

Domain: First Grade Math

Cluster: Operations and Algebraic Thinking

Standards:

1.OA.

A. Represent and solve problems involving addition and subtraction.

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.²

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.

B. Understand and apply properties of operations and the relationship between addition and subtraction.

3. Apply properties of operations as strategies to add and subtract.³ 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.) {Students need not use formal terms for these properties}

4. Understand subtraction as an unknown-addend problem. For example, subtract $10 - 8$ by finding the number that makes 10 when added to 8.

C. Add and subtract within 20.

5. Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).

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 $6 + 6 + 1 = 12 + 1 = 13$).

D. Work with addition and subtraction equations.

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? $6 = 6$, $7 = 8 - 1$, $5 + 2 = 2 + 5$, $4 + 1 = 5 + 2$.

8. Determine the unknown whole number in an addition or subtraction equation relating to three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations $8 + ? = 11$, $5 = \diamond - 3$, $6 + 6 = \diamond$.

**Essential
Questions**

**Enduring
Understandings**

**Activities, Investigations and Student
Experiences**

<p>How do we apply different properties of operations to add or subtract?</p> <p>What are different strategies for addition and subtraction within 20?</p> <p>What is an example of an addition and subtraction equation that is true?</p> <p>How do I know which mathematical operation (+, -) to use?</p> <p>How do you determine if operations on both sides of the equal signs are the same?</p> <p>How are addition and subtraction problems related?</p>	<p>Computation involves taking apart and combining numbers using a variety of approaches</p> <p>Joining parts to make a whole is one interpretation of addition.</p> <p>Real world situations can be represented symbolically and graphically.</p> <p>There can be different strategies to solve a problem, but some are more effective and efficient than others</p> <p>Two numbers can be added in any order.</p> <p>Addition and subtraction are related/inverse operations.</p> <p>Various strategies can be used to quickly add numbers.</p> <p>Strategies can be used to decompose complex problems to make them easier (counting on, make a ten, near ten, double, doubles +1) • The equal sign is used to represent quantities that have the same value.</p>	<p>Activities: Students use jelly beans and cups to solve addition and subtraction problems or any food-based manipulatives for demonstration purposes (m&ms, jelly beans, beans, etc).</p> <p>Using various word problems, have students use manipulatives such as cubes, crayons, counters or paper clips to represent amounts.</p> <p>Using 2 dice, students will roll dice and add or subtract the numbers together.</p> <p>Students are given number cards and will find their partner that has the related addition or subtraction fact.</p> <p>Students read, draw and solve problems from flash cards.</p> <p>Fact Family Fun - Students are giving addition and subtraction problems on "French Fries" and need to match it to the correct container with the fact family</p> <p>True/False - students sort various problems in either a true cup or a false cup</p> <p>Students make a number bond and use counters to represent part + part = whole.</p> <p>Students use kangaroo counters to hop on the number line to solve addition and subtraction problems.</p> <p>Using masking tape, create a life sized number line and have students hop on their feet to see how to correctly hop on or hop back when adding or subtracting.</p> <p>Students create word problems with three addends. They can also increase their estimation skills by creating problems in which the sum is less than 5, 10 or 20. They use properties of operations and different</p>
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	<p>Word problems have basic problem solving structures: adding to, taking from, putting together, taking apart and comparing.</p> <p>Numbers can be grouped in different ways to solve word problems with three addends.</p>	<p>strategies to find the sum of three whole numbers.</p> <p>Show students various number sentences with three one-digit numbers. Ask students to identify what strategies can be used to solve the problem (doubles fact, make a ten, plus one).</p> <p>Student can build a tower of 8 green cubes and 3 yellow cubes and another tower of 3 yellow and 8 green cubes to show that order does not change the result in the operation of addition.</p> <p>Resources:</p> <ul style="list-style-type: none"> ● Respond to Essential Questions at start and end of unit ● Use vocabulary in speaking and writing, as needed and post vocabulary on Math Word Wall ● Let's Practice and Extra Practice problems from the workbook pages for homework ● Khan Academy tutorials and assignments ● BrainPopJr.com tutorials ● ThinkCentral.com interactive whiteboard activities ● ThinkCentral.com chapter overview videos ● Mathseeds.com
<p style="text-align: center;">Equipment Needed</p> <ul style="list-style-type: none"> - Counting chips - Counting bears - Ten frames - Connecting cubes - Jellybeans - Cups - Linking cubes - Number lines - Masking tape 	<p>Teacher Resources:</p> <p>www.thinkcentral.com</p> <p>www.brainpopjr.com</p> <p>www.xtramath.org</p> <p>www.abcya.com</p> <p>www.youtube.com</p> <p>www.pinterest.com</p> <p>www.mathseeds.com</p>	

www.teacherspayteachers.com

www.ixl.com

Khan Academy website

Domain: First Grade Math

Cluster: Number and Operations in Base Ten

Standards:

1.NBT.

A. Extend the counting sequence.

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.

