

ALPHA MATH



 ALPHA PUBLISHING

Alpha Math
Grade 6-8 Brochure

www.alphapublishing.com

Welcome to Alpha Publishing

Alpha Publishing believes that children and adults have the right to a quality education. Continuous learning is the best means of improving the lives of individuals and enhancing the standards and quality of our communities.

Our mission is to provide educational materials and courses across Africa, Asia, the Middle East and Latin America that meet international standards while also reflecting and incorporating the cultures and traditions of the region.

Our dedicated publishing teams are mindful of the different types of learners who come from various national and cultural backgrounds; therefore, our publishing strategy is driven by the motto: **"We are in the Region, for the Region."** We pay the utmost attention to the delivery of globally recognized and culturally appropriate content and innovative teaching tools not just in our books but through **eAlpha**, our digital CLMS platform.



Lifelong Learning

We make constant endeavors to bring global experience, expertise, and best practices to what we publish, while bearing in mind the region's current and future learning and teaching requirements.



Innovative and Futuristic

We ensure that all of our products are based on the latest research in education and make the mission of international standards a reality. We are committed to delivering both traditional print and innovative, interactive online educational experiences.



Latest Technology

We put great stock in the importance of technology to produce cutting-edge programs and courses for the educational transformation of the community.



Results-Oriented

At Alpha, we know that enhancing teaching and learning outcomes is a key element for measurable impacts.



Publishing Excellence

We guarantee that what we publish is reliable and trustworthy, both globally and regionally.

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 **ALPHA**
Mobile eLearning Platform

www.eAlpha.info

Alpha's Content Learning Management System for both students and teachers gives access to premium interactive lessons and resources to create virtual classrooms for all students both online and offline. eAlpha makes learning a personalized, exciting and enriching experience.



Easy to Use



Engaging Audio



Informative Videos



Online Reporting



Online / Offline Resources



Interactive Content



Cross-platform Offline Application

Available on the  **App Store**

Get it on  **Windows 10**

GET IT ON  **Google Play**

Grades 6-8



- American English
- Video Clips
- Online Reporting
- Online Resources
- Interactive Content
- Alpha + PhET Sims

Alpha Math Grades 6–8 Middle School continues to extend math beyond the walls of the classroom and builds upon the skills and content covered by Alpha Math Grades 1–5. Its lessons provide a real-world context that engages the mind of the global learner while fulfilling international educational standards.

Alpha Math Grade 6 fully covers the Grade 6 CCSS (Common Core State Standards). Alpha Math Grade 7 is an accelerated Grade 7 course that fully covers the Grade 7 CCSS and includes some Grade 8 standards. Alpha Math Grade 8 covers the remaining Grade 8 CCSS and all Algebra 1 standards.

Key Features

- Fully aligned to CCSS with Cross-Curricular connections to CCSS English Language Arts and the Next Generation Science Standards. Standards are clearly listed throughout the program.
- Hands-on activities, practices, and problem-solving that help students become global learners while developing critical-thinking skills and mathematical literacy
- Built on the 5E Instructional Model: Engage, Explore, Explain, Elaborate, and Evaluate
- Differentiated instruction is built into the program through three Practice Books, instructional support in the Teacher Guide, and fun and engaging activities provided for each lesson
- Easy-to-use and customizable program for teachers with robust resources, training, and professional development opportunities
- ExamView assessment generator for creating, assigning, and scoring tests, quizzes, and more
- Available both online and offline on eAlpha, your dynamic and interactive Learning Management System
- NEW - Alpha + PhET Sims from the University of Colorado Boulder's PhET Simulations. PhET Sims are based on extensive education research and engage students through an intuitive environment where they will learn through exploration and discovery.

Student Book

The Student Book is the main resource for students. There are two light-weight volumes per grade that contain all the core content that students will complete during class and at home. Each lesson follows the same organized structure to ensure complete coverage of the lesson objective and CCSS.

Students make real-world connections to math through special features in their books that include: Engineering Connections, Math and Science Connections, Math and Art Connections, Math and ELA Connections, Careers in Math, Technology, and Science, and ESL/ELL Strategies.

Calculator Practice



Before students begin the Calculator Practice, demonstrate how a terminating and a non-terminating decimal looks on a calculator by showing the following quotients.

$$5.16 \div 12.9 = 0.4$$

$$85.7 \div 3.3 = 25.969696$$

Have students complete the exercises. Then have them find $6.4 \times 0.5 = 3.2$ on the calculator. **Ask:** If there are 2 decimal places in the two factors, why is there only 1 place in the product? The calculator does not show the zero on the end. $3.2 = 3.20$. Remind students how important it is to estimate the product before multiplying. Half of 6 is 3 so the answer needs to be about 3.

