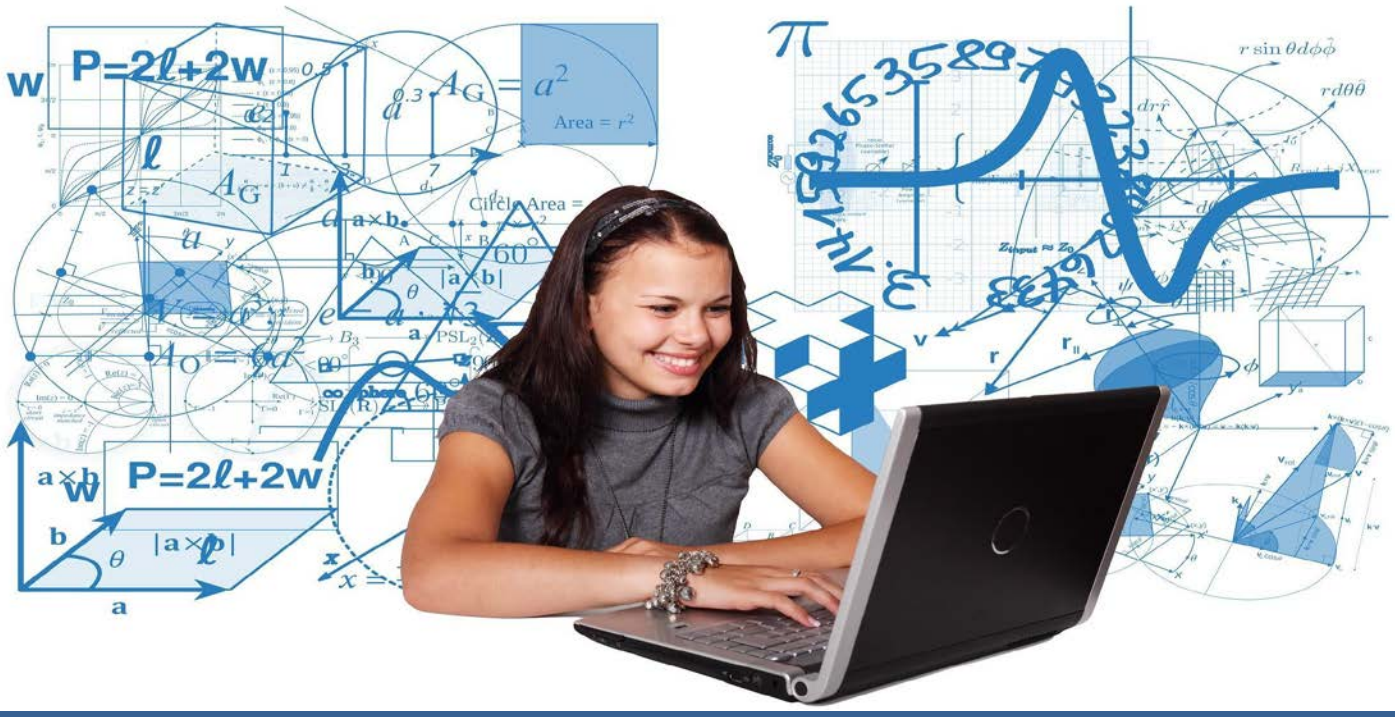
Mathematics Standards Clarification for Kindergarten



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Standards-Based Instruction for
ALL Nevada Students

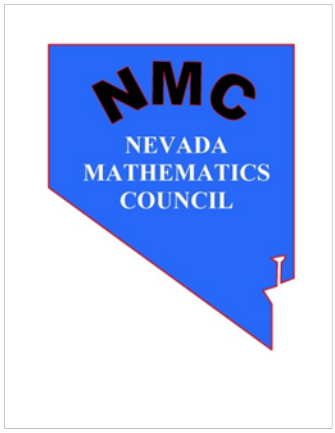
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Table of Contents

Counting & Cardinality

Domain Overview

Students will be able to know number names and the count sequence, count to tell the number of objects, and compare numbers.

Cluster

Know number names and the count sequence.

NVACS K.CC.A.1 (Major Work)

Count to 100 by ones and by tens.

