



Township of Ocean Schools

Assistant Superintendent
Office of Teaching and Learning

SPARTAN MISSION:

Meeting the needs of all students with a proud tradition of academic excellence.

Curriculum Documents

School: All Elementaries

Course: Math – Grade 2

Department: Math

Supervisor: Christine Picerno

Board Approval	Supervisor	Notes
August 2006	Jessica Shaw	Update Standards
November 2011	Christine Picerno	Update Standards
December 2017	Christine Picerno	Update Standards

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#spartanlegacy



Philosophy of Mathematics Education Township of Ocean Schools

To function effectively as citizens and consumers, all students need to learn to enjoy and appreciate the value of mathematics and develop the mathematical skills they must have for varied educational and career options. Strong foundations in number sense and numerical operations form a basis for the successful use of mathematics.

Students best acquire mathematics skills when they are engaged in activities that enable them to discover, understand, and apply mathematical concepts. When students are challenged to use mathematics in meaningful ways, they develop their reasoning and problem-solving skills and come to realize the usefulness of mathematics in their lives.

Students preparing for careers in the information-based economy of the twenty-first century must be able to solve real problems, reason effectively, and make logical connections. To enable all students to gain the necessary mathematical skills, understandings and attitudes, instruction needs to focus on the whys and hows of mathematical learning which are as follows:

1. Pose and solve real world problems.
2. Effectively communicate mathematical ideas.
3. Make connections within mathematics and between mathematics and other areas.
4. Provide opportunities for active student involvement.
5. Use of technology.

When math is taught in a problem-solving spirit, students are interested in what they are doing and are more likely to understand the material. Instructional strategies that allow students to talk and write about math helps to clarify and solidify their thinking and develop confidence in themselves as mathematical thinkers.

Mathematics learning is not dependent on special abilities but can be achieved by all students: by using organizational strategies such grouping, cooperative learning, individualized and whole class instruction; by differentiating instructional strategies; and by developing achievable high-level expectations.

Students will develop positive attitudes toward mathematics when they are taught in a supportive, developmentally appropriate environment, when all students' mathematical learning embodies the notion that engagement in mathematics is essential and that where decision-making, risk-taking, perseverance, self-assessment, and self-confidence are frequently keys to success.

2.OA Operations and Algebraic Thinking		Grade 2
Cluster: Add and subtract within 20.		
Essential Questions	Enduring Understandings	
How does knowing our facts help us to solve math problems?	Solving addition and subtraction number sentences requires fluency, flexibility and accuracy.	
Standards	Classroom Applications	
<p>2. Fluently add and subtract within 20 using mental strategies. [See standard 1.OA.6 for a list of mental strategies: counting on; making ten ($8 + 6 = 8 + 2 + 4 = 10 + 4 = 14$), decomposing a number leading to a ten ($13 - 4 = 13 - 3 - 1 = 10 - 1 = 9$)], using the relationship between addition and subtraction (knowing $8 + 4 = 12$, one knows $12 - 8 = 4$), creating equivalent but easier or known sums (adding $6 + 7$, by creating the known equivalent $6 + 6 + 1 = 12 + 1 = 13$). By end of Grade 2, know from memory all sums of two one-digit numbers.</p> <p>(NJSLS 2.OA.2)</p>	<p><u>Instructional Guidance</u> <i>To assist in meeting this standard, students may:</i></p> <ul style="list-style-type: none"> Practice (both orally and in writing) facts for addition and subtraction within 20 Use fact families and/or fact triangles to practice facts for addition and subtraction within 20 Use a variety of mental strategies to solve number sentences <p><u>Measures of Understanding</u> <i>To show evidence of meeting this standard, students will:</i></p> <ul style="list-style-type: none"> By the end of the year, demonstrate automaticity of addition and subtraction facts within 20 <p><u>Resources</u></p> <p>Illuminations: Learn those facts http://illuminations.nctm.org/LessonDetail.aspx?ID=U58</p> <p>National Library of Virtual Manipulatives: Algebra, Grades Pre- K-2 http://nlvm.usu.edu/en/nav/grade_g_1.html</p> <p><u>Suggested Formative Assessments</u></p> <ul style="list-style-type: none"> Quick Checks Quizzes Lesson Assessments District Wide Formative Assessments (3) <p><u>Suggested Summative Assessments:</u></p> <ul style="list-style-type: none"> Program Benchmarks Unit Assessments District Wide Summative Assessments 	

