Strand: Number and Number Sense

6.3 The student will
     a) identify and represent integers;
     b) compare and order integers; and
     c) identify and describe absolute value of integers.

Suggested Pacing

First Nine Weeks – 6 Instructional Days

Spiraling Standards	
No prior standards	**7.1** The student will c) compare and order rational numbers; e) identify and describe absolute value of rational numbers. **8.1** The student will compare and order real numbers. **8.2** The student will describe the relationships between the subsets of the real number system

Essential Questions	Common Misconceptions

6.3a
  • How does a number line help to compare two integers?
  • Are negative integers always less than positive integers? Justify your answer.
6.3b
  • How does a number line help to compare two integers?
  • Are negative integers always less than positive integers? Justify your answer.
6.3c
	When identifying integers students may not recognize that a fraction could be simplified into an integer.
	
	Students think that all numbers that are negative are integers even negative fractions.
	
	When using a number line with just the zero given, students may list the negative numbers incorrectly. This will cause students to

• Why do we use the absolute value of a number when talking about distance? • How does the opposite of *n* differ from the absolute value of *n*?	incorrectly identify the integer in question. Students should be reminded that opposites are always equal distance from zero. Students ignore or don't read critically enough to identify the adjectives that make the integers positive or negative. Comparing and ordering integers using a number line require students to have a firm understanding of integer placement. Students often place smaller negative integers on the right instead of the left side of the given integer. Students often mistaken the > and < symbols which causes their answers to be incorrect. Students also have difficulty "saying" the words greater than or less than to fit the appropriate symbol. Students don't make the connection between the definition of an integer and that integers that are opposite each other have the same absolute value. They do not connect that absolute values are both the same distance from zero and because we are dealing with distance, they are both a positive number. Students confuse the negative sign outside of an absolute value, and question why if absolute value is always positive then why does it then become negative.
Understanding the Standard	**Essential Knowledge and Skills**
• The set of integers includes the set of whole numbers and their opposites {…-2, -1, 0, 1, 2, …}. Zero has no opposite and is an integer that is neither positive nor negative.	**The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to**

- Integers are used in practical situations, such as temperature (above/below zero), deposits/withdrawals in a checking account, golf (above/below par), time lines, football yardage, positive and negative electrical charges, and altitude (above/below sea level).

- Integers should be explored by modeling on a number line and using manipulatives, such as two-color counters, drawings, or algebra tiles.

- The opposite of a positive number is negative and the opposite of a negative number is positive.

- Positive integers are greater than zero.

- Negative integers are less than zero.

- A negative integer is always less than a positive integer.

- When comparing two negative integers, the negative integer that is closer to zero is greater.

- An integer and its opposite are the same distance from zero on a number line.

  - Example: the opposite of 3 is −3 and the opposite of −10 is 10.

- On a conventional number line, a smaller number is always located to the left of a larger number (e.g.,−7 lies to the left of −3, thus −7 < −3; 5 lies to the left of 8 thus 5 is less than 8)

- The absolute value of a number is the distance of a number from zero on the number line regardless of direction. Absolute value is represented using the symbol $||$ (e.g., $|-6| = 6$ and $|6| = 6$).
- The absolute value of zero is zero

- Model integers, including models derived from practical situations. (a)

- Identify an integer represented by a point on a number line. (a)

- Compare and order integers using a number line. (b)

- Compare integers, using mathematical symbols ($<, \leq, >, \geq, =$). (b)

- Identify and describe the absolute value of an integer. (c)

Vocabulary	Instructional Activities Organized by Learning Objective
Integers positive negative opposite whole number set absolute value zero pair compare order ascending descending greater than greater than or equal to less than less than or equal to	Textbook: Eureka: <table><tr><td>Eureka Grade</td><td>Module</td><td>Topic</td><td>Lesson(s)</td></tr><tr><td>6</td><td>3</td><td>A</td><td>1-6</td></tr><tr><td>6</td><td>3</td><td>B</td><td>7-12</td></tr></table> Virginia Math Connects, Course 1, ©2012, Glencoe/McGraw-Hill page(s) 408 – 412 and pages 765 – 768 (additional lessons if needed) Extra Practice page –EP19 Lesson 7-3 part a & b Virginia Math Connects, Course 2, ©2012, Price, et al, McGraw-Hill page(s) 76-80 Notes Interactive Reading and Note taking SOL 6.3 Resources ● Print Virginia Department of Education Working With Integers Ground Zero ● Technology-based Gizmo- Integers, Opposites, and Absolute Values Brain Pop –Absolute Value- interactive skill practice
Assessment	

	Smart Exchange - interactive skill practice
	Introducing Integers[SMART Notebook lesson]
	Understanding Integers [SMART Notebook lesson]
	Studyjams.com
	Integers
	Station Activities (See activities folder)
	Manipulatives
	Teacher Station
	Task Card
Cross-Curricular Connections	**Tiered Differentiations**
Integers and Science- Exploring Integers and Scientific Facts (Thermometers) Integers and History- Exploring Number Lines and Timelines	• Suggested manipulatives: number lines, algebra tiles, two colored counters. • Make sure students have multiple opportunities placing and comparing integers on a number line. • Students find positive and negative numbers in newspapers or magazines. Next, place the numbers that the students found on a number line. • Students create a Celsius thermometer naming the temperature as positive and negative integers. • Have students research temperatures in very cold areas (Alaska, Canada, Russia…) and compare then to the local temperatures. For an extended period of time graphing the results. • Have students create a timeline (number line of their life events). Have negative numbers represent events before they were born, the integer 0 represent their birth and positive integers represent events after they were born.