Element	Exemplars
Standards for Mathematical Practice	● MP 6 Students communicate precisely to others as they are learning numbers by rote counting. Vocabulary development with clear definitions, especially for students who have not had previous experience, includes counting as well as learning number names as they count by ones and by tens.
Instructional Strategies	● Provide opportunities for students to count orally. ● Begin with a small range of numbers, such as 1 to 10, and increase the range depending on student needs.
Prerequisite Skills	● Count to 10 orally.
Connections Within and Beyond Grade Level	Within: ● Count up to 100 orally. ● Need to know number names. ● Know the count sequence (Ex. 1, 2, 3…). Beyond: ● Count to 120.
Instructional Examples/Lessons/Tasks	● Counting to Ten ● Adding Machine Tape ● How Many Dots?
Assessment Examples	● Start at 1 and count by ones. Students should be able to count correctly to 100 by ones without skipping numbers, repeating numbers, or hesitating. ● Start at 10 and count by tens. Students should be able to count correctly to 100 by tens without skipping numbers, repeating numbers, or hesitating. ● Listen for students knowing the names of numbers and the count sequence. ● Listen for omission of numbers.

Counting & Cardinality

Cluster

Know number names and the count sequence.

NVACS K.CC.A.2 (Major Work)

Count forward beginning from a given number within the known sequence (instead of beginning at 1).

Element	Exemplars
Standards for Mathematical Practice	● MP 6 Students communicate precisely to others as they are learning numbers by rote counting. Vocabulary development with clear definitions, especially for students who have not had previous experience, includes counting as well as learning number names as they count by ones and by tens.
Instructional Strategies	● Once students are fluent at counting beginning with 1, they begin to work on counting forward from a number other than 1, within a given range. ● Practice counting together out-loud (forward).
Prerequisite Skills	● Need to know a count sequence within a range.
Connections Within and Beyond Grade Level	Within: ● Skill for counting on as a student begins to work with addition. ● While students are increasing the range of numbers to which they are counting, they are starting work on addition and place value using smaller numbers. Beyond: ● Orally count to 120 starting at any number less than 120. ● Students need to be able to count forwards and backwards.
Instructional Examples/Lessons/Tasks	● Give students a starting number greater than 1 and ask the students to count on to that number within a range of numbers. ● While rote counting, consider bringing in tools such as number lines and number grids, to support students with making future connections to counting quantities. ● Read counting books and make them available to children. ● Assessing Sequencing Numbers ● Adding Machine Tape ● Start-Stop Counting ● Number After Bingo 1–15 ● Number Line Up ● "One More" Concentration ● How Many Dots?
Assessment Examples	● Listen for students knowing the names of numbers and the count sequence. ● Listen for omission of numbers. ● Assessing Counting Sequences Part 1 ● Assessing Counting Sequences Part 2

Counting & Cardinality

Cluster

Know number names and the count sequence.

NVACS K.CC.A.3 (Major Work)

Write numbers from 0 to 20. Represent a number of objects with a written numeral 0–20 (with 0 representing a count of no objects).

Element	Exemplars
Standards for Mathematical Practice	• MP 6 Students communicate precisely to others as they are learning numbers by rote counting. Vocabulary development with clear definitions, especially for students who have not had previous experience, includes counting as well as learning number names as they count by ones and by tens.
Instructional Strategies	• Provide students with a variety of opportunities to recognize written numerals from 0 to 9. • Provide multiple opportunities for students to write the numerals in sand, tracing in the air, and using paper and pencil. • Provide students with collections and have them match the appropriate number to the collection.
Prerequisite Skills	• Match the number of objects in a set to the correct numeral 0 to 9. • Recognize and read numerals 0 to 9.
Connections Within and Beyond Grade Level	Within: • Teach this standard together with K.CC.B.5 (counting to answer "how many?" questions) so that as students count the objects they are able to match the number of objects in the set with the numeral. • Students will later use written numerals to compare two numbers between 1 and 10. Beyond: • Read and write numerals and represent a number of objects with a written numeral.
Instructional Examples/Lessons/Tasks	• Prepare cards with numerals and have children place them in order on a number line. • Match a written numeral with a given set of concrete objects and/or pictorial representations. • As the teacher says a numeral aloud, the student records the written numeral. • Race to Trace – Number Recognition 1–20 • Teen Go Fish • Find the Numbers 0–5 or 5–10 • "One More" Concentration • Race to the Top • How Many Dots?