2.OA Operations and Algebraic Thinking		Grade 2
Cluster: Work with equal groups of objects to gain foundations for multiplication.		
Essential Questions	Enduring Understandings	
Why do we call some numbers even and some numbers odd?	Even numbers can be made into two equal groups; odd numbers leave one left over when we try to make two equal groups.	
Standards	Classroom Applications	
<p>3. Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.</p> <p>(NJSLS 2.OA.3)</p>	<p><u>Instructional Guidance</u> <i>To assist in meeting this standard, students may:</i></p> <ul style="list-style-type: none"> • Use manipulatives and drawings to show that any group contains either an even or odd number of objects • Identify groups of objects as even or odd by pairing or counting by twos • Explore even numbers as a sum of two equal addends • Explore odd numbers as a sum of two equal addends plus or minus one <p><u>Measures of Understanding</u> <i>To show evidence of meeting this standard, students will:</i></p> <ul style="list-style-type: none"> • By the end of the year, determine whether groups are made up of an odd or even number of objects • By the end of the year, explain even numbers as a sum of two equal addends <p><u>Resources</u> Illuminations Learn those facts http://illuminations.nctm.org/LessonDetail.aspx?ID=U58</p> <p>National Library of Virtual Manipulatives: Algebra, Grades Pre- K-2 http://nlvm.usu.edu/en/nav/grade_g_1.html</p> <p><u>Suggested Formative Assessments</u></p> <ul style="list-style-type: none"> • Quick Checks • Quizzes • Lesson Assessments • District Wide Formative Assessments (3) <p><u>Suggested Summative Assessments:</u></p> <ul style="list-style-type: none"> • Program Benchmarks • Unit Assessments • District Wide Summative Assessments 	

2. NBT Number and Operations in Base Ten		Grade 2
Cluster: Understand place value.		
Essential Questions	Enduring Understandings	
Why do numbers have place value?	Place value allows us to use 10 digits to express numbers up to and beyond 1000; the location of a digit in a number determines its value.	
Standards	Classroom Applications	
<p>1. Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases:</p> <p>(NJSLS 2.NBT.1)</p> <p>1a. 100 can be thought of as a bundle of ten tens—called a “hundred.”</p> <p>(NJSLS 2.NBT.1a)</p> <p>1b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).</p> <p>(NJSLS 2.NBT.1b)</p> <p>2. Count within 1000; skip-count by 5s, 10s, and 100s.</p> <p>(NJSLS 2.NBT.2)</p> <p>3. Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.</p> <p>(NJSLS 2.NBT.3)</p> <p>4. Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using $>$, $=$, and $<$ symbols to record the results of comparisons.</p> <p>(NJSLS 2.NBT.4)</p>	<p><u>Instructional Guidance</u></p> <p><i>To assist in meeting this standard, students may:</i></p> <ul style="list-style-type: none"> • Use place value charts and base ten block store present up to three digit numbers • Use play paper money (\$1, \$10, & \$100) to represent three digit numbers • Use ten base ten rods to represent 100, or ten 10 dollar bills to represent 100 • Use base ten hundred blocks or paper 100 dollar bills to demonstrate that the number of hundred blocks is found in the hundreds place with zero tens and zero ones • Skip count up to 1000 by 5s, 10s, and 100s, beginning at any multiple of 5, and 10 or 100. (e.g. begin at 505 and skip count by 5 up to ; or begin at 600 and skip count by 100 up to 1000) • Read and write numbers to 1000 using base-ten numerals, number names, and expanded form • Use $>$, $=$, and $<$ symbols to record the results of comparing two three-digit numbers, using a place value chart, with and without base ten blocks <p><u>Measures of Understanding</u></p> <p><i>To show evidence of meeting this standard, students will:</i></p> <ul style="list-style-type: none"> • By the end of the year, given a three-digit number, identify the value of each digit • By the end of the year, demonstrate how ten tens make 100 • By the end of the year, Skip count by 5s, 10s, and 100s within and up to 1000 • By the end of the year, read and write number to 1000 using: <ul style="list-style-type: none"> to Base-ten numerals Number names (written out using words) expanded form • By the end of the year, compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using $>$, $=$, and $<$ symbols to record the results of comparisons, without the use of manipulatives <p><u>Resources</u></p> <p>National Library of Virtual Manipulatives: Base Blocks (stay in base 10) http://nlvm.usu.edu/en/nav/topic_t_1.html</p> <p>Number Club: A Game of Place Value http://illuminations.nctm.org/WebResourceReview.aspx?ID=1708</p>	

Suggested Formative Assessments

- Quick Checks
- Quizzes
- Lesson Assessments
- District Wide Formative Assessments (3)

Suggested Summative Assessments:

