

Overview

Prior Learning	Math 6, Unit 7	Future Learning
Grades 3–5 <ul style="list-style-type: none"> • Inequalities with numbers • Comparing fractions and decimals • Graphing points with positive coordinates Math 6 <ul style="list-style-type: none"> • Intro to polygons (Unit 1) • Equations with variables (Unit 6) 	<ul style="list-style-type: none"> • Negative numbers and absolute value • Inequalities with variables • The coordinate plane (with positive and negative coordinates) 	Math 7, Units 5 and 6 <ul style="list-style-type: none"> • Operations with negative numbers • Solving inequalities Math 8 <ul style="list-style-type: none"> • Transformations in the plane • Pythagorean theorem and distance

Big Ideas

Negative Numbers and Absolute Values (Lessons 1–5)

- Describe locations on the number line using positive and negative numbers.
- Compare and order positive and negative numbers and absolute values.

Inequalities (Lessons 6–8)

- Represent inequalities using symbols, words, and graphs.
- Identify solutions to inequalities.

The Coordinate Plane (Lessons 9–12)

- Solve problems by graphing points with positive and negative coordinates.
- Draw polygons given coordinates for the vertices.

Key Math Practice Standards

- **MP2:** Represent statements like “You must be less than 3 feet tall” with symbols and graphs, and describe situations based on information in a graph.
- **MP3:** Make arguments for comparing negative numbers, and justify whether or not a set of coordinates could be the vertices of a square.
- **MP6:** Use number lines to precisely locate and describe negative numbers.

Unit Cool-Downs

[Unit 6.7 Cool-Downs](#)

Lessons by Standard

	6.EE.B			6.G.A	6.NS.C										
Standard	5	6	8	3	5	6	6.A	6.B	6.C	C.7	C.7.A	C.7.B	C.7.C	C.7.D	C.8
Lessons	8	7, 8	6, 7, 8	11	1, 4	2	2, 3	9, 10	2, 3, 9, 10, 12	3, 5	3, 5	4, 6	5, 12	5	10, 11, 12

Section 1: Negative Numbers and Absolute Values (Lessons 1–5)

Students describe locations on the number line and situations in context using positive and negative numbers. They also compare and order positive and negative numbers and their absolute values.

Lesson	Title	Purpose	Vocabulary	Notes
1	Can You Dig It?	Students are introduced to numbers less than 0 on the number line.	negative number positive number	
2	Digging Deeper	Students describe and use strategies for identifying and plotting negative rational numbers on the number line.	opposite	
3 	Order in the Class	Students practice comparing positive and negative numbers in a social way.	sign	
4	Sub-Zero	Students apply what they've learned about positive and negative numbers in the contexts of elevations and temperatures around the world.		
5	Distance on the Number Line	Students are introduced to the concept of absolute value. They also practice what they've learned so far in this unit by solving a series of puzzles.	absolute value	
Practice 	Practice Day 1			

Section 2: Inequalities (Lessons 6–8)

Students represent inequalities, such as $x > 3$, using symbols, words, and graphs, and identify some of their solutions.

Lesson	Title	Purpose	Vocabulary	Notes
6	Tunnel Travels	Students are introduced to inequalities with variables and connect verbal descriptions, symbols, and number line representations of inequalities		
7	Comparing Weights	Students use the hanger representation from earlier in Math 6 to interpret and write inequalities that involve one variable and more than one variable.		
8	Shira's Solutions	Students consolidate and apply what they've learned about inequalities on the number line and learn the term <i>solution to an inequality</i> .	solution to an inequality	

Section 3: The Coordinate Plane (Lessons 9–12)

Students extend what they learned about the coordinate plane in Grade 5 to include points with positive and negative coordinates. Students solve real-world and mathematical problems by graphing points, and draw polygons given coordinates for the vertices.