Element	Exemplars
Assessment Examples	● Notice and watch for students who: ○ Are able to recognize numerals 0–20. ○ Are able to write numerals (paper & pencil, tracing in the air). ○ Match sets of objects with written numerals. *Developmentally at this stage, students may have reversals while writing numerals, this is acceptable at this stage.*

Counting & Cardinality

Cluster

Count to tell the number of objects.

NVACS K.CC.B.4.a (Major Work)

Understand the relationship between numbers and quantities; connect counting to cardinality.

a. When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.

Element	Exemplars
Standards for Mathematical Practice	● MP 4 Students make explicit connections to representations and models. ● MP 5 Students consider the available tools and choose the correct manipulative to develop the idea of one-to-one correspondence. ● MP 6 Students communicate and explain their thinking when counting precisely.
Instructional Strategies	● Start by counting objects that are in a straight line and then move to organized representations. ● Provide opportunities for students to count using a variety of objects. ● Use five and ten frames to model linear representations of objects.
Prerequisite Skills	● Count to 10 (orally using the known number sequence). ● Count to 10 by demonstrating 1-1correspondence using objects. ● Understand 1-1 correspondence, each object is counted only once when counting up to 10 objects. ● Model ways to stay organized, such as touching or moving objects as they are counted. ● Synchrony: That there is only one number word for each and every object to 10. (Sometimes students split two syllable words across two counting numbers example “twen-ty” counting one object when they say the first syllable and a second object when they say the second syllable.)
Connections Within and Beyond Grade Level	Within: ● Students move from oral counting to finding the number of objects in a set when using physical objects or representations. ● Cardinality is the actual number or count of items within a set. Beyond: ● Count to 120, starting at any number, and represent a number of objects with a written number.

Element	Exemplars
Instructional Examples/Lessons/Tasks	● As the child counts objects, have child place one object in each space of an egg carton or ice cube tray. ● Slow down the count by having the child put counters into a bag or by picking up objects with salad tongs as it is counted. ● Make a plan for counting: arrange objects in row, count objects from left to right, touch one object and say each number word out loud, move each object as it is counted across a line on a work mat or place into a bag or box. ● Counting in Kindergarten ● Counting Objects and Ordering Numbers With and Without a Number Line ● How Many Dots?
Assessment Examples	● Notice and watch for students who: ○ Consistently (without support) are able to accurately count sets of objects using 1-1 correspondence. ● If students struggle, watch for the following: ○ Touch each object one time (1-1 correspondence). Some students may double count an object, thus counting it two times. ○ Synchrony: Do students say one number word as they touch each object? ○ Are they able to keep track and stay organized (understand that each object is only counted once)? For example, do students move objects once they have been counted to ensure they do not count them a second time?

Counting & Cardinality

Cluster

Count to tell the number of objects.

NVACS K.CC.B.4.b (Major Work)

Understand the relationship between numbers and quantities; connect counting to cardinality.

b. Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.

Element	Exemplars
Standards for Mathematical Practice	● MP 4 Students make explicit connections to representations and models. ● MP 5 Students consider the available tools and choose the correct manipulative to develop the idea of one-to-one correspondence. ● MP 6 Students communicate and explain their thinking when counting precisely.
Instructional Strategies	● Provide opportunities for students to count using a variety of objects. ● Ask students to count the objects. Begin with a smaller range of items and then increase the range as students count accurately. ● Connect counting to tools such as five frames, number lines, and number grids. ● Arrange objects randomly after students are able to successfully count objects in organized arrangements.
Prerequisite Skills	● Use 1-1 correspondence. ● Count to 10 (orally using the known number sequence).
Connections Within and Beyond Grade Level	Within: ● Know the count sequence (known number sequence). ● Use 1-1 correspondence to identify an accurate count. ● Begin to work with two sets of objects to compare the number in each set. ● Understand that the arrangement of the objects does not change the quantity of the object. Beyond: ● Students will extend these understandings to counting to 120 in 1st grade.
Instructional Examples/Lessons/Tasks	● Use matching to compare sets. For example, stack counters on top of images to match the sets. ● Provide many varied counting activities, always ask “How many?”. ● When counting collections together say, “1, 2, 3, 4, 5. We have 5 pencils”. ● How Many Dots?

