**TEACHER RESOURCE LIBRARY**

Grade 6 ~ ***Number Systems: Rational Numbers (6.NS.5-8)***

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| **Apply and extend previous understandings of numbers to the system of rational numbers.** |
| **Resources** | **5. Understand that positive and negative numbers are used together to describe quantities having opposite directions or values** (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); **use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.** | **6. 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.****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, e.g., –(–3) = 3, and that 0 is its own opposite.**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.**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. | **7. Understand ordering and absolute value of rational numbers.****a.** Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. *For example,* *interpret –3 > –7 as a statement that –3 is located to the right of –7 on* *a number line oriented from left to right.***b.** Write, interpret, and explain statements of order for rational numbers in real-world contexts. *For example, write –3°C > –7°C to* *express the fact that –3°C is warmer than –7°C.***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. *For example, for an account balance of –30 dollars, write |–30| = 30 to describe the size of the debt in dollars.***d.** Distinguish comparisons of absolute value from statements about order. *For example, recognize that an account balance less than –30* *dollars represents a debt greater than 30 dollars.* | **8. Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.** |
| **Scott Foresman Millennium Ed. (SFM)** | SFM Understand Integers p 462 | Understand Rational Numbers: p. 412Coordinate Plane: p. 484 | Understand Integers: p. 462 | Graphing Slides & Flips: p. 490 |
| **My Stuff** |  |  |  |  |
| **Resource Books** | **Elementary & Middle School Mathematics (VanDeWalle, 7th Ed.)** * TEACHER CONTENT
	+ Integers, Contexts for Exploring Integers, & Meaning of Negative Numbers: p. 479-481

**Elementary & Middle School Mathematics (VanDeWalle, 6th Ed.)** * TEACHER CONTENT
	+ Integer Concepts & Intuitive Models of Signed Quantities: p. 497-498
	+ Absolute Value: p. 503-504
* STUDENT ACTIVITIES
	+ Integer Football: Pause and Reflect, p. 498

**Elementary Mathematics for Teachers (Parker, Baldridge, 2004) ISBN 0-9748140-0-8*** TEACHER CONTENT
	+ Negative Numbers and Integers: p. 185-187
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| **Web**  | **Integers in Real World Contexts**TEACHER CONTENT* **Math Goodies - Integers Introduction - Tutorial and Practice** - <http://www.mathgoodies.com/lessons/vol5/intro_integers.html>
* **Math Central - “Applications of Integers” - Information** - <http://mathcentral.uregina.ca/beyond/articles/Integers/integer1.html>

STUDENT ACTIVITIES/LESSONS* **LearnAlberta - Exploring Integers and Temperatures - Interactive Video** - <http://www.learnalberta.ca/content/mejhm/index.html?l=0&ID1=AB.MATH.JR.NUMB&ID2=AB.MATH.JR.NUMB.INTE&lesson=html/video_interactives/integers/integersSmall.html>
* **IXL Math - Understanding Integers - Assessment** - <http://www.ixl.com/math/grade-6/understanding-integers>
* **Math Star - Integer Lessons** - <http://mathstar.lacoe.edu/lessonlinks/integers/integers_main.html>
* **UEN - “Representing, Identifying and Comparing Integers” Lesson** - <http://www.uen.org/Lessonplan/preview.cgi?LPid=23402>
* **Math Central - “Applications of Integers” - Information** - <http://mathcentral.uregina.ca/beyond/articles/Integers/integer1.html>
* **Helping with Math - Practice Page** - <http://www.helpingwithmath.com/printables/worksheets/numbers/int0601negative_01.htm>

**Absolute Value**TEACHER CONTENT* **Purplemath - Teacher Tutorial** - <http://www.purplemath.com/modules/absolute.htm>

STUDENT ACTIVITIES/LESSONS* **Math Goodies - Absolute Value - Tutorial and Practice** - <http://www.mathgoodies.com/lessons/vol5/absolute_value.html>
* **IXL Math - Absolute Value - Assessment** - <http://www.ixl.com/math/grade-6/absolute-value-and-opposite-integers>
* **Shepherd’s Software - Number Balls - Game** -

 <http://www.sheppardsoftware.com/mathgames/Numberballs_absolute_value/numberballsAS2_abs.htm>**Integers on a Number Line**TEACHER CONTENT* **WebMATH - Teacher Tutorial** - <http://www.webmath.com/k8numlineuse.html>
* **Houghton-Mifflin - Teacher Tutorial** - <http://www.eduplace.com/math/mw/background/5/05/te_5_05_negnums_ideas1.html>

