

Bay Head School

Content Area: Mathematics
Course Title: Mathematics

Grade Level: First Grade

Unit Plan 1
Operations and Algebraic Thinking

70 days
Ongoing

Unit Plan 2
Measurement and Data

40 days
Ongoing

Unit Plan 3
Number and Operations in Base 10

40 days
Ongoing

Unit Plan 4
Geometry

30 days
Ongoing

Updated: August 2018 by Sharon Carroll

Board Approved:

Standards for Mathematical Practices

The following standards for mathematical practice should be incorporated in all units

MP.1 Make sense of problems and persevere in solving them.

Find meaning in problems
Look for entry points
Analyze, conjecture and plan solution pathways
Monitor and adjust
Verify answers
Ask themselves the question: "Does this make sense?"

<p>MP.2 Reason abstractly and quantitatively.</p>	<p>Make sense of quantities and their relationships in problems Learn to contextualize and decontextualize Create coherent representations of problems</p>
<p>MP.3 Construct viable arguments and critique the reasoning of others.</p>	<p>Understand and use information to construct arguments Make and explore the truth of conjectures Recognize and use counterexamples Justify conclusions and respond to arguments of others</p>
<p>MP 4 Model with mathematics.</p>	<p>Apply mathematics to problems in everyday life Make assumptions and approximations Identify quantities in a practical situation Interpret results in the context of the situation and reflect on whether results make sense</p>
<p>MP.5 Use appropriate tools strategically</p>	<p>Consider the available tools when solving problems Are familiar with tools appropriate for their grade or course (pencil and paper, concrete models, ruler, protractor, calculator, spreadsheet, computer programs, digital content located on a website and other technological tools) Make sound decisions of which of these tools might be helpful</p>
<p>MP.6 Attend to precision.</p>	<p>Communicate precisely to others Use clear definitions, state the meaning of symbols and are careful specifying units of measure and labeling axes Calculate accurately and efficiently</p>
<p>MP.7 Look for and make use of structure</p>	<p>Discern patterns and structures Can step back for an overview and shift perspective See complicated things as single objects or as being composed of several objects</p>
<p>MP.8 Look for and express regularity in repeated reasoning.</p>	<p>Notice if calculations are repeated and look for both general methods and shortcuts. In solving problems, maintain oversight of the process while attending to detail Evaluate the reasonableness of their immediate results</p>

**Bay Head School
MATHEMATICS CURRICULUM
Unit Overview**

Content Area: Mathematics

Grade Level: First Grade

Domain (Unit Title): Operations and Algebraic Thinking

Cluster: 1.OA

Cluster Summary:

- Represent and solve problems involving addition and subtraction
- Understand and apply properties of operations and the relationship between addition and subtraction
- Add and subtract within 20
- Work with addition and subtraction equations

Primary Interdisciplinary Connections:

Science	experiments, manipulate data, environmental studies, life cycle of plants and animals
Social Studies	economics, weather patterns, geography, and sociology
Language Arts	word problem comprehension, create math stories, opened ended math questions
Technology	interactive SmartBoard lessons, independent centers, classroom websites, use digital tools to access, manage, evaluate, and synthesize information

21st Century Themes:

Global Awareness	Students work with word problems containing names of people and locations around the world to develop understanding of diverse cultures and lifestyles.
Communication	Students use mathematical arguments to articulate thoughts and

	ideas with peers and teachers
Environmental Literacy	Students demonstrate knowledge and understanding of their environmental surroundings by using counting and comparing skills.

College and Career Readiness

Mathematics programs develops a deep understanding of mathematics by building a strong foundation of number sense at the elementary level before moving into more advanced content. Students will learn to make sense of problems and persevere in problem solving, reason abstractly and quantitatively, construct viable arguments and critique the reasoning of others, model with mathematics, use appropriate tools strategically, attend to precision, look for and make use of a structure, and look for and express regularity in repeated reasoning.

Learning Targets

Content Standards:

Number	Standard for Mastery
1.OA.1	Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.
1.OA.2	Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.
1.OA.3	Apply properties of operations as strategies to add and subtract. 2 Examples: If $8 + 3 = 11$ is known, then $3 + 8 = 11$ is also known. (Commutative property of addition.) To add $2 + 6 + 4$, the second two numbers can be added to make a ten, so $2 + 6 + 4 = 2 + 10 = 12$. (Associative property of addition.)
1.OA.4	Understand subtraction as an unknown-addend problem. For example, subtract $10 - 8$ by finding the number that makes 10 when added to 8.
1.OA.5	Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).

