|  |  |
| --- | --- |
|  |  |
| C:\Users\EmeraldCity\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\IVU30P0M\MC900149862[1].wmf | **Math 6/7 Unit 7****Rational Explorations** |
| Volume 1 Issue 7 |  |
| **References**Helpful Links:[www.khanacademy.org](http://www.khanacademy.org)<http://virtualnerd.com/middle-math/integers-coordinate-plane/integers-absolute-value/calculate-absolue-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-6/coordinate-graphs-as-maps](http://www.ixl.com/math/grade-6/coordinate-graphs-as-maps)<https://learnzillion.com/lesson_plans/3642/?card=50395><https://learnzillion.com/lesson_plans/3641/?card=50385>Georgia Math Grade 6 Textbook: Volume 2 Chapter 12 Lessons 1-8Online Access: connected.mcgraw-hill.com –your teacher has your login information  | Dear ParentsIn 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 $\left|-8\right|=8$.
* **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), < (less than or equal to), or > (greater than or equal to).
* **Integers:** The set of whole numbers and their opposites $\{…-3, -2, -1, 0, 1, 2, 3, …\}$
* **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 $b\ne 0$.
* **Sign:** a symbol that indicates whether a number is positive or negative. Example: in $-4$, the $(-)$ sign hows this number is read “negative four”.
* **x-axis**: The horizontal number line on the Cartesian coordinate plane.
* **x-coordinate**: The first number of in 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/dictnary/homepg.asp> or http://www.amathsdictionaryforkids.com/ for further examples. |
|  |  |
| Symbols**I****(+, +)****II****(-, +)****III****(-, -)****IV****(+, -)** | Example 1The city of Tannerville has an elevation of 12 feet below sea level. How is that elevation, in feet, represented as an integer? | Example 2Which point(s) represents a number with an absolute value of 4? *S**T**R**Q*  |
| Example 3A 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 4Which point has a positive *x-*coordinate and a negative *y-*coordinate? |
|  |  |
|  | **Key** |
| **Example 1** -12 | **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) |
|  |  |