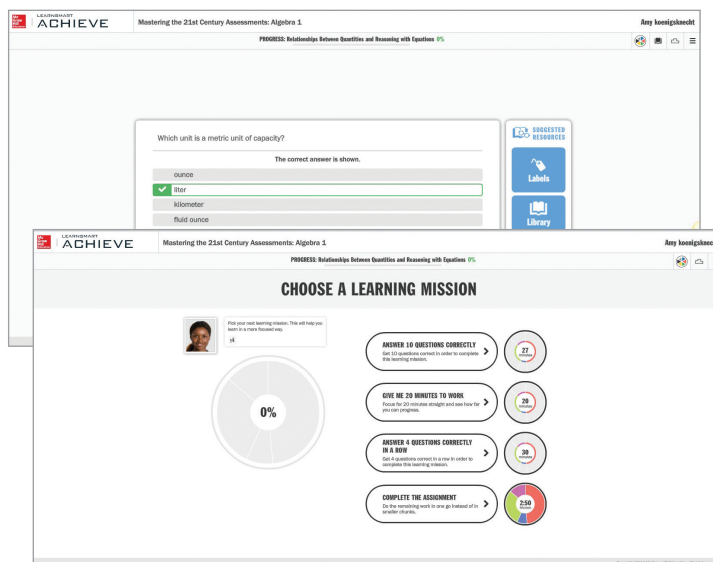


Glencoe High School Math Series has adaptive and personalized instructional tools built into the program, you can take command, make data-informed decisions, and provide the individualized instruction each student needs.

LEARNSMART®

Personalized study resources your students need today – to master state assessments tomorrow

LearnSmart® uses adaptive review with technology-enhanced questions to measure student accuracy, number of attempts, time spent, requests for help and confidence level to predict what course topics a student is most likely to forget and revisits those topics using engaging resources to build retention.





Trust **ALEKS**® to make informed instructional decisions

With the purchase of **ALEKS*** you are enabled to find out where your students are to inform your decisions on where whole-class instruction begins. This adaptive, personalized learning solution uses artificial intelligence to predict what content students are ready to learn and easily target individualized instruction, remediation, and acceleration.



* Contact your McGraw-Hill Education sales representative to learn how **ALEKS** can enhance your current math curriculum.

Bring Math to Life



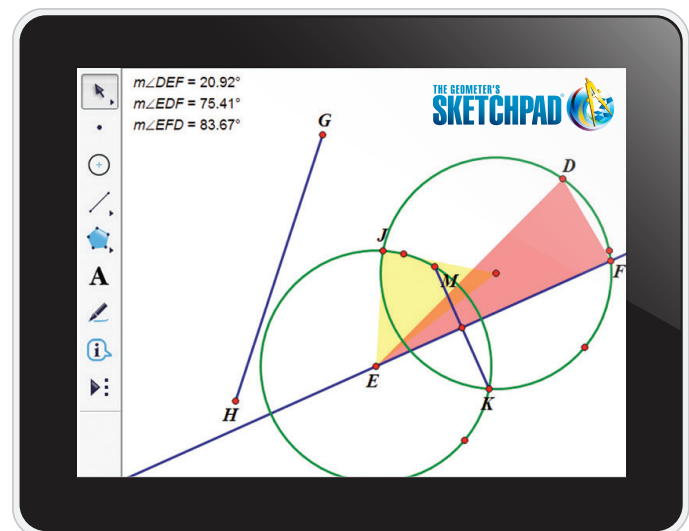
With the *Glencoe High School Math Series* digital resources in ConnectED, you can create an interactive learning center and empower students to live the math through exploration and investigation!

Draw out your students' excitement for math with *The Geometer's Sketchpad*®

This interactive learning tool challenges students to drag, sketch, and model activities to deepen their conceptual understanding and application of abstract math concepts.