Lesson	Title	Purpose	Vocabulary	Notes
9	Sand Dollar Search	Students develop an understanding of negative numbers in the coordinate plane.	coordinate plane	
10	The A-maze-ing Coordinate Plane	Students practice what they've learned about coordinates in the context of solving mazes. They use different scales for the axes and notice patterns in coordinates that differ only by their signs.		
11	Polygon Maker	Students apply coordinates with positive and negative numbers to create polygons and determine distances in the coordinate plane.		
12 	Graph Telephone	Students plot and interpret coordinates in order to make sense of situations in context.		
Practice 	Practice Day 2			

Suggestions for Consolidation or Omission

- **Lesson 1:** This lesson supports students in describing values less than 0 on a number line, which will be addressed in more depth in upcoming lessons.
- **Lesson 3:** This lesson supports students in comparing positive and negative rational numbers. If students show a strong understanding comparing numbers on Problem 4 of the Readiness Check, this lesson may be omitted. If omitted, be sure to discuss the word *sign* and how to use a number line to compare and order positive and negative numbers.
- **Lesson 7:** The purpose of this lesson is for students to practice interpreting and writing inequalities in preparation for understanding solutions of inequalities in the next lesson. If most students show a strong understanding of inequalities in Problem 4 of the Readiness Check and in Lesson 6, this lesson may be omitted.
- **Lesson 12:** This lesson gives students an opportunity to apply the concepts they learned in this unit to plot and interpret coordinates in order to make sense of situations in context. There is no new content introduced in this lesson.

Connections to Prior Learning

The following concepts from previous grades may support students in meeting grade-level standards in this unit:

- Representing fractions and decimals on the number line and comparing fractions and decimals. **(3.NF.A.2.B, 4.NF.A.2, 4.NF.C.6)**
- Identifying and plotting points with positive coordinates on the coordinate plane. **(5.G.A.1, 5.G.A.2)**

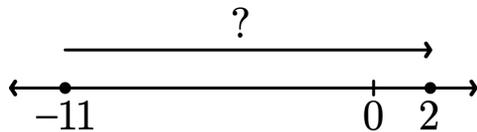
Connections to Future Learning

The content in this unit supports the following concepts in later units and courses:

Operations with Negative Numbers (7.NS.A.3)

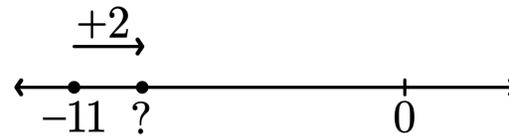
In this unit, students use number lines to compare values. In Math 7, Unit 5, they will continue to use number lines to add and subtract positive and negative numbers.

$2 - (-11)$ means: *What is the distance from -11 to 2?*



$$2 - (-11) = 13$$

$(-11) + 2$ means: *What number is 2 units to the right of -11?*



$$(-11) + 2 = -9$$

Solving Inequalities (7.EE.B.4.B)

In this unit, students use inequality symbols and graph inequalities on a number line. In Math 7, Unit 6, they will build on their understanding to write and solve inequalities to represent situations with a constraint.

The cost to rent a scooter is \$2.00, plus another \$0.30 per minute you ride. Callen has a \$10 credit.

For how many minutes could he ride?

$$0.30x + 2 \leq 10$$

$$0.30x + 2 = 10$$

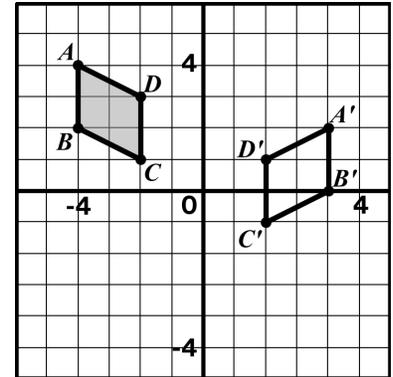
$$x = 26.\overline{66}$$

Since he cannot ride part of a minute, Callen could ride anywhere between 0 and 26 minutes.

Transformations in the Plane (8.G.A.3)

In this unit, students graph points using positive and negative values in the coordinate plane. In Math 8, Unit 1, students will apply this understanding to visualize, describe, and perform translations, rotations, and reflections in the plane.

For example, to take the pre-image $ABCD$ to the image $A'B'C'D'$, reflect the polygon over the y -axis and then translate 2 units down, or translate first and then reflect.



Pythagorean Theorem and Distance (8.G.B)

In this unit, students determine horizontal and vertical side lengths of figures on a coordinate plane. In Math 8, Unit 8, students will learn about the *Pythagorean theorem* and apply it to determine diagonal (non-vertical or horizontal) lengths.

For example, we can use the Pythagorean theorem to calculate how far from the wall the ladder is (the “length” of the ground in the image).

The ladder is 8 ft from the wall.

$$\begin{aligned} a^2 + b^2 &= c^2 \\ 15^2 + b^2 &= 17^2 \\ 225 + b^2 &= 289 \\ b^2 &= 64 \\ b &= 8 \end{aligned}$$