Element	Exemplars
Assessment Examples	● Notice and watch for students who: ○ Consistently (without support) understand that the last number they named when counting represents the set of objects (cardinality). ○ When asked “How many?” do not need to recount the set. ○ Understands that the number does not change when objects are moved or arranged differently. ● If students struggle, watch for the following: ○ Recount the set instead of naming the last number stated. ○ Use 1-1 Correspondence to accurately identify the number in the set.

Counting & Cardinality

Cluster

Count to tell the number of objects.

NVACS K.CC.B.4.c (Major Work)

Understand the relationship between numbers and quantities; connect counting to cardinality.

c. Understand that each successive number name refers to a quantity that is one larger.

Element	Exemplars
Standards for Mathematical Practice	● MP 4 Students make explicit connections to representations and models. ● MP 5 Students consider the available tools and choose the correct manipulative to develop the idea of one-to-one correspondence. ● MP 6 Students communicate and explain their thinking when counting precisely.
Instructional Strategies	● Have students count 5 items. Add one more item to the set and then ask how many now? Progress to a similar situation but do not add the physical item and ask questions like: "How many will there be if I add one more item?" Begin with numbers 1–5 and then increase the range of numbers to 10. ● Extend the work to the use of ten frames and number lines. *It will take time to develop conceptual understanding for this standard.*
Prerequisite Skills	● Understand the count sequence and be able to tell you what number comes next. ● Count forward beginning from a given number within the known sequence.
Connections Within and Beyond Grade Level	Within: ● Know the count sequence (known number sequence). Beyond: ● Relate counting to addition and subtraction (counting on).
Instructional Examples/Lessons/Tasks	● The Napping House ● Counting Mat
Assessment Examples	● Notice and watch for students who: ○ Are able to count a set of objects and tell you what comes next. ○ Tell you what comes next when given a number. ● If students struggle, consider using: ○ Number lines and ten frames to connect quantity to understanding conceptually one more than. For example, consider having a number line 0–20. Have students count objects and then place one object on each number. Ask "what number comes next?" using the number line to support.

Counting & Cardinality

Cluster

Count to tell the number of objects.

NVACS K.CC.B.5 (Major Work)

Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1–20, count out that many objects.

Element	Exemplars
Standards for Mathematical Practice	• MP 4 Students make explicit connections to representations and models. • MP 5 Students consider the available tools and choose the correct manipulative to develop the idea of one-to-one correspondence. • MP 6 Students communicate and explain their thinking when counting precisely.

Instructional Strategies	This standard asks that students are both counter and producers.
	• **Producer:** When given a number, the student counts out a set of objects or draws a picture to match.
	• **Counter:** When given a set of objects or drawings, the student counts to determine "how many?"
	  o Provide students with a bag of objects and ask them to count out a certain number of objects.
	  o Give students a number card and ask them to count out that many items.

Prerequisite Skills	• Use 1-1 correspondence. • Count forward beginning from a given number within the known sequence.
Connections Within and Beyond Grade Level	Within: • Builds on the previous standards in this cluster. • Students continue to count items in a set, using physical and pictorial representations. • Number recognition is developed throughout this cluster. Beyond: • Students will extend these understandings to counting to 120 in 1st grade. • This skill also prepares the student for addition and subtraction using objects to represent the problem.
Instructional Examples/Lessons/Tasks	• Teacher places an unorganized amount of objects on the table and asks the student to count out a set of up to 10 objects. Student takes the 10 objects and places them in front of them on the table while counting aloud. • Have students count as materials or snacks are passed out. • Feet Under the Table • Goody Bags

Element	Exemplars
Assessment Examples	● Notice and watch for students who: ○ Are able to successfully count 20 objects in a line. ○ Are able to successfully count 20 objects in a rectangular array. ○ Are able to successfully count 20 objects in a circle. ○ Are able to count up to 20 objects in a scattered configuration. ○ Are able to produce a given amount (count out a specific amount).

Counting & Cardinality

Cluster

Compare numbers.

