

Unit 2: Rational Numbers

6th Grade Mathematics

22 Class Meetings

Revised May 2026

Essential Questions

- How do the intervals on a number line affect the value of the numbers?
- How does the number line help determine the magnitude of the number?
- When is a coordinate system used in real life?

Enduring Understandings with Unit Goals

EU1: The number line can be extended to the left or downward to include negative values. Integers and other rational numbers can be used to represent and model real-world values, including situations with negatives.

- Use positive and negative numbers to represent real-world contexts, including money, temperature, and elevation
- Define and determine opposites
- Find, position, and compare rational numbers on horizontal and vertical number lines.

EU 2: Absolute value can be used to determine a number's distance from zero.

- Define and determine absolute value
- Write and interpret inequalities involving absolute value
- Use absolute value to model magnitude and distance in real world situations

EU 3: When two perpendicular number lines intersect, they create a four-quadrant coordinate plane. The coordinate plane can be used to describe location in two dimensions, defined by an ordered pair.

- Understand structure of the coordinate plane
- Reflect points across axes
- Calculate vertical and horizontal distances on a coordinate plane

Standards

Common Core State Standards:

- **6.NS.C.5:** Understand that positive and negative numbers are used together to describe quantities having opposite directions or values
- **6.NS.C.6.A:** Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself.
- **6.NS.C.6.C:** Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.
- **6.NS.C.7.A:** Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram.
- **6.NS.C.7.B:** Write, interpret, and explain statements of order for rational numbers in real-world contexts.

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- **6.NS.C.7.C:** Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation.
- **6.NS.C.7.D:** Distinguish comparisons of absolute value from statements about order.
- **6.NS.C.6.B:** Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.
- **6.NS.C.8:** Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane.

ISAAC Vision of the Graduate Competencies

Competency 1: Write effectively for a variety of purposes.

Competency 2: Speak to diverse audiences in an accountable manner.

Competency 3: Develop the behaviors needed to interact and contribute with others on a team.

Competency 4: Analyze and solve problems independently and collaboratively.

Competency 5: Be responsible, creative, and empathetic members of the community.

Unit Content Overview

1. Positive and Negative Numbers

- Extend the number line
- Use positive and negative numbers to describe real-world contexts
- Define opposites
- Find and position integers and rational numbers on horizontal and vertical number lines
- Vocabulary-positive number, negative number, opposites, credit, debit, charge, integer, deposit, withdrawal, elevation

2. Order and Absolute Value

- Compare and order integers and rational numbers
- Write and interpret inequalities to compare rational numbers
- Define absolute value
- Use absolute value to model magnitude and distance
- Vocabulary-greater than, less than, inequality, absolute value, equivalent

4. Coordinate Plane

- Understand structure of coordinate plane
- Use ordered pairs to name location on coordinate plane
- Reflect points across axes
- Use absolute value to calculate vertical and horizontal distance between points

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- Vocabulary-vertical, horizontal, opposite, coordinate plane, quadrant, reflection, ordered pair, origin

Interdisciplinary Connection:

- Language Arts – Reading strategies for solving Word Problems, vocabulary, CER writing strategies
- Humanities:
 - Unit 1: Many Faces, Many Places
- Science:
 - Unit 1: Weather Patterns
 - Unit 2: Earth and Universe
 - Unit 3: Inside the Earth

Daily Learning Objectives with *TWPS*

Students will be able to...