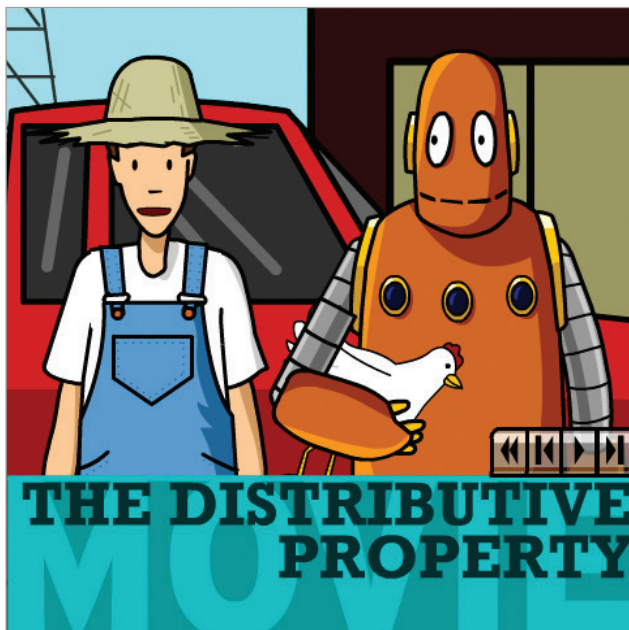
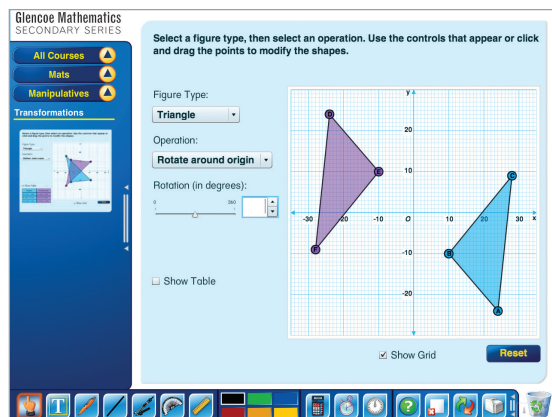
Integrated at the lesson level are engaging exercises that increase comprehension of abstract math concepts by helping students:

- Formalize key concepts
- Test mathematical hypothesis
- Visualize abstract math concepts



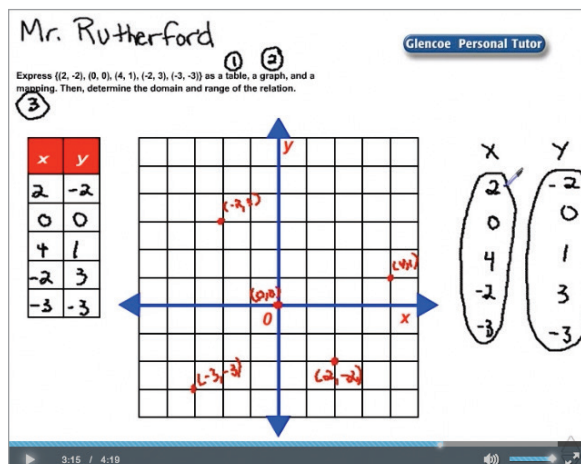
Help students deepen their understanding of math with truly interactive resources

The eToolkit virtual manipulatives empowers students to take learning into their own hands with opportunities to modify concrete models and see how changes they make impact the formula.



BrainPOP® supports individual and whole-class learning with animations that provide clear and concise explanations of select topics. Students can't help but be drawn in and you are fully supported with a variety of resources at your fingertips.

Personal Tutors are embedded and available to students at point-of-use to explain math concepts and help them apply or review lesson material.



Ensure Student Success



Students will be prepared to be successful on the new kinds of assessments that measure deeper understanding, critical-thinking, and problem-solving skills.

Promoting Conceptual Understanding

Performance Tasks are important to helping students learn concepts and skills. Each chapter has a preview of a performance task that will help students understand the concepts as they work through each lesson. Students will be asked to finish the task at the end of the chapter.

