

Unit Title: “Data Around Us”

Course: Middle School Mathematics

Subject Area: Mathematics

Time Frame: 20 days

Standards

Middle School Mathematics Standards	Sunshine State Standards Benchmarks	NCEE New Standards
<p>The student will:</p> <p>16.1 Read, write, and interpret the large numbers that occur in real-life measurements using standard, scientific, and calculator notation.</p> <p>16.2 Review the concept of place value as it relates to reading, writing, and using large numbers.</p> <p>16.3 Review and extend the use of exponents.</p> <p>16.4 Choose sensible ways of comparing counts and measurements, including using differences, rates, and ratios.</p>	<p>MA.A.1.3.1 The students associates verbal names, written word names, and standard numerals with integers, fractions, decimals; numbers expressed as percents; numbers with exponents; numbers in scientific notation; radicals; absolute value; and ratios.</p> <p><i>Expectations</i> The student:</p> <ul style="list-style-type: none">• Knows word names and standard numerals for integers, fractions, decimals, ratios, numbers expressed as percent, numbers with exponents, numbers expressed in scientific notation, and numbers expressed using the square root radical.• Reads and write whole numbers and decimals in expanded form, including exponential notation.	<p>The student:</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> <p>M6c Estimates numerically and spatially.</p> <p>M2g Measures angles, weights, capacities, times, and temperatures using appropriate units.</p> <p>M6d Measures length, area, volume, weight, time, and temperature accurately.</p> <p>M2h Chooses appropriate units of measure and converts with ease between like units, within a customary or metric system.</p>

Middle School Mathematics Standards	Sunshine State Standards Benchmarks	NCEE New Standards
	<p>MA.A.2.3.1 The student understands and uses exponential and scientific notation.</p> <p><i>Expectations</i> The student:</p> <ul style="list-style-type: none"> • Expresses whole numbers in exponential notation. • Evaluates numerical expressions that contain exponential notation. • Expresses numbers greater than one in scientific notation. • Expresses number in scientific notation as numbers in standard form. <p>MA.B.2.3.1 The student uses direct (measured) and indirect (not measured) measures to compare a given characteristic in either metric or customary units.</p> <p><i>Expectations</i> The student:</p> <ul style="list-style-type: none"> • Measures length, weight or mass, and capacity or volume using customary or metric units. • Knows relationships between metric units of mass and capacity. • Finds measures of lengths, weight or mass, and capacity or volume using proportional relationships and properties of similar geometric figures. 	

Desired Results

Enduring Understanding	Essential Questions	Knowledge and Skills
<p>Student will understand</p> <ul style="list-style-type: none"> Reasoning about quantity involves the ability to work with both relative magnitude and absolute magnitude. An awareness of measurement involves the understanding that both units and counts are essential for describing quantity. Numerical information can be used to make decisions by comparison or to derive new information by performing operations on given data. 	<ul style="list-style-type: none"> What is the role of measurement? How can benchmarks be developed to help make measurement readily accessible? Why is accuracy handled in different ways in different situations? 	<p>Students will know</p> <ul style="list-style-type: none"> Key terms (e.g., Customary system, metric system, SI system, scientific notation, standard notation) <p>Students will be able to</p> <ul style="list-style-type: none"> Choose sensible units for measuring. Review and extend the use of exponents. Use estimates and rounded values for describing and comparing object and events. Choose sensible ways of comparing counts and measurements including using differences, rates, and ratios. Understand that a measurement has two components, a unit of measure and a count.

Acceptable Evidence

Performance Tasks	Quizzes, Test, and Work Samples	Observations and Dialogues
<ul style="list-style-type: none"> Interpreting Disaster reports Accounts of recent disasters are used to challenge students to think about ways that numbers can be used to describe and compare important events. Measuring Oil Spills Students read an account of the Exxon Valdez oil spill and are asked to think about the many ways that numbers are used to 	<p>Check-Up 1 Quiz A Check-Up 2 Quiz B Unit Test</p>	<p>Teacher observations of students during work on performance tasks. Accountable talk during work on performance tasks.</p>

Performance Tasks	Quizzes, Test, and Work Samples	Observations and Dialogues
<p>measure objects and events. They are reminded that a measurement consists of a unit and a count. Students begin to acquire a repertoire of personally meaningful measurement benchmarks.</p> <ul style="list-style-type: none"> • Comparing Large Numbers Through the exploration of data-rich problems, students review and further refine their technical skills in reading, writing, ordering, and interpreting large numbers. They are given opportunities to think about appropriate degrees of accuracy in the rounding of large numbers, and are introduced to ways to estimate numbers and to interpret estimated numbers. • How Many Is a Million? To be able to reason about or interpret realistic information involving large numbers, quantities in millions, billions, and sometimes trillions must make some sense. Students look at several common situations involving such numbers, and they are introduced to scientific and calculator notation for expression large numbers. • Every Litter Bit Hurts Students focus on how individual instances of pollution and litter can lead to enormous environmental problems. Student work with data expressed as wholes and as rates, and they use rates or ratios to explore large numbers. 		