NVACS K.CC.C.6 (Major Work)

Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies.[1]

[1] Include groups with up to ten objects.

Element	Exemplars
Standards for Mathematical Practice	● MP 4 Students make explicit connections to representations and models. ● MP 5 Students use strategies to compare concrete quantities. ● MP 6 Students will use precision with the language of more than (greater than), less than (fewer than) and equal/same amount.
Instructional Strategies	● Provide activities and tasks that allow for students to compare quantities to determine which group has more and which group has less with the focus on developing appropriate vocabulary including greater than, less than and equal to. ● Strategies involved for comparing: ○ Matching, observation, take away or equal groups, and compare counts.
Prerequisite Skills	● Cardinality to 10 ● 1-1 correspondence
Connections Within and Beyond Grade Level	Within: ● Count up to 10 objects (cardinality). ● Match one object from one set to one object from a second set to compare quantities (more, less or the same). Beyond: ● In 1st grade, students will compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparison with the symbols >, <, =.
Instructional Examples/Lessons/Tasks	● More and Less Handfuls ● Finding Equal Groups ● The Pocket Game
Assessment Examples	● Notice and watch for students who: ○ Are able to count each set, state the quantity and tell you which set has more, less or the same amount. ○ Are able to use matching strategies to determine what set has more, less, or the same amount.

Counting & Cardinality

Cluster

Compare numbers.

NVACS K.CC.C.7 (Major Work)

Compare two numbers between 1 and 10 presented as written numerals.

Element	Exemplars
Standards for Mathematical Practice	● MP 4 Students will model with the use of appropriate academic vocabulary. ● MP 6 Students will accurately compare numbers written as numerals.
Instructional Strategies	● Provide activities and tasks that help students to begin to conceptually understand the abstract nature of comparing numbers when only given written numerals.
Prerequisite Skills	● Students must recognize numbers and numerical representations. ● Students have to compare two groups of objects to identify which is greater or less.
Connections Within and Beyond Grade Level	Within: ● Understand that written numerals represent quantities. Beyond: ● In 1st grade, students will compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparison with the symbols >, <, =.
Instructional Examples/Lessons/Tasks	● Guess the Marbles in the Bag
Assessment Examples	● Notice and watch for students who: ○ Recognize numerals and are able to tell which numeral is greater, less, or the same. ● If students struggle, consider: ○ Using concrete materials, then label each set with the appropriate numeral. ○ Having students draw pictorial representations.

Operations & Algebraic Thinking

Domain Overview

Students begin to explore addition and subtraction in a variety of ways.

Cluster

Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.

NVACS K.OA.A.1 (Major Work)

Represent addition and subtraction with objects, fingers, mental images, drawings[1], sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.

Element	Exemplars
Standards for Mathematical Practice	● MP 1 Students will make sense of problems and persevere in solving them. ● MP 2 Students at the primary level often need to manipulate concrete objects to make meaning of numbers and find solutions. ● MP 3 Students should have opportunities to explain and justify their thinking through discourse and listening. ● MP 4 Students begin to explore the operations of addition and subtraction by using a variety of concrete materials to model specific problem situations.
Instructional Strategies	● Introduce students to numerical representations by writing equations that represent students' work.
Prerequisite Skills	● Students must recognize numbers and numerical representations.
Connections Within and Beyond Grade Level	Within: ● Count sets of objects. ● Add numbers within 10. Beyond: ● Represent and solve problems involving addition and subtraction including word problems within 20. ● Add and subtract within 20 using various mental strategies such as counting on, making ten, decomposing a number leading to a ten, using the relationship between addition and subtraction, and creating equivalent but easier known sums.
Instructional Examples/Lessons/Tasks	● Use concrete materials to model how numbers up to 10 are composed (put together). ● Describe their models using pictures, words, and numbers with emphasis on appropriate addition and subtraction terminology. ● Match their models with equations and expressions provided by the teacher. ● South Dakota Counts CGI Problems ● Graphic Organizer for Join/Separate Word Problems ● Dice Addition 2

Element	Exemplars
Assessment Examples	● Notice and watch for students who: ○ Explain addition as adding to or putting together. ○ Explain subtraction as taking apart or taking from. ○ Model the action of addition and subtraction. ○ Represent the mathematics in the problem using various objects, fingers, mental images, drawings, sounds, ten frames, acting out the situation, verbal explanations or later connecting these to expressions and/or equations. ● Problem Solving Rubric [1]*Drawings need not show details, but should show the mathematics in the problem. (This applies wherever drawings are mentioned in the Standards.)*

Operations & Algebraic Thinking

Cluster

Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.