Modeling Through Reasoning

Practicing reasoning and modeling is done in the **Multi-Step Questions** that are incorporated into the Preparing for Assessment page at the end of each lesson. Students can look for structure in different situations in the multi-step questions found throughout each lesson and chapter.

CHAPTER 3
Preparing for Assessment

Performance Task
Provide a clear solution to each part of the task. Be sure to show all of your work, include all relevant drawings, and justify your answers.

FINANCIAL LITERACY Adrih runs a lawn mowing business for his neighbors. He has different plans homeowners can purchase based on their needs.

Part A
With the Basic plan, homeowners pay each time Adrih mows their lawn. The table shows the total amount paid for number of service visits.

Number of service visits	Total amount paid
0	0
1	15
2	30
3	45
4	60
5	75

- What is the common difference?
- Write an equation to represent the sequence.

Part B
Homeowners pay a \$50 fee to sign up for the Premium plan, which includes both lawn mowing and trimming shrubs. The graph for the equation representing this plan goes through the points (1, 50) and (3, 80), where x represents the number of service visits and y represents the total amount paid.

- What is the slope for the Premium plan?
- Write an equation in slope-intercept form to represent the total amount paid for any number of service visits.

Part C
Compare the common difference for the sequence representing the Basic plan and for the Premium plan.

- What does the common difference for the Basic plan represent?
- What does the slope for the Premium plan represent?
- Explain how the costs per service visit are related.

Part D
Graph the solutions of the equations for the Basic plan and Premium plan. Describe the change from the Basic plan to the Premium plan as a transformation of a linear function.

Part E
Create an argument for homeowners on the Basic plan. Adrih will trim shrubs additional charge of \$5 each time. Describe an advantage of the Premium plan.

Part F
Structure Describe a transformation that would make the graph of the Premium plan steeper. Explain how the transformation affects the cost per service visit.

230 Chapter 3 | Preparing for Assessment

Preparing for Assessment

65. What are the x - and y -intercepts of the line shown in the graph?

A. x -intercept is -4 , y -intercept is -6 .
 B. x -intercept is -4 , y -intercept is 6 .
 C. x -intercept is 4 , y -intercept is -4 .
 D. x -intercept is 6 , y -intercept is 6 .

66. Which of the following shows the equation $y = \frac{1}{2}x + \frac{3}{2}$ written in standard form?

A. $-5x - 8y = -12$
 B. $5x + 8y = 24$
 C. $5x + 8y = 12$
 D. $8y - 5x = 12$

67. Which of the following equations has the same y -intercept as the line shown in the graph?

A. $x + y = 4$
 B. $3x - y = 6$
 C. $2x + y = 4$
 D. $x + y = -2$

68. MULTI-STEP A candle burns as shown in the graph.

A. The graph is linear.
 B. The graph is nonlinear.
 C. The function is increasing.
 D. The function is decreasing.
 E. The function is neither increasing nor decreasing.
 F. The function is positive.
 G. The function is negative.

a. What is the x -intercept of the graph?

b. What is the y -intercept of the graph?

c. What do the intercepts represent?

4. If the height of the candle is 8 centimeters, approximately how long has the candle been burning?

A. 0 hours
 B. $2\frac{1}{2}$ hours
 C. 8 hours
 D. 24 hours

162 | Lesson 3.1 | Graphing Linear Functions

The screenshot displays the 'eAssessment - Test Generator' interface. On the left, a sidebar shows a tree view of 'Question Sets' for 'ALGEBRA 1', including chapters on linear functions, systems of equations, and quadratic functions. The main workspace is titled 'Fall Midterm Review' and contains a question editor. The editor shows a question about evaluating a logarithmic expression, $f(x) = \log_5(x-3)$, and a graphing task. A graphing calculator is visible in the background. The bottom panel shows a 'Fall Midterm Review' test with a 'File Edit Test Question' menu and a question about finding the value of c in a right triangle.