- Program Benchmarks
- Unit Assessments
- District Wide Summative Assessments

2. NBT Number and Operations in Base Ten		Grade 2
Cluster: Use place value understanding and properties of operations to add and subtract.		
Essential Questions	Enduring Understandings	
How do we use different strategies to help us add and subtract?	Computation requires breaking apart and combining numbers. There is more than one way to solve a computation problem. We use place value to help us solve number sentences. We try out strategies to find the most efficient and accurate method and represent the strategy using numbers and symbols.	
Standards	Classroom Applications	
<p>5. Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.</p> <p>(NJSLS 2.NBT.5)</p> <p>6. Add up to four two-digit numbers using strategies based on place value and properties of operations.</p> <p>(NJSLS 2.NBT.6)</p> <p>7. Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction, relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.</p> <p>(NJSLS 2.NBT.7)</p> <p>8. Mentally add 10 or 100 to a given number 100-900, and mentally subtract 10 or 100 from a given number 100-900.</p> <p>(NJSLS 2.NBT.8)</p> <p>9. Explain why addition and</p>	<p><u>Instructional Guidance</u> <i>To assist in meeting this standard, students may:</i></p> <ul style="list-style-type: none"> • Play place value games (see links below) to practice adding and subtracting numbers within 100 and progressing up to 1000. Students will use ones cubes, tens rods, hundreds flat, and thousands cube to add and subtract • Add up to four sets of two-digit numbers—first starting out using the place value manipulatives, then moving to pictorial models, then to abstract number sentence models Add and subtract numbers within 1,000 by using a variety of methods that demonstrate the composition and decomposition of the numbers. Use manipulatives and expanded form to practice solving number sentences • Use the number grid chart up to 1000 to add and subtract by ten or 100 from any given number. Provide students opportunities to do this without the number grid once they can explain the thinking process using the place value system. • Add and subtract numbers through 1000 using words, pictures and number sentences to explain thinking <p><u>Measures of Understanding</u> <i>To show evidence of meeting this standard, students will:</i></p> <ul style="list-style-type: none"> • By the end of the year, add three-digit numbers to three-digit numbers equaling up to 1,000. Students will show evidence of understanding by using written responses and pictures to support thinking process, as well as a written number sentence • By the end of the year, subtract numbers within 1,000. Students will show evidence of understanding by using written responses and pictures to support thinking process, as well as a written number sentence • By the end of the year, write numbers up to 1,000 using expanded form (__ thousands + __ hundreds + __ tens + __ ones) • By the end of the year, demonstrate mental addition and subtraction with the numbers 100-900 <p><u>Resources</u> http://mrsgebauer.com/mathsites.html</p>	

subtraction strategies work, using place value and the properties of operations. *[Explanations maybe supported by drawings or objects.]*

(NJSLS 2.NBT.9)

<http://www.mathwire.com/numbersense/placevalue.html>

<http://www.mathwire.com/numbersense/morepv.html>

Suggested Formative Assessments

- Quick Checks
- Quizzes
- Lesson Assessments
- District Wide Formative Assessments (3)

Suggested Summative Assessments:

- Program Benchmarks
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2.MD Measurement and Data		Grade 2
Cluster: Measure and estimate lengths in standard units.		
Essential Questions	Enduring Understandings	
<p>How do we determine which is the best tool (i.e. ruler, yardstick, measuring tape) to use to measure an object?</p> <p>Why do the units matter when measuring the length of an object?</p> <p>How can we use one measuring tool to determine how much longer one object is than another?</p>	<p>Measuring with a longer unit of measure will give a smaller number for length than measuring with a smaller unit of measure. When measuring two objects with the same measuring tool, you can subtract the lengths to find out how much longer one is than the other.</p> <p>Being able to visualize the lengths of standard units (inch, foot, centimeter, meter) helps me estimate unmeasured lengths.</p>	
Standards	Classroom Applications	
<p>1. Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.</p> <p>(NJSLS 2.MD.1)</p> <p>2. Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.</p> <p>(NJSLS 2.MD.2)</p> <p>3. Estimate lengths using units of inches, feet, centimeters, and meters.</p> <p>(NJSLS 2.MD.3)</p> <p>4. Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.</p> <p>(NJSLS 2.MD.4)</p>	<p><u>Instructional Guidance</u> <i>To assist in meeting this standard, students may:</i></p> <ul style="list-style-type: none"> • Measure the same object using two different units of measures and discuss why the number representing the length are different. • Measure various lengths from very short to very long and have the students pick the unit of measure that would make the most sense and explain why that unit was picked. • Given various objects to look at and touch, estimate the length in a given unit of measurement. <p><u>Measures of Understanding</u> <i>To show evidence of meeting this standard, students will:</i></p> <ul style="list-style-type: none"> • By the end of the year, be able to measure two objects with the same unit of measurement and determine which is longer and by how much. • By the end of the year, be able to explain that if a smaller unit of measure is used to measure an object, the number representing the length will be larger than if a larger unit of measure was used. • By the end of the year, be able to recognize which unit of measure would be most appropriate to measure various lengths. • By the end of the year, given an object be able to appropriately estimate its length (in inches, feet, centimeters and meters.) <p><u>Resources</u></p> <p>http://www.funbrain.com/funbrain/measure/</p> <p>http://www.hbschool.com/elab/act_3_24.html</p> <p><u>Suggested Formative Assessments</u></p> <ul style="list-style-type: none"> • Quick Checks • Quizzes • Lesson Assessments • District Wide Formative Assessments (3) <p><u>Suggested Summative Assessments:</u></p>	

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| | <ul style="list-style-type: none">• Program Benchmarks• Unit Assessments• District Wide Summative Assessments |
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2.MD Measurement and Data		Grade 2
Cluster: Relate addition and subtraction to length.		
Essential Questions	Enduring Understandings	
How can a number lines and rulers be used to find sum and difference?	We can use our knowledge of addition and subtraction to solve problems involving lengths.	
Standards	Classroom Applications	
<p>5. Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.</p> <p>(NJSLS 2.MD.5)</p>	<p><u>Instructional Guidance</u> <i>To assist in meeting this standard, students may:</i></p> <ul style="list-style-type: none"> Solve word problems involving length using numbers within 100, by using either addition or subtraction strategies Determine the difference between two lengths within 100, students will use the number line to determine the difference <p><u>Measures of Understanding</u> <i>To show evidence of meeting this standard, students will:</i></p> <ul style="list-style-type: none"> By the end of the year, students will be able to solve addition and subtraction word problems with numbers up to 100 involving length By the end of the school year, students will be able to use a number line to determine the difference between two lengths up to 100 <p><u>Resources</u> <u>AuntyMath:</u> http://www.dupagechildrensmuseum.org/aunty/</p> <p><u>The Franklin Institute:</u> http://www.fi.edu/school/math2/oct.html</p> <p><u>Enrich Specialists in Rich Math:</u> http://nrich.maths.org/public/monthindex.php?mm=2</p> <p><u>Suggested Formative Assessments</u></p> <ul style="list-style-type: none"> Quick Checks Quizzes Lesson Assessments District Wide Formative Assessments (3) <p><u>Suggested Summative Assessments:</u></p> <ul style="list-style-type: none"> Program Benchmarks Unit Assessments District Wide Summative Assessments 	
<p>6. Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram.</p> <p>(NJSLS 2.MD.6)</p>		

2.MD Measurement and Data		Grade 2
Cluster: Work with time and money.		
Essential Questions	Enduring Understandings	
What time is it? How much money do we have (need)?	Being able to tell time and count money are critical life skills. Time and money can be measured and have value.	
Standards	Classroom Applications	
7. Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m. (NJSLS 2.MD.7)	<p><u>Instructional Guidance</u> <i>To assist in meeting this standard, students may:</i></p> <ul style="list-style-type: none"> • Demonstrate time in both analog and digital format on prepared (paper or manipulative) clocks • Tell time using the classroom clocks • Count by fives up to 60, noting 15, 30, 45, and 60 in common terms as quarters and half • Demonstrate dollar and cent values with manipulatives • Write each denomination out, then adding them together or taking some value away • Relate value to money in terms of items having a price • Perform addition and subtraction of varied denominations <p><u>Measures of Understanding</u> <i>To show evidence of meeting this standard, students will:</i></p> <ul style="list-style-type: none"> • By the end of the year, identify the current time to the nearest 5 minutes on both analog and digital clocks • By the end of the year, show on both analog and digital clocks the time that they perform various activities during the day, to the nearest five minutes • By the end of the year, calculate money totals represented in word format • By the end of the year, use appropriate operations as described in word problems to find money totals <p><u>Resources</u></p> <p>http://www.mathsisfun.com/money/index.html</p> <p>http://www.apples4theteacher.com/math.html#moneygames</p> <p>http://www.apples4theteacher.com/math/time/</p> <p>http://www.mathsisfun.com/time-clocks.html</p> <p>http://www.mathsisfun.com/time-clocks-analog-digital.html</p> <p><u>Suggested Formative Assessments</u></p> <ul style="list-style-type: none"> • Quick Checks • Quizzes 	
8. Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using \$ and ¢ symbols appropriately. <i>Example: If you have 2 dimes and 3 pennies, how many cents do you have?</i> (NJSLS 2.MD.8)		