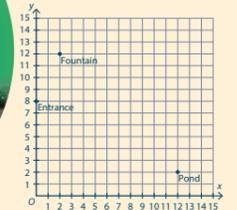
Teacher Guide

The Teacher Guide provides assistance in all phases of the teaching cycle. It complements each page of the Student Book with wrap-around instructional support. Teaching Connections draw the teacher's attention to how the math content connects to other content areas. Robust teacher guidance is also delivered through Teaching Tips, Common Errors, instructions for ESL/ELL support, vocabulary review, and key-by-key calculator instruction.

Math Around Us

Do you know that ...

The Majorelle Garden is in Marrakech, Morocco. It was created by the French painter Jacques Majorelle. It contains exotic trees and plants. There are ponds, waterways, and fountains.



A garden center sells potted plants. A coordinate plane is used as a floor plan for the garden center. What are the coordinate pairs for the entrance, the fountain, and the pond?

Answer:
entrance: (0, 8), fountain (2, 12), pond (12, 2)

Step by Step

Plot these four points on the coordinate grid.

Point Q: (5, 8) Point R: (8, 10)

Point S: (8, 2) Point T: (5, 4)

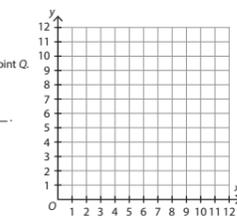
Connect the points in order. Then connect Point T back to Point Q.

The shape is a _____.

The line segments _____ and _____ are parallel.

To go from Point T to Point Q, move _____ units _____.

To go from Point S to Point T, move 3 units _____ and _____ units up.



LESSON 1 Graph Inequalities

Standard

6.EE.B.5 Understand solving an equation or inequality as a process of answering a question which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

6.EE.B.8 Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.

Objective

Write and graph inequalities in one variable, and use substitution to determine whether a value makes an inequality true.

Essential Question

How can you write and graph an inequality?
By the end of this lesson, students should be able to write an inequality from a description given in words, determine which values make an inequality true or false, and graph an inequality on a number line.

Warm-Up

Show students two inequalities: $2 + 2 < 5$ and $2 + 2 > 5$. **Ask:** What is two plus two? Point to the first inequality and rewrite it as $4 < 5$. **Ask:** What does this inequality say? 4 is less than 5. Is four always less than 5? Write true above the first inequality. Point to the second inequality and rewrite it as $4 < 5$. **Ask:** What does this inequality say? 4 is greater than 5. **Ask:** Is four ever greater than 5? Write false above the second inequality. **Say:** Inequalities with variables work the same way. You can check to see if a number makes an inequality true or false.



Show students an advertisement similar to the one shown. Using the advertisement sale price, follow the format for a discussion. Write these dollar amounts for students: \$2.79, \$2.78, \$2.80, \$8.65, \$1.49. **Ask:** Which dollar amounts could be the price for an item at this sale? \$2.79, \$2.80, \$8.65. **Ask:** Why could \$2.79 be a price for an item? The sign says "starting at". **Say:** \$1.49 and \$2.78 are not sale prices. Why? They are both less than \$2.79.

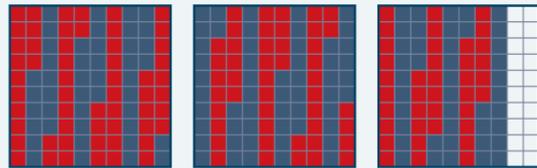
Give each student 5 counters, beans, or other small objects. Write $x < 4$ on the board. **Ask:** What does the inequality say? x is less than 4. **Say:** Put less than 4 counters in the bag. **Ask:** How many counters could be in the bag? 0, 1, 2, or 3. Write $3 < 4$. **Ask:** Does 3 make the inequality true? **Say:** yes. Write $0 < 4$. **Ask:** Does 0 make the inequality true? **Say:** yes. Write $4.5 < 4$. **Ask:** Does 4.5 make the inequality true? **Say:** no. Write false above the inequality. Tell students they will learn how to graph inequalities. They will substitute values for a variable and evaluate to see whether the values make an inequality true.

Full Scope & Sequence and CCSS Alignment charts are included. The Lesson Plans, found on eAlpha, complement the Teacher Guide and allow teachers to easily customize the program around the needs of each student, the whole class, and the school calendar.

Teaching Tips

For students who may be struggling, have them work through this problem. Help students confirm that the model with three grids shows 2.8 in all. Then they should see and count the 20 groups of 0.14.

Use the hundredths grids below to model $2.8 \div 0.14$.



Each group models 14 hundredths.

There are 20 groups.

So $2.8 \div 0.14 = 20$

Differentiated Practice Books

On-Level Practice Book: complements the Student Book; for each lesson there are extra problems and questions that reinforce what students learn in class. The On-Level Practice Book also includes Mid-Chapter Quizzes, Multiple-Choice Quizzes, and Chapter Tests.