1.OA.6	Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., $8 + 6 = 8 + 2 + 4 = 10 + 4 = 14$); decomposing a number leading to a ten (e.g., $13 - 4 = 13 - 3 - 1 = 10 - 1 = 9$); using the relationship between addition and subtraction (e.g., knowing that $8 + 4 = 12$, one knows $12 - 8 = 4$); and creating equivalent but easier or known sums (e.g., adding $6 + 7$ by creating the known equivalent $6 + 6 + 1 = 12 + 1 = 13$).
1.OA.7	Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. For example, which of the following equations are true and which are false? $6 = 6$, $7 = 8 - 1$, $5 + 2 = 2 + 5$, $4 + 1 = 5 + 2$.
1.OA.8	Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations $8 + ? = 11$, $5 = _ - 3$, $6 + 6 = _$.
Number Standard for Introduction	
2.OA.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>Unit Essential Questions</p> <ul style="list-style-type: none"> • What is addition and how is it used? • What is subtraction and how is it used? • How are addition and subtraction related? 	<p>Unit Enduring Understandings <i>Students will understand that...</i></p> <ul style="list-style-type: none"> • addition and subtraction are used to model real-world situations such as computing saving or spending, finding the number of days until a special day or determining an amount needed to earn a reward. • fluency with addition and subtraction facts helps to quickly find answers to important questions..
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<p>Unit Objectives <i>Students will know...</i></p> <ul style="list-style-type: none"> • to use addition and subtraction to take numbers apart and put them back together in order to understand 	<p>Unit Objectives <i>Students will be able to...</i></p> <ul style="list-style-type: none"> • represent and solve problems involving addition and subtraction. • understand and apply properties of
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- number relationships.
- to look for and make use of structure.
- which strategies to use to problem solve.

- operations and the relationship between addition and subtraction.
- add and subtract within 20.
- work with addition and subtraction equations.

**Bay Head School
MATHEMATICS CURRICULUM
Unit Overview**

Content Area: Mathematics

Grade Level: First Grade

Domain (Unit Title): Measurement and Data

Cluster: 1.MD

Cluster Summary:

- Measure lengths indirectly and by iterating length units
- Tell and write time
- Represent and interpret data

Primary Interdisciplinary Connections:

Science	measure, record, and compare data, create tables and graphs to represent data
Social Studies	survey, record, and compare data, economics
Language Arts	write informational/ explanatory texts in which a topic is named, facts and procedure are provided, and a sense of closure is given
Technology	interactive SmartBoard lessons, independent centers, classroom websites, use digital tools to access, manage, evaluate, and synthesize information

21st Century Themes:

Global Awareness	Students work with word problems containing names of people
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	and locations around the world to develop understanding of diverse cultures and lifestyles.
Communication	Students use mathematical arguments to articulate thoughts and ideas with peers and teachers
Civil Literacy	Students understand the skills of mapping, gridding, and compass directions.
Economic Literacy	Students understand the role of economics in society and understand how to make appropriate personal economic choices.

College and Career Readiness

Mathematics programs develops a deep understanding of mathematics by building a strong foundation of number sense at the elementary level before moving into more advanced content. Students will learn to make sense of problems and persevere in problem solving, reason abstractly and quantitatively, construct viable arguments and critique the reasoning of others, model with mathematics, use appropriate tools strategically, attend to precision, look for and make use of a structure, and look for and express regularity in repeated reasoning.

Learning Targets

Content Standards:

Number	Standard for Mastery
1.MD.1	Order three objects by length; compare the lengths of two objects indirectly by using a third object.
1.MD.2	Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.
1.MD.3	Tell and write time in hours and half-hours using analog and digital clocks.
1.MD.4	Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

Number Standard for Introduction	
2.MD.8	Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using \$ and ¢ symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have?
<p>Unit Essential Questions</p> <ul style="list-style-type: none"> ● How can you tell one object is bigger than another? ● Why do we measure objects and time? ● How are length and time different? ● How are they the same? ● What kinds of questions generate data? ● What questions can be answered by a data representation? 	<p>Unit Enduring Understandings <i>Students will understand that...</i></p> <ul style="list-style-type: none"> ● time measurement is a means to organize and structure each day and our lives, and to describe tempo in music. ● measurement helps to understand and describe the world such as comparing heights of friends, describing how heavy something is, or how much something holds. ● people use graphs and charts to communicate information and learn about a class or community, such as favorite ice cream flavors of a class.
<p>Unit Objectives <i>Students will know...</i></p> <ul style="list-style-type: none"> ● to use measurable attributes to describe countless objects. ● to use appropriate tools strategically. ● to measure accurately to organize and explain random information. 	<p>Unit Objectives <i>Students will be able to...</i></p> <ul style="list-style-type: none"> ● measure lengths indirectly and by iterating length units. ● tell and write time. ● represent and interpret data.

**Bay Head School
MATHEMATICS CURRICULUM
Unit Overview**

Content Area: Mathematics

Grade Level: Grade 1

Domain (Unit Title): Number and Operations in Base Ten

Cluster: 1.NBT

Cluster Summary:

- Extend the counting sequence
- Understand place value
- Use place value understanding and properties of operations to add and subtract

Primary Interdisciplinary Connections:

Science	scientific method, weather patterns, life cycle of plants and animals
Social Studies	calendar, timelines, dates, and events, ethnic and organizational cultures
Language Arts	create math stories
Technology	interactive SmartBoard lessons, independent centers, classroom websites, use digital tools to access, manage, evaluate, and synthesize information

21st Century Themes:

Global Awareness	Students work with word problems containing names of people and locations around the world to develop understanding of
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	diverse cultures and lifestyles.
Communication	Students use mathematical arguments to articulate thoughts and ideas with peers and teachers
Financial Literacy	Students use place values to understand and make appropriate financial choices.