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Suggested Summative Assessments:

- Program Benchmarks
- Unit Assessments
- District Wide Summative Assessments

2.MD Measurement and Data	Grade 2
Cluster: Represent and interpret data.	
Essential Questions	Enduring Understandings
How can we represent the information we collect?	Charts and graphs turn data into images that help us draw conclusions. Charts and graphs allow us to make visual displays of our collected data.
Standards	Classroom Applications
<p>9. Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-numbers.</p> <p>(NJSLS 2.MD.9)</p>	<p><u>Instructional Guidance</u> <i>To assist in meeting this standard, students may:</i></p> <ul style="list-style-type: none"> • Convert a standard number line into a line plot by displaying data on top of each number • Use rulers to measure classroom objects, recording the data, and displaying data on a line plot • Review pre-existing line plots to check for rationality • Create an “L” to represent the first quadrant, showing groups in pictures and bars up to the given quantity • Evaluate data displayed in graphs and respond to questions based upon the given graph <p><u>Measures of Understanding</u> <i>To show evidence of meeting this standard, students will:</i></p> <ul style="list-style-type: none"> • By the end of the year, use the number line (with whole numbers) to create line plots • By the end of the year, measure varied items and represent the collected measurement data on a line plot • By the end of the year, create picture graphs and bar graphs with up to four categories of given information • By the end of the year, demonstrate understanding of displayed data by accurately identifying the information presented by the graph <p><u>Resources</u> http://www.mathsisfun.com/data/graphs-index.html http://www.apples4theteacher.com/math.html#measurementgames http://www.myschoolhouse.com/courses/0/1/17.asp</p> <p><u>Suggested Formative Assessments</u></p> <ul style="list-style-type: none"> • Quick Checks • Quizzes • Lesson Assessments • District Wide Formative Assessments (3) <p><u>Suggested Summative Assessments:</u></p> <ul style="list-style-type: none"> • Program Benchmarks • Unit Assessments • District Wide Summative Assessments

2.G Geometry		Grade 2
Cluster: Reason with shapes and their attributes.		
Essential Questions	Enduring Understandings	
<p>What are attributes of geometric figures? How can shapes be combined or separated to form new shapes?</p>	<p>Geometric shapes are named by their attributes. Circles and rectangles can be broken apart into halves, thirds and fourths/quarters.</p>	
Standards	Classroom Applications	
<p>1. Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. [Sizes are compared directly or visually, not compared by measuring.] Identify triangles, quadrilaterals, pentagons, hexagons, and cubes. (NJSL 2.G.1)</p> <p>2. Partition a rectangle into rows and columns of same-size squares and count to find the total number of them. (NJSL 2.G.2)</p> <p>3. Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words <i>halves</i>, <i>thirds</i>, <i>half of</i>, <i>a third of</i>, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape. (NJSL 2.G.3)</p>	<p><u>Instructional Guidance</u> <i>To assist in meeting this standard, students may:</i></p> <ul style="list-style-type: none"> • Describe the number of faces, vertices and edges in a solid figure • Identify the plane shapes that are made by tracing the flat surfaces of solid figures • Use pattern blocks to make and trace larger shapes and count the number of sides and vertices • Use equal size squares to fill columns and rows of a rectangle to find the total number needed to completely cover the rectangle <p><u>Measures of Understanding</u> <i>To show evidence of meeting this standard, students will:</i></p> <ul style="list-style-type: none"> • By the end of the year, identify various geometric shapes • By the end of the year, explain the similarities and differences in plane shapes • By the end of the year, explain the similarities and differences in geometric shapes by naming similarities in the faces, vertices and edges • By the end of the year, identify the fractional parts of a shape divided into thirds, fourths and halves and describe the fractional parts • By the end of the year, find the total number of equal size squares needed to fill a rectangle <p><u>Resources</u></p> <p><i>The Greedy Triangle</i> by Stephanie Shegfield http://www.illuminations.nctm.org/LessonDetail.aspx?ID=L202 http://www.mathplayground.com/geoboard.html http://www.mathcats.com/explore/polygonplayground.html</p> <p><u>Suggested Formative Assessments</u></p> <ul style="list-style-type: none"> • Quick Checks • Quizzes • Lesson Assessments • District Wide Formative Assessments (3) <p><u>Suggested Summative Assessments:</u></p> <ul style="list-style-type: none"> • Program Benchmarks • Unit Assessments • District Wide Summative Assessments 	