B. Understand place value.

2. Understand that the two digits of a two-digit number represent amounts of tens and ones.

Understand the following as special cases:

a. 10 can be thought of as a bundle of ten ones — called a “ten.”

b. The numbers from 11 to 19 are composed of a 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).

3. Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols $>$, $=$, and $<$.

C. Use place value understanding and properties of operations to add and subtract.

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 (e.g., base ten blocks) 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.

5. Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.

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.

Essential Questions	Enduring Understandings	Activities, Investigations and Student Experiences
What are the different ways that you can count to 120 starting at any	A unit of 10 is made of 10 ones.	Activities: Students will be able to extend the counting sequence by reading, writing, and orally counting numbers.

<p>number less than 120?</p> <p>What is place value?</p> <p>What is an example of 10 more or 10 less than a number without having to count?</p> <p>Why are the properties important in solving problems?</p> <p>What is the relationship of addition to subtraction?</p> <p>How can we use place value to add and subtract?</p> <p>Why is it important to add and subtract quickly?</p> <p>Why is it important to know multiple strategies in solving addition and subtraction problems?</p> <p>How can grouping numbers by tens help us add?</p>	<p>Two-digit numbers are composed of units of tens and some ones.</p> <p>Numbers can be represented in different ways to demonstrate tens and ones in a two digit number.</p> <p>The decade numbers are built on groups of ten. The oral names are similar, but not the same as the number of tens counted. • The meaning of the comparison symbols (<, >, =)</p> <p>Numbers are used to show how many objects are in a group.</p> <p>There is an order for saying and writing numbers.</p> <p>Numbers can be represented in different ways to demonstrate tens and ones in a two digit number. • Two digit numbers are composed of units of tens and some ones.</p> <p>Identification of 10 more/10 less is the same as adding or subtracting ten.</p>	<p>Students will use 100s chart to identify numbers. Students will complete color by code to decode mystery pictures on the 100s chart</p> <p> Students will be able to solve addition problems within 100 using understanding of place value, properties of operations, etc. Student will use cubes and longs to represent tens and ones on place value mats.</p> <p>Students will be able to compare two numbers in order to determine if they are greater than, less than, or equal to one another. Students will use place value to determine which number is greater or less.</p> <p>Students will be able to apply mental math strategies in order to add or subtract 10 to a given number. Students use flashcards to test one another with mental math problems.</p> <p>Students play 10 more or 10 less game with numbers. Students will match the correct number that is either 10 more or 10 less.</p> <p>Students complete puzzle matching activities. Student will match the teen word to the place value and addition sentence</p> <p>Students use connecting cubes made into 10 towers, each of the same color, and loose cubes per pair to represent each number.</p> <p>Use 2 unequal groups of students; ask them to compare to the front of the class. Follow by asking the class how many are in each group and what group has more.</p>
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	<p>Addition can be used to solve subtraction.</p> <p>Decomposing numbers so that the numbers can be recombined for a 10 or group of ten, and some more.</p>	<p>Students cut apart filled in 100s chart and will correctly match in the right order (puzzle).</p> <p>Resources:</p> <ul style="list-style-type: none"> • Respond to Essential Questions at start and end of unit • Use vocabulary in speaking and writing, as needed and post vocabulary on Math Word Wall • Let's Practice and Extra Practice problems from the workbook pages for homework • Khan Academy tutorials and assignments • BrainPopJr.com tutorials • ThinkCentral.com interactive whiteboard activities • ThinkCentral.com chapter overview videos • Mathseeds.com lessons and activities
<p style="text-align: center;">Equipment Needed</p> <ul style="list-style-type: none"> - Counting chips - Connecting cubes - 100s chart - Blank 100s chart - Flashcards - Longs and cubes for place value - Place Value mats (Hundreds, Tens, Ones) - Base ten blocks 		<p>Teacher Resources:</p> <p>www.thinkcentral.com</p> <p>www.brainpopjr.com</p> <p>www.xtramath.org</p> <p>www.abcya.com</p> <p>www.youtube.com</p> <p>www.mathseeds.com</p>

Domain: First Grade Math

Cluster: Measurement and Data

Standards:

1.MD

A. Measure lengths indirectly and by iterating length units.

1. Order three objects by length; compare the lengths of two objects indirectly by using a third object.

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.

B. Tell and write time.

3. Tell and write time in hours and half-hours using analog and digital clocks.

C. Represent and interpret data.

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.

Essential Questions	Enduring Understandings	Activities, Investigations and Student Experiences
How are position words useful? How can we measure the length of objects using non-standard units? How do we use an analog and a digital clock to tell time? How do we organize, represent, and interpret data in order to reach	Measurement is a process of comparing units to the object being measured. Some problems can be solved by reasoning about conditions in the problems. Different units can be used to measure length.	Students order three objects by length; compare the lengths of two objects indirectly by using a third object. Students express the length of an object as a whole number of length units, by laying multiple copies of a shorter object 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. Students will tell and write time in hours and half-hours using analog and digital clocks. Students can make own personal clocks with plates and pins.