- Create horizontal and vertical number lines using proper intervals to include positive and negative numbers.
 - *TWPS: Create and label a number line. What did you include on your number line and why? Explain.*
- Represent real world situations using positive and negative numbers
- *TWPS: Create either a vertical or horizontal number and plot the following numbers on your number line. (-1, 5, -3, 7) Explain why your reasoning for your number placement. Use words such as positive, negative, left and right to help support your answer.*
- Generate opposites on a number line*
 - *TWPS: Use the fact that $34256 = 19,152$. Enter the exact product of 3.42. Explain your reasoning.*
 - *Complete representing integers worksheet utilizing integer vocabulary and prepare to pair and share with peers and class.*
- Compare and order integers and rational numbers by plotting them on a number line using appropriate intervals (Thermometers)*
 - *TWPS: Which of the three statements below is a lie? Explain how you made your choice. 2 Truths and a Lie, pg. 28 (warm-up/ do now)*
 - *TWPS: Order the rational numbers from least to greatest and explain how you know this is in the proper order. Explain.*
- Construct and interpret inequalities to compare rational numbers*
 - *TWPS: Which of the three statements below is a lie? Explain how you made your choice. 2 Truths and a Lie, pg. 26 (warm-up/ do now)*
 - *TWPS: Which statement is true? Explain your reasoning for your answer. (comparing rational numbers in multiple choice form.)*
- Distinguish absolute value of a number and use it to find distance on a number line.**
 - *TWPS: Compare inequalities using integers and rational numbers*
 - *TWPS: Divide 54,789 by 1,000. Explain how you got your answer.*

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- *TWPS: What is the distance between point A and point C on the coordinate plane. Explain your answer.*
- Construct a coordinate plane with appropriate components
 - *TWPS: Using graph paper, construct a coordinate grid and label all components. Be prepared to share your coordinate grid and explain the components you included.*
- Demonstrate and describe the locations on the coordinate plane using ordered pairs. *
 - *TWPS: What are the coordinates of point A, B, C and D.*
 - *TWPS: Plot J, K, L, and M on the coordinate grid. J (1,4); K (-3, 5); L (-6, -4) and M (2, -2). Label the origin as well as the x and y axis.*
- Evaluate and explain the impact of reflections on the signs of ordered pairs
 - *TWPS: Plot the following 4 points. (2,2); (-2,2); (-2,-2); (2,-2). What shape does this make?*
- Calculate the vertical and horizontal distances on a coordinate plane using absolute value
 - *TWPS: What is the distance between the points. Explain your thinking.*

Instructional Strategies/Differentiated Instruction

- Whole group instruction
- Guided notes
- Accountable Talk
- TWPS
- Student-led instruction/discussions
- Independent problem-solving
- Collaborative problem-solving
- Graphic Organizer
- Cross-curricular problem solving (independent and collaborative)
- Homework
- Word walls with visuals
- Small group instruction
- Manipulatives
- Interactive Notebook
- Highlighted directions
- CER (Claim, Evidence, Reason)

EL DIFFERENTIATED INSTRUCTION:

- Word Walls with visuals
- TWPS (Think, Write, Pair, Share)
- Pre-reading strategies
- Culturally responsive teaching
- Explicit Modeling
- Key Vocabulary
- Graphic Organizers
- Strategic Grouping
- Non-verbal Assessments

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- Modified classwork and homework

Assessments

FORMATIVE ASSESSMENTS:

- Warm-ups
- TWPS
- Whiteboards
- Mid-class check-ins (Fist of 5; Thumbs up/mid/down)
- Exit Slips
- Accountable Talk Discussions
- Student-led instruction
- Classwork
- Homework

SUMMATIVE ASSESSMENTS:

- Pear Assessment Quiz - EU 1
- Pear Assessment Quiz – EU 2
- Performance Task- Coordinate Cartoon
- Pear Assessment Unit 1 Summative Assessment

Unit Task

Unit Task Name: Coordinate Cartoon

Description: In this task, students will use their knowledge of the integers (EU1), the coordinate plane, and graphing to complete a coordinate cartoon when given specific instructions on where to plot ordered pairs. They will plot and label a coordinate grid and the given ordered pairs on the coordinate plane (EU3), to create a specific cartoon.

Evaluation: Unit 2 Summative Performance Task Assessment Rubric

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Unit Resources

- Pear Assessment
- Engage Ny
- Math In Focus
- Math Antics
- State Common Core Standards Transition Tasks
- Match Fishtank
- Worksheets
- Individual White boards
- Interactive notebook
- Laptops
- SBAC Prep Online
- 2 Truths & One Lie
- Education.com
- Commoncoresheets.com
- Maneuvering the Middle
- Jeopardy Labs
- Blooket