Reteach Practice Book: provides extra support for students who have difficulty understanding the lesson.

Enrich Practice Book: provides challenging questions and problems for above-level students.

Cross-Curricular Connections

GEOGRAPHY Use ratios to accurately represent actual distances on maps. For example, an inch on a map may represent 50 miles in the real world. Have students find examples of maps in their textbooks or online and show the scale.

Say: The scale is a ratio that tells how many miles are represented by each inch or other measurement on the map.

COMMON ERRORS Some students may mistakenly multiply or divide each term by a different number when asked to write an equivalent ratio. For example, for the ratio 3:4, students may multiply 3 by 3 and note that the term 3 is multiplied by itself, then multiply the second term by itself also, 4×4 to find 9:16 rather than 6:8. Remind students that both quantities in the ratio must be multiplied by the same number to form an equivalent ratio.

ELL Help students to understand the phrase *given value*. Have students write the expression $3x$. **Say:** You don't know the value of x . Then tell students that $x = 5$. **Say:** I told you the value of x . Now you know the value of x . **Ask:** What is the value of x that I gave you? **Say:** When $x = 5$, 5 is the given value of x .

Lesson 2: Solve Multi-Step Equations

To solve multi-step equations, first use properties of equality to combine like terms. Then, use properties of equality to perform inverse operations and isolate the variable.

Example Solve the equation $23 + 2(4x - 3) - 5x = 32$.

| | |
|----------------------------|----------------------------------|
| $23 + 2(4x - 3) - 5x = 32$ | Distributive Property |
| $23 + 8x - 6 - 5x = 32$ | |
| $8x - 5x + 23 - 6 = 32$ | Commutative Property |
| $3x + 17 = 32$ | Combine like terms. |
| $3x = 15$ | Subtraction Property of Equality |
| $x = 5$ | Division Property of Equality |

You can check your solution by substituting your result into the original equation.

$$23 + 2(4(5) - 3) - 5(5) = 32$$

$$23 + 2(20 - 3) - 25 = 32$$

$$23 + 34 - 25 = 32$$

$$32 = 32 \quad \checkmark$$

$32 = 32$ is a true statement, so $x = 5$ is the correct solution.

Example Solve the equation $6(5 - 3x) = 78$ in two different ways.

| | |
|--------------------------------------|--|
| One way | Another way |
| Use the Distributive Property first. | Use the Division Property of Equality first. |
| $6(5 - 3x) = 78$ | $\frac{6(5 - 3x)}{6} = \frac{78}{6}$ |
| $30 - 18x = 78$ | $5 - 3x = 13$ |
| $-18x = 48$ | $-3x = 8$ |
| $x = -\frac{48}{18} = -\frac{8}{3}$ | $x = -\frac{8}{3}$ |

Solve each equation. Show your solution steps and check your solution.

1. $3.5 - 0.4x + 2.1 - 0.6x = 4.9$ 2. $\frac{5x - 1}{4} = -9$

Ancillaries & Teacher Resources

Anchor Activities

Anchor Activities are engaging activities that encourage active learning and exploration while reinforcing foundational concepts—a quick and fun opening for each lesson. There are three levels of differentiated activities to meet the students at their own level of readiness for new material. Teacher support for implementation, materials lists, alignment, and procedures are included in the Lesson Plans. These activities are available both as printable and interactive pages on eAlpha.

Exit Activities

Exit Activities are short and fun formative assessments to complete at the end of each lesson. They provide the teacher with a quick snapshot of each student's understanding of the lesson. Teacher support for implementation procedures is included in the Lesson Plans. These activities are available both as printable and interactive pages on eAlpha.

Alpha Math Grade 6 Lesson Planner
Volume A
Chapter 1: Decimals
Lessons: 1–9

Grade 6 Chapter 1 Lesson 1
Add and Subtract Decimals

Materials: play money, hundredths grids

Time: 8 minutes

Participants: pairs

CCSS: 6.NS.B.3

Goal of the Activity Students add and subtract decimals in hundredths.

Multiple Intelligences visual

Procedure to Follow Students work with a partner. They use hundredths grids or play money to represent values. Then, they add or subtract the decimals. Students should check their partner's work.

Closure of the Activity Be sure students understand how to regroup when adding and subtracting decimals.

GRADE 6 • CHAPTER 1 LESSON 4 CCSS 6.NS.B.3
Volume A

ANCHOR ACTIVITY

Multiply Decimals

Use an area model to solve the problem. Then write the equation.

A teacher has 32 students who need calculators. Each calculator costs \$12. How much will the teacher pay if she buys one calculator for each student?

GRADE 6 • CHAPTER 1 LESSON 4 CCSS 6.NS.B.3
Volume A

ANCHOR ACTIVITY

Multiply Decimals

Use the coins to model the problem. Then write the equation and explain how you found the answer.

Mariam is buying pencils for her three children. The pencils cost \$0.12 each. How much will it cost to buy one for each child?

GRADE 6 • CHAPTER 1 LESSON 4 CCSS 6.NS.B.3
Volume A

ANCHOR ACTIVITY

Multiply Decimals

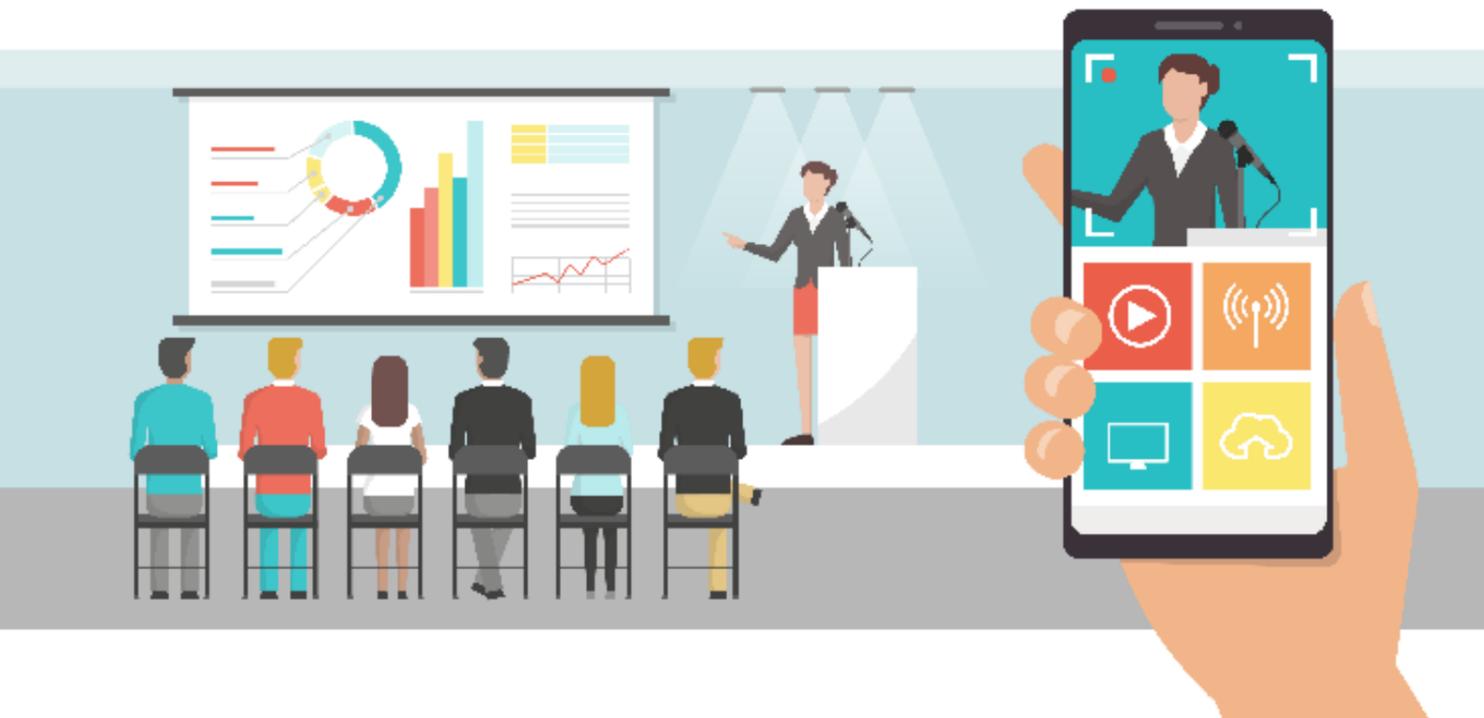
Use an area model to solve the problem. Then write the equation.

A teacher needs to buy 32 folders that cost \$1.20 each. How much will they cost?

Lesson Plans

Lesson Plans are available as downloadable, editable, and printable pages on eAlpha. They contain pacing, materials lists, vocabulary, preparation tips, procedures for the Anchor and Exit Activities, the 5Es throughout each lesson, a lesson closure, lesson extensions, and assessment information. A Yearly Pacing Guide is provided for each grade level.

Professional Development & Product Training



Providing ongoing professional development for educators is one of the most critical success factors for better learning and teaching outcomes.

Alpha Publishing, in partnership with KDSL Global and a selection of independent trainers, provides specifically tailored program training and practice sessions, along with leadership and school management courses, for teachers and institutions, via distance learning or at site events.

For more information about professional development and product training please visit www.alphapublishing.com or call +971 4 391 8658.

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