College and Career Readiness

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Learning Targets

Content Standards:

Number	Standard for Mastery
1.NBT.1	Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.
1.NBT.2	Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases: <ul style="list-style-type: none"> a. 10 can be thought of as a bundle of ten ones — called a "ten" b. In numbers 11-19 there is composed of 1 ten and one, two, three, four, five, six, seven, eight, or nine ones c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones)
1.NBT.3	Compare two, two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols $<$, $=$, and $>$.
1.NBT.4	Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, 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 and explain the reasoning used. Understand that in adding two-digit numbers, one adds

	tens and tens, ones and ones; and sometimes it is necessary to compose a ten.
1.NBT.5	Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.
1.NBT.6	Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), 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 and explain the reasoning used.

Unit Essential Questions

- Can numbers always be related to tens?
- Why not always count by 1?
- Why was a place value system developed?
- How does a position of a digit affect its value?
- How big is 100?

Unit Enduring Understandings

Students will understand that...

- the comparison of numbers helps to communicate and to make sense of the world.

Unit Objectives

Students will know...

- to visualize and make representations of their ideas.
- to count and order both real and imaginary objects.
- abstract and quantitative reasoning.

Unit Objectives

Students will be able to...

- extend the counting sequence.
- understand place value.
- use place value understanding and properties of operations to add and subtract.

**Bay Head School
MATHEMATICS CURRICULUM
Unit Overview**

Content Area: Mathematics

Grade Level: First Grade

Domain (Unit Title): Geometry

Cluster: 1.G

Cluster Summary:

- Reason with shapes and their attributes

Primary Interdisciplinary Connections:

Science	identify and sort shapes and their properties, explore shapes of the planets and constellations
Social Studies	maps, signs, and symbols, coordinate grids
Language Arts	literacy books, and puzzles
Technology	interactive SmartBoard lessons, independent centers, classroom websites, use digital tools to access, manage, evaluate, and synthesize information

21st Century Themes:

Global Awareness	Students work with word problems containing names of people and locations around the world to develop understanding of diverse cultures and lifestyles.
Communication	Students use mathematical arguments to articulate thoughts and

	ideas with peers and teachers
Civic Literacy	Students understand the skills of mapping, gridding, and compass directions

College and Career Readiness

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Learning Targets

Content Standards:

Number	Standard for Mastery
1.G.1	Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes.
1.G.2	Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape.
1.G.3	Partition circles and rectangles into two and four equal shares: <ul style="list-style-type: none"> ● Describe shares using the words halves, fourths, and quarters, and use the phrases half of, fourth of, and quarter of ● Describe the whole as two of, or four of the equal shares ● Understand that decomposing into more equal shares creates smaller shares

<p>Unit Essential Questions</p> <ul style="list-style-type: none"> ● How do you share a whole equally? ● Why is a cube not a square? 	<p>Unit Enduring Understandings</p> <p><i>Students will understand that...</i></p> <ul style="list-style-type: none"> ● many objects in the world can be described using geometric shapes and relationships.
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	<ul style="list-style-type: none"> • geometry gives us the language to describe these objects.
<p>Unit Objectives <i>Students will know...</i></p> <ul style="list-style-type: none"> • to use attributes of shapes to reason. 	<p>Unit Objectives <i>Students will be able to...</i></p> <ul style="list-style-type: none"> • build and draw two and three-dimensional shapes. • partition circles and rectangles into halves and fourths

Evidence of Learning

Suggested Formative Assessments:

<ul style="list-style-type: none"> • Teacher Observation • Performance Assessment • Exit Slips/Slate Assessment • Portfolios/Journals • Pre-Assessment 	<ul style="list-style-type: none"> • Games • Anecdotal Records • Oral Assessment/Conferencing • Daily Classwork
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Suggested Summative Assessments:

- Tests
- Quizzes
- National/State/District Assessments

Suggested Modifications (ELLs, Special Education, Gifted and Talented):

Low Level Strategies:

- Modified classroom and homework assignments
- Teacher tutoring
- Parent - teacher communication
- Anchor charts and visual aids
- Flexible grouping
- Teacher - student goal setting
- Technology integration
- Centers
- Response to intervention

High Level Strategies

- Multi-step and higher level math problems
- Enrich problems

- Extend activities
- Centers
- Student driven activities
- Student choice activities
- Peer tutoring

Suggested activities for lesson plans:

What am I?	3D shape naming activity using the various properties of shapes
Sorting Shape Tree	“Tree Sort” to develop knowledge and understanding of shape properties. Used for both 2D and 3D shapes
Shape Hunt	Students explore indoor or outdoor surroundings to identify shapes.
Interactive Polygon Explorer	Web- based resource to explore the properties of polygons.

Teacher Notes: