

Math 67 Unit 7

Rational Explorations

Volume 1 Issue 7

References

Helpful Links:

www.khanacademy.org

<http://virtualnerd.com/middle-math/integers-coordinate-plane/integers-absolute-value/calculate-absolute-value>

<http://virtualnerd.com/middle-math/integers-coordinate-plane/coordinate-plane/graph-ordered-pairs-identify-quadrants>

<http://virtualnerd.com/middle-math/integers-coordinate-plane/coordinate-plane/calculate-perimeter-rectangle-vertices>

www.ixl.com/math/grade-

Dear Parents

In this unit students will:

- understand that positive and negative numbers are used together to describe quantities having opposite directions or values.
- understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.
- 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.
- 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.
- 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.
- understand ordering and absolute value of rational numbers.
- interpret statements of inequality as statements about the relative position of two numbers on a number line diagram.
- write, interpret, and explain statements of order for rational numbers in real-world contexts.
- 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.
- distinguish comparisons of absolute value from statements about order.
- solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane.

Concepts Students will Use and Understand

- Negative numbers are used to represent quantities that are less than zero such as temperatures, scores in games or sports, and loss of income in business.
- Absolute value is useful in ordering and graphing positive and negative numbers.
- Positive and negative numbers are often used to solve problems in everyday life.
- Rational numbers are points on a number line
- Numbers in ordered pairs indicate locations in quadrants of the coordinate plane

Vocabulary

- **Absolute value:** The distance between a number and zero on the number line. The symbol for absolute value is shown in the equation $|-8| = 8$.
- **Coordinates:** An ordered pair, (x, y) , that locates a point in a plane
- **Inequality:** Any mathematical sentence that contains the symbols $>$ (greater than), $<$ (less than), \leq (less than or equal to), or \geq (greater than or equal to).
- **Integers:** The set of whole numbers and their opposites $\{\dots - 3, -2, -1, 0, 1, 2, 3, \dots\}$
- **Negative numbers:** The set of numbers less than zero
- **Opposite number:** Two different numbers that have the same absolute value. Example: 4 and -4 are opposite numbers because both have an absolute value of 4.
- **Ordered Pair:** A pair of numbers, (x, y) , that indicate the position of a point on the Cartesian Plane.
- **Origin:** The point of intersection of the vertical and horizontal axes of a Cartesian plane. The coordinates of the origin are $(0, 0)$.
- **Positive number:** The set of numbers greater than zero.

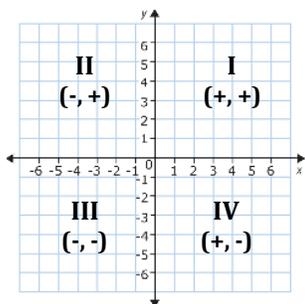
- **Rational number:** The set of numbers that can be written in the form $\frac{a}{b}$ where a and b are integers and $b \neq 0$.
 - **Sign:** a symbol that indicates whether a number is positive or negative. Example: in -4 , the $(-)$ sign shows this number is read "negative four".
 - **x-axis:** The horizontal number line on the Cartesian coordinate plane.
 - **x-coordinate:** The first number in an ordered pair; the position of a point relative to the vertical axis
 - **y-axis:** The vertical number line on the Cartesian coordinate plane
 - **y-coordinate:** The second number in an ordered pair; the position of a point relative to the horizontal axis
- Try <http://intermath.coe.uga.edu/dictionary/homepg.asp> or <http://www.amathsdictionaryforkids.com/> for further examples.

**Georgia Math
Grade 6**

Textbook:
Volume 2 Chapter
12 Lessons 1-8

Online Access:
connected.mcgraw-hill.com –your teacher has your login information

Symbols

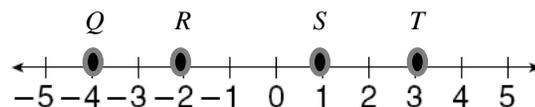


Example 1

The city of Tannerville has an elevation of 12 feet below sea level. How is that elevation, in feet, represented as an integer?

Example 2

Which point(s) represents a number with an absolute value of 4?



Example 3

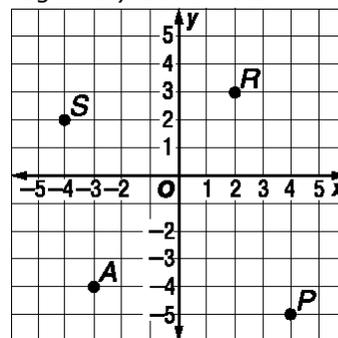
A football coach recorded the results of his team's first 4 plays in its last game. The table below shows his data.

Play	1	2	3	4
Number of Yards	8	-2	5	-7

On which play did the team lose the fewest yards?

Example 4

Which point has a positive x-coordinate and a negative y-coordinate?



Key

Example 1

Example 2

Point Q has an absolute value of 4. Negative 4 (-4) is four units from 0 on the number line.

Example 3

On play numbers 1 and 3, the team gain yards. On play number 2, the team loss 2 yards which was less than the 7 yards loss on play number 4. Therefore, **the team loss the fewest yards on play number 2.**

Example 4

Point P. (4, -4)