Use precise and customized tests with eAssessment

Using eAssessment makes it easy to create customized assessments for your state's content standards test practice, schedule homework, receive immediate results, and generate student proficiency reports.

Effectively and immediately provide support to improve achievement for every student.

Solutions with a Click of a Button

eSolutions Manual replaces the traditional solutions manual with a digital version that you can access 24/7 and use to create custom reports. This manual allows for significantly more flexibility than the traditional solutions manual. You can create sets of answers or solutions for your own use or to help students assess their own work.

Using the “view online” feature in class allows you to project on a screen or interactive whiteboard in a presentation style. The questions are displayed one at a time and can be shown in steps to help students work the question as you project it.

The screenshot shows the 'eSolutions Manual' interface for 'Algebra 1'. The top navigation bar includes 'McGraw-Hill Education' and 'Solutions Manual'. The main content area displays a table of contents for Algebra 1 chapters, from Chapter 0 to Chapter 12. On the right side, there are options to 'Include' or 'Exclude' 'Answers' and 'Solutions'. Below that, there are 'Select' options for 'All', 'Even', 'Odd', and 'Custom'. At the bottom, there are 'View' options for 'Online', 'Print', 'Portrait', and 'Landscape', with sub-options for '1-Column' and '2-Column'.

Meeting Needs of All Students



Confidently tailor your instruction with comprehensive materials to meet the individual learning needs of every student.

Built-In Differentiated Instruction

Glencoe's *High School Series* fully supports the 3-tier RtI model with print and digital resources to diagnose students, identify areas of need, and conduct short, frequent assessments for accurate data-driven decision making. Every lesson provides easy-to-use resources that consider the needs of all students.

Comprehensive resources are found throughout the program.

- Teacher Edition with strategies to modify activities and lesson content.
- Multilingual **eGlossary** with definitions for each vocabulary word in 13 languages

Go Online!
connect4learning.com

LearnSmart ALEKS The Geometry Vocabulary Personal Tutor Tools Calculator Spell Check Animations

Customize Your Chapter
Use the Plan & Present, Assignment Tracker, and Assessment built-in ConnectED to introduce lesson concepts, design personalized practice, and diagnose areas of student need.

Differentiated Instruction
Throughout the program, look for the icons to find specialized content designed for your students.

App Teaching Level
On Level
Beyond Level
English Language Learners

Engage
Featured IWB Resources

Geometry's ElectroGrid provides students with a tangible, visual way to learn. Use with Lessons 21 and 24.

eGlossary engages students and helps build conceptual understanding of key ideas. Use with Lessons 21 through 24.

Animations help students make important connections through videos. Use with Lesson 31.

Time Management show how well it is able to use these resources! Look for the check in each resource interface!

Personalize

	On Level	Beyond Level	English Language Learners
FOR EVERY CHAPTER	On Level	Beyond Level	English Language Learners
Chapter Readiness Quizzes	On Level	Beyond Level	English Language Learners
Chapter Tests	On Level	Beyond Level	English Language Learners
Standardized Test Practice	On Level	Beyond Level	English Language Learners
Vocabulary Review Games	On Level	Beyond Level	English Language Learners
Anticipation Guide (English/Spanish)	On Level	Beyond Level	English Language Learners
Student Built Glossary	On Level	Beyond Level	English Language Learners
Chapter Project	On Level	Beyond Level	English Language Learners
FOR EVERY LESSON	On Level	Beyond Level	English Language Learners
Personal Tutors (English/Spanish)	On Level	Beyond Level	English Language Learners
Graphing Calculator Personal Tutors	On Level	Beyond Level	English Language Learners
Step-by-Step Solutions	On Level	Beyond Level	English Language Learners
Self-Check Quizzes	On Level	Beyond Level	English Language Learners
5 Minute Check	On Level	Beyond Level	English Language Learners
Study Notebook	On Level	Beyond Level	English Language Learners
Study Guide and Intervention	On Level	Beyond Level	English Language Learners
Skills Practice (English/Spanish)	On Level	Beyond Level	English Language Learners
Practice (English/Spanish)	On Level	Beyond Level	English Language Learners
Word Problem Practice	On Level	Beyond Level	English Language Learners
Enrichment	On Level	Beyond Level	English Language Learners
Extra Examples	On Level	Beyond Level	English Language Learners
Interactive Classroom	On Level	Beyond Level	English Language Learners

