

**Unit Title:** "Difference of Square: Organizing Data"

**Course:** Algebra I (High School)

**Subject Area:** Mathematics

**Time Frame:** 14 days

**Standards**

<b>Algebra I Standards</b>	<b>Sunshine State Standards Benchmarks</b>	<b>NCEE New Standards</b>
<p>The student will:</p> <ul style="list-style-type: none"><li>1.1 Simplify expressions with and without grouping symbols.</li><li>1.1 Find solution sets for equations and inequalities over a given domain.</li><li>2.1 State the coordinates of specified points on the number line and graph points on the number line when given the coordinates.</li><li>2.2 Find sums of rational numbers.</li><li>2.2 Find differences of rational numbers.</li><li>2.2 Find products of rational numbers.</li><li>2.2 Determine the reciprocals of specified rational numbers.</li><li>2.2 Find quotients of rational numbers.</li><li>3.3 Use the distributive property to combine similar terms.</li></ul> <p>Review of: M/J Mathematics 1</p> <p>The student will:</p> <ul style="list-style-type: none"><li>2.1 Explore the process of data</li></ul>	<p>MA.A.1.4.4 The student will understand that numbers can be represented in a variety of equivalent forms, including integers, fractions, decimals, percents, scientific notation, exponents, radicals, absolute value, <i>and logarithms</i>.</p> <p>MA.A.3.4.1 The student will understand and explain the effects of addition, subtraction, multiplication, and division on real numbers, including square roots, exponents, and appropriate inverse relationships.</p> <p>MA.A.3.4.2 The student will select and justify alternative strategies, such as using properties of numbers, including inverse, identity, distributive, associative, and transitive, that allow operational shortcuts for computational</p>	<p>The student:</p> <ul style="list-style-type: none"><li>M1a Consistently and accurately adds, subtracts, multiplies, and divides rational numbers using appropriate methods and raises rational numbers to whole number powers.</li><li>M1c Consistently and accurately applies and converts the different kinds and forms of rational numbers.</li><li>M1d Is familiar with characteristics of numbers (e.g., divisibility, prime factorization) and with properties of operations (e.g., commutativity and associativity), short of formal statements.</li><li>M5b Makes the basic choices involved in planning and carrying out a solution.</li><li>M6a Computes accurately with arithmetic operations on rational numbers.</li><li>M6b Knows and uses the correct order of operations for arithmetic computations.</li><li>M6f Uses equations, formulas, and simple algebraic notation appropriately.</li></ul>

<b>Algebra I Standards</b>	<b>Sunshine State Standards Benchmarks</b>	<b>NCEE New Standards</b>
<p>investigation, such as posing questions, collecting data, analyzing data, and making interpretations to answer questions.</p> <p>2.1 Represent data using line graphs, bar graphs, and coordinate graphs.</p> <p>2.4 Develop strategies for comparing data sets.</p>	<p>procedures in real-world or mathematical problems.</p> <p>MA.A.3.4.3 The student will add, subtract, multiply, and divide real numbers, including square roots and exponents, using appropriate methods of computing, such as mental mathematics, paper and pencil, and calculator.</p> <p>MA.A.4.4.1 The student will use estimation strategies in complex situations to predict results and to check the reasonableness of results.</p> <p>MA.E.1.4.1 The student interpret data that has been collected, organized, and displayed in charts, tables, and plots.</p> <p>MA.E.1.4.2 The student will calculate measure of central tendency (mean, median, and mode) and dispersion (<i>range, standard deviation and variance</i>) for complex sets of data and determine the most meaningful measure to describe the data.</p>	<p>M7a Uses mathematical language and representations with appropriate accuracy, including numerical tables and equations, simple algebraic equations and formulas, charts, graphs, and diagrams.</p>

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	<p>MA.E.2.4.2 The student will determine the probability for simple and compound events as well as independent and dependent events.</p> <p>MA.E.3.4.1 The student will design and perform real-world statistical experiments that involve more than one variable, then analyze results and report findings.</p>	

## Desired Results

Enduring Understanding	Essential Questions	Knowledge and Skills
<p>Students will understand:</p> <ul style="list-style-type: none"> <li>• Exploring statistics is a dynamic process of data investigations that involves moving back and forth among four interconnected components:               <ul style="list-style-type: none"> <li>○ Posing the questions;</li> <li>○ Collecting the data;</li> <li>○ Analyzing the data; and</li> <li>○ Interpreting the data.</li> </ul> </li> <li>• The algorithms for addition, subtraction, and multiplication of integers can be meaningfully developed by use of integer tiles and the number lines.</li> </ul>	<ul style="list-style-type: none"> <li>• How can data be studied by using tables, graphs, or line plots? How can one determine which of these is most useful in a given situation?</li> <li>• What information can one get from a coordinate graph? What kind of relationship can be seen in a coordinate graph?</li> <li>• When two related quantities change, how can we tell whether the change is predictable?</li> <li>• What situations in daily life can be represented by positive or negative numbers?</li> <li>• How can meaning be found for operations on negative numbers? Where can such operations be modeled?</li> <li>• What does it mean to solve an equation?</li> </ul>	<p>Students will know</p> <ul style="list-style-type: none"> <li>• Key terms (e.g., axis, axes, data, survey, table, integers, absolute value, opposites, negative integer, positive integer, inverse operations, quadrant, coordinate, pair, linear, point of intersection, y-intercept).</li> </ul> <p>Students will be able to</p> <ul style="list-style-type: none"> <li>• Find sums and differences of integers.</li> <li>• Find product and quotients of integers.</li> <li>• Interpret graphs.</li> <li>• Find solution sets for equations and inequalities over a given domain.</li> <li>• Use the distributive property to combine like terms.</li> </ul>

## Acceptable Evidence

Performance Tasks	Quizzes, Test, and Work Samples	Observations and Dialogues
<ul style="list-style-type: none"> <li>• <b>The Beebopper Shoe Store</b> Students place a dot (two colors, one each for male or female) on a coordinate grid to indicate their height and shoe size as they walk into the classroom. Students then record the class data on their own tables after discussions on the best way to organize the data. They review the use of tables and graphs to represent data.</li> </ul>	Check-Up 1 Quiz A Check-Up 2 Quiz B Unit Test Unit Project – Team presentations	Teacher observations of students during work on performance tasks. Accountable talk during work on performance tasks.

Performance Tasks	Quizzes, Test, and Work Samples	Observations and Dialogues
<ul style="list-style-type: none"> <li>• <b>Integer Tiles</b> Students use integers tiles to develop algorithms for addition, subtraction, and multiplication of integers. Students consider that any given integer can be represented with the tiles in many different ways. All problems are built and the tiles recorded with a sketch.</li> <li>• <b>Guess and Check Tables</b> Often reluctant to risk guessing, students are asked to consider the notion that no guess is “wrong” because all guesses give us information that help lead to a solution. Students make Guess and Check tables and carefully identify and label each column including the “Guess” which will later be represented by a variable.</li> <li>• <b>Combining Like Terms</b> Students use algebra tiles to combine like terms.</li> </ul>		