Grade 6 Topic 10 - Integers

Content Area: **Mathematics**
Course(s):
Time Period: **Week1**
Length: **1 Week**
Status: **Published**

Stage 1: Desired Results

Unit Overview/ Rationale

Standards & Indicators

MA.6.6.NS.C.7d	Distinguish comparisons of absolute value from statements about order.
MA.7.7.NS.A.1	Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.
MA.6.6.G.A.3	Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.
MA.7.7.NS.A.1b	Understand p + q as the number located a distance |q| from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.
MA.7.7.NS.A.1c	Understand subtraction of rational numbers as adding the additive inverse, p – q = p + (–q). Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.
MA.6.6.NS.C.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.
MA.6.6.NS.C.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.
MA.7.7.NS.A.2a	Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as (–1)(–1) = 1 and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.
MA.7.7.NS.A.2b	Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q

	are integers, then $-(p/q) = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real-world contexts.
MA.6.6.NS.C.7a	Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram.

Big Ideas - Students will understand that...

Numbers and the Number Line – The set of real numbers is infinite and ordered. Whole numbers, integers, and fractions are real numbers. Each real number can be associated with a unique point on the number line.

Geometric Figures – Two-and three-dimensional objects with or without curved surfaces can be described, classified, and analyzed by their attributes. An objects location in space can be described quantitatively.

Practices, Processes and Proficiencies – Mathematics content and practices can be applied to solve problems.

Essential Questions - What provocative questions will foster inquiry and transfer of learning

How are integers related to whole numbers?

How can integers be added, subtracted, multiplied, and divided.

Content - Students will know...

Interpret positive and negative numbers.

Show rational numbers on the number line.

Show points on the number line with negative number coordinates.

Graph points with negative number coordinates.

Interpret opposties of numbers.

Relate signs of numbers in ordered pairs to quadrants of the coordinate plane.

Relate signs of numbers in ordered pairs to relections in the coordinate plane.

Find and position integers on a horizontal or vertiacl number line.

Find and position pairs of integers on a coordinate plae.

Find and position pairs of rational numbers on a coordinate plane.

Order rational numbers.

Understand absolute value.

Relate inequalities to number lines.

Write, interpret, and explain ordering of rational numbers in real-world contexts.

Interpret the absolute value of a rational number.

Relate absolute value and order.

Graph points in the coordinate plane.

Find the length of a side of a polygon drawn in the coordinate plane.

Find the distances between points witht he same first coordinate or the same second coordinate.

Draw a polygon in the coordinate plane.

Skills - Students will be able to...

Read, write, and use positive and negative integers.

Compare and order integers.

Locate, compare, and order rational numbers on a number line.

Add integers using a number line and the rules for adding integers.

Subtract integers using a number line and the rules for subtracting integers.

Multiply integers using patterns and rules for multiplying integers.

Divide integers using the relationship between multiplication and division and the rules for dividing integers.

Compare and order absolute values.

Identify and graph points on a coordinate plane.

Use reasoning to solve problems. Draw polygons in the coordinate plane when given the coordinates of their vertices,m and find the lengths of the polygons' sides.

Stage 2: Assessment Evidence

Assessment

Stage 3: Learning Plan

Learning Activities

Model opposites on a number line, using printed thermometers that show positive and negative integers.

Learn how to compare and order integers, using a number line.

Will use a number line to compare rational numbers in different forms.

Learn how to use number lines to model adition of integers.

Use number lines to model subtraction of integers.

Use patterns to learn the rules for identifying the sign of the product.

Find the rules for dividing integers by using the relationship between division and multiplication.

Use absolute vale to find the distance between integers and 0 on a number line, and order absolute values from least to greatest and from greatest to least.

Identify and graph points on a coordinate plane.

Investigate the strategy of working backward to solve a problem.

Resources

Thermometes (Teaching Tool 32)

Interactive Learning Recording Sheet 2

Interactive Learning Recording Sheet 3

Number Lines (Teaching Tool 8)

Coordinate Grid Paper (Teaching Tool 13)