STUDENT ACTIVITIES/LESSONS* **LearnAlberta - Spy Guys Understanding Integers** -

 <http://www.learnalberta.ca/content/mesg/html/math6web/index.html?page=lessons&lesson=m6lessonshell06.swf>* **MathStar - Integer Game** - <http://mathstar.lacoe.edu/newmedia/integers/intro/activities/intro_numberline.html>
* **Math Goodies - Compare and Order Integers - Tutorial and Practice** –

 <http://www.mathgoodies.com/lessons/vol5/compare_order.html>* **Online Math Learning - Introduction - Tutorial and Videos** - <http://www.onlinemathlearning.com/integer-number-line.html>
* **IXL - Number Lines with Integers - Assessment** - <http://www.ixl.com/math/grade-6/number-lines-with-integers>
* **Comparing Integers on a Number Line - Practice Page** - <http://go.hrw.com/resources/go_sc/hst/HSTMW091.PDF>
* **Math123 - Student Tutorial** - <http://math123xyz.com/Nav/Pre-Algebra/Integer_Number_Line.php>
* **Cyberchase - Vertical Number Line Game** - <http://pbskids.org/cyberchase/games/negativenumbers/negativenumbers.html>

**Integers on a Coordinate Plane**TEACHER CONTENT* **Math Steps - Teacher Tutorial** - <http://www.eduplace.com/math/mathsteps/5/c/index.html>

STUDENT ACTIVITIES/LESSONS* **NLVM - Counting All Pairs - Student Interactive**-

 <http://nlvm.usu.edu/en/nav/frames_asid_307_g_4_t_1.html?from=category_g_4_t_1.html>* **BBC - Planet Hop- Game** - <http://www.bbc.co.uk/education/mathsfile/index.shtml>
* **Shodor - Plotting Coordinate Pairs - Interactive Applet** - <http://www.shodor.org/interactivate/activities/GeneralCoordinates/>
* **Shodor - Maze - Game** - <http://www.shodor.org/interactivate/activities/MazeGame/>
* **Fun Brain - What’s The Point?- Game** -

 <http://www.funbrain.com/cgi-bin/getskill.cgi?A1=choices&A2=co&A3=8&A4=0&A7=0&A8=math>* **Hot Math - Catch the Fly - Game** -<http://hotmath.com/hotmath_help/games/ctf/ctf_hotmath.swf>
* **UEN - “Integers on a Coordinate Plane” Lesson** - <http://www.uen.org/Lessonplan/preview.cgi?LPid=23530>
* **Math Playground - “Locate the Aliens” - Game** - <http://www.mathplayground.com/locate_aliens.html>
* **Mr. Nussbaum - “Stock the Shelves” - Game** - <http://www.mrnussbaum.com/stockshelves.htm#inst>
* **IXL - Coordinate Grids - Assessment** - <http://www.ixl.com/math/grade-6/coordinate-graphs-review>
* **UEN - “Coordinate Connections” Lesson** - <http://www.uen.org/Lessonplan/preview.cgi?LPid=15431>
* **UEN - “Getting to the Point” Lesson** - <http://www.uen.org/Lessonplan/preview.cgi?LPid=18994>
* **Thatquiz - Assessment** - <http://www.thatquiz.org/tq-7/?-j8-l5-m2kc0-na-p0>
* **Math Open Reference - Coordinate Grid - Print Blank Grids** - <http://www.mathopenref.com/coordblank.html>

**Inequalities; Ordering and Comparing Rational Numbers including Number Lines**STUDENT ACTIVITIES/LESSONS* **IXL Math - Decimal Number Lines - Assessment** - <http://www.ixl.com/math/grade-6/decimal-number-lines>
* **IXL Math - Compare and Order Integers - Assessment** - <http://www.ixl.com/math/grade-6/compare-and-order-integers>
* **SpeedMath- Inequalities - Game** - <http://education.jlab.org/sminequality/index.html>
* **IXL Math - Comparing Integers - Assessment** - <http://www.ixl.com/math/practice/grade-5-compare-integers>
* **XP Math - Inequality - Game** - <http://xpmath.com/forums/arcade.php?s=47418d9f43c25c3823d447df51517c57&do=play&gameid=61>
* **The Math Games - Number Balls - Game** - <http://themathgames.com/our-games/arithmetic-games/order-positive-negative-integers/>
* **Helping with Math - Practice Page** - <http://www.helpingwithmath.com/printables/worksheets/numbers/int0601integers_01.htm>
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| **Literature Connections** | The Fly on the Ceiling by Julie GlassHottest, Coldest, Highest, Deepest by Steve JenkinsLess Than Zero by Stuart Murphy |