<p>specific conclusions?</p> <p>How can you compare and then order concrete objects according to length?</p> <p>How can you estimate and measure length with nonstandard units?</p> <p>How does the length of the unit of measure affect the number of units needed to measure an object's length?</p> <p>What are the different ways to estimate time?</p> <p>What is the difference between an analog and a digital clock?</p> <p>Different graphs should be used for different data.</p>	<p>Minutes, hours, and days are units that can be used to estimate and order time durations.</p> <p>The hour hand tells the hour, and the minute hand tells the number of minutes after the hour.</p> <p>Which is the best graph to use?</p>	<p>Students will complete a class poll discussing "What is their favorite _____" and complete a chart to help interpret the data received.</p> <p>Students use linking cubes to determine how long or short a given item is.</p> <p>Students use a hula hoop to demonstrate time on an analog clock.</p> <p>Students complete "measure the room" activity. They will be given pictures of different objects in the room that they need to measure with unifix cubes.</p> <p>Students will order and compare different objects with different tools (such as cubes, erasers, crayons, shoes, etc).</p> <p>Resources:</p> <ul style="list-style-type: none"> ● Respond to Essential Questions at start and end of unit ● Use vocabulary in speaking and writing, as needed and post vocabulary on Math Word Wall ● Let's Practice and Extra Practice problems from the workbook pages for homework ● Khan Academy tutorials and assignments ● BrainPopJr.com tutorials ● ThinkCentral.com interactive whiteboard activities ● ThinkCentral.com chapter overview videos ● Mathseeds.com lessons and activities
<p style="text-align: center;">Equipment Needed</p> <ul style="list-style-type: none"> - Picture and bar graphs - Tally charts - Paper plates - Ruler - Different sized objects - Shoes - Linking cubes - Erasers and classroom objects 		<p>Teacher Resources:</p> <p>www.thinkcentral.com</p> <p>www.brainpopjr.com</p> <p>www.xtramath.org</p> <p>www.abcya.com</p>

- **Digital and analog clocks**
- **Hula Hoop**

www.youtube.com

www.mathseeds.com

www.teacherspayteachers.com

Domain: First Grade Math

Cluster: Geometry

Standards:

1.G

A. Reason with shapes and their attributes.

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.

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.

3. Partition circles and rectangles into two and four equal shares, describe the 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 shares. Understand for these examples that decomposing into more equal shares creates smaller shares.

Essential Questions	Enduring Understandings	Activities, Investigations and Student Experiences
How are everyday objects similar to plane shapes and geometric solids?	Some everyday objects are close approximations to geometric solids.	Students will 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.
How can breaking apart larger shapes make new smaller shapes?	Plane shapes can be broken apart into other shapes.	Students are given attributes to trace and identify basic plane shapes.
How can we show a shape has symmetry?	Plane shapes can be symmetrical.	Students create real-life pictures and objects with attribute shapes.
How does writing down all the ways of doing something help solve a problem?	Many solid figures have flat surfaces and vertices. A region can be divided into equal sized parts in different ways. Equal sized parts of a region have the same	Students sort shapes according to their sides and vertices. Students make new shapes using basic plane shapes.

<p>How can attributes be used to sort figures?</p> <p>How can a shape be divided into equal parts?</p> <p>How can equal parts of a set have the same number of objects in each part?</p>	<p>area but not necessarily the same shape.</p> <p>Equal parts of a set have the same number of objects in each part.</p>	<p>Students are given a picture made up of shapes and will identify the shapes used to compose that picture</p> <p>Students complete a gallery walk and identify all solid shapes in the classroom.</p> <p>Students sort objects into two categories; Two-Dimensional and Three-Dimensional shapes.</p> <p>Students fold paper into different geometric shapes. Compare with a partner to tell how they are alike and different.</p> <p>Use shapes to outline geometric figures. Students will label the shape and count the sides and corners.</p> <p>Students will to sort shapes (e.g., attribute blocks, polygon figures) by shape, number of sides, size or number of angles</p> <p>Students will use geoboards, toothpicks, straws, paper and pencil, computer games to build shapes that possess the defining attributes</p> <p>Students will be able to explain how two shapes are alike or how they are different from each other by using attribute blocks.</p> <p>Students build 3D shapes with toothpicks and marshmallows.</p> <p>Students are given pipe cleaners and straws to create geometric shapes</p> <p>Students look through supermarket flyers and find items that have the same shapes as geometric solids.</p> <p>Resources:</p> <ul style="list-style-type: none"> • Respond to Essential Questions at start and end of unit
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<p style="text-align: center;">Equipment Needed</p> <ul style="list-style-type: none"> - Plane shapes - Solid shapes - Attribute blocks - Cubes, boxes, paper towel holders, etc to demonstrate shapes are all around us. - Geoboards - Toothpicks - Computer games - Marshmallows - Clay 		<p>Teacher Resources:</p> <p>www.thinkcentral.com</p> <p>www.brainpopjr.com</p> <p>www.xtramath.org</p> <p>www.abcya.com</p> <p>www.youtube.com</p> <p>www.mathseeds.com</p> <p>www.teacherspayteachers.com</p>