Aligned to this group | Designed for this group

connect4learning.com 1008

Spark excitement about the impact of math in the real world using these **Differentiated Instruction** resources:

- Recommendations to personalize instruction for every student.
- Leveled exercise sets, reference resources, and dynamic digital tools.
- Differentiated homework options.
- English Learner and Vocabulary tips throughout each lesson that connect the math meaning to every day meaning

Using Glencoe High School Math Series' 3-Tier RTI model to reach every student

TIER 1 **On Level** OL

IF students miss 25% of the exercises or less,

THEN choose a resource:

SE Lessons 5-1, 5-2, and 5-3

Go Online!

- Skills Practice
- Chapter Project
- Self-Check Quizzes

TIER 2 **Strategic Intervention** AL
Approaching grade level

IF students miss 50% of the exercises,

THEN choose a resource:

Quick Review Math Handbook

Go Online!

- Study Guide and Intervention
- Extra Examples
- Personal Tutors
- Homework Help

TIER 3 **Intensive Intervention**
2 or more grades below level

IF students miss 75% of the exercises,

THEN choose a resource:

Use *Math Triumphs, Alg. 1*

Go Online!

- Extra Examples
- Personal Tutors
- Homework Help
- Review Vocabulary

Using Open Education Resources

With our **ConnectED** platform, teachers who have created their own resources are able to upload them into the *Glencoe High School Math Series*. They can assign them to students or add to their customized Lesson Presentations.

Teachers can reference the OER suggestions in the planning pages before each lesson in their Teacher's Edition.

LESSON 3-1 **Graphing Linear Functions**

Track Your Progress

Objectives

- Identify linear equations, intercepts, and axes.
- Graph linear equations.

Mathematical Background

An equation in two of the Properties of Equality can be applied to rewrite an equation from one form to another. The graph of a linear function has the form $y = mx + b$, where m is the slope and b is the y-intercept. The graph of a linear function has the form $y = mx + b$, where m is the slope and b is the y-intercept. The graph of a linear function has the form $y = mx + b$, where m is the slope and b is the y-intercept.

THEN	NOW	NEXT
A.20: Students determine the domain and range of linear functions in mathematical problems.	A.20: Students will write linear equations in two variables in various forms, including $y = mx + b$, $Ax + By = C$, and $y - y_1 = m(x - x_1)$, given one point and the slope and given two points.	A.20: Students will determine the slope of a line given a table of values, a graph, two points on the line, and an equation written in various forms, including $y = mx + b$, $Ax + By = C$, and $y - y_1 = m(x - x_1)$.
A.21: Students decide whether a relation represented verbally, tabularly, graphically, and symbolically defines a function.	A.21: Students will graph linear functions on the coordinate plane and identify the features, including intercept, y-intercept, axes, and slope, in mathematical and real-world problems. Also address A.2.6.	A.21: Students will calculate the rate of change of three functions represented verbally, graphically, or algebraically in context of mathematical and real-world problems.

Go Online! All of these resources and more are available at www.ck12.org.

- Access the power of your own content and create an impact with the Open Education Resources to address the needs in this lesson.
- Annotations describe key concepts through step-by-step explanations and videos.
- Graphing tools with outstanding built-in auto-grabbing technology.

Using Open Educational Resources

Apps Have students access Google Apps for Education. As an educator it also offers spreadsheets, calendars, and more in planning tool.

Use at Beginning of Lesson

Using Open Educational Resources

Apps Have students access Google Apps for Education to use as a planning tool.