NVACS K.OA.A.2 (Major Work)

Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.

Element	Exemplars
Standards for Mathematical Practice	● MP 1 Students will make sense of problems and persevere in solving them. ● MP 2 Students at the primary level often need to manipulate concrete objects to make meaning of numbers and find solutions. ● MP 3 Students should have opportunities to explain and justify their thinking through discourse and listening. ● MP 4 Students begin to explore the operations of addition and subtraction by using a variety of concrete materials to model specific problem situations.
Instructional Strategies	● Provide opportunities for students to solve word problems with numbers up to 10 through direct modeling activities and counting strategies. ● Encourage students to use manipulatives, objects and drawings to model the mathematics in the problem. ● Pose questions that have students explain their thinking and make connections to their previous work with addition and subtraction meanings.
Prerequisite Skills	● Count to 10 ● 1-1 correspondence ● Cardinality
Connections Within and Beyond Grade Level	Within: ● Add and subtract numbers within 10. ● Solve addition and subtraction word problems. Beyond: ● 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. ● Represent and solve problems involving addition and subtraction including word problems within 20. ● Add and subtract within 20 using various mental strategies such as counting on, making ten, decomposing a number leading to a ten, using the relationship between addition and subtraction, and creating equivalent but easier known sums.

Element	Exemplars
Instructional Examples/Lessons/Tasks	● Solve problems using objects and drawings. ● Explain their thinking using appropriate addition and subtraction vocabulary. ● Ten Flashing Fireflies ● What's Missing?
Assessment Examples	● Notice and watch for students who (contextual problems only): ○ Understand the context or the situation in the problem. ○ Explain and represent addition as adding to or putting together. ○ Explain and represent subtraction as taking apart or taking from. ○ Represent the action of addition or subtraction using objects or drawings. ● Problem Solving Rubric *Drawings need not show details, but should show the mathematics in the problem. (This applies wherever drawings are mentioned in the Standards.)*

Operations & Algebraic Thinking

Cluster

Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.

NVACS K.OA.A.3 (Major Work)

Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation (e.g., 5 = 2 + 3 and 5 = 4 + 1).

Element	Exemplars
Standards for Mathematical Practice	• MP 1 Students will make sense of problems and persevere in solving them. • MP 2 Students at the primary level often need to manipulate concrete objects to make meaning of numbers and find solutions. • MP 3 Students should have opportunities to explain and justify their thinking through discourse and listening. • MP 4 Students begin to explore the operations of addition and subtraction by using a variety of concrete materials to model specific problem situations. • MP 5 Students strategically use concrete materials and tools, such as linking cubes, square tiles, etc.
Instructional Strategies	• Use problem situations to give students many opportunities to model ways numbers can be decomposed. • Provide a variety of materials for students to use to display their understanding of decomposing numbers. • Represent their concrete models with visual representations (drawings).
Prerequisite Skills	• Count to 10.
Connections Within and Beyond Grade Level	Within: • Students will compose and decompose numbers up to 10. • Understand that any number up to 10 can be composed or decomposed. Beyond: • In 1st grade, students will work with addition and subtraction equations to determine the unknown whole number in an addition and 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, and 6 + 6 = ?.
Instructional Examples/Lessons/Tasks	• Bobbie Bear's Buttons • Christina's Candies • Make 9 • My Book of 5 • Pick Two • Shake and Spill • Humpty Dumpty 3-Act-Task

Element	Exemplars
Assessment Examples	● Notice and watch for students who: ○ Break a number up to or equal to 10 into two parts using objects and drawings and can explain the two parts. ○ Model the decomposition using objects or drawings. ○ Who are able to record the results of their decompositions by using a drawing or an equation. *Drawings need not show details, but should show the mathematics in the problem. (This applies wherever drawings are mentioned in the Standards.)*

Operations & Algebraic Thinking

Cluster

Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.

NVACS K.OA.A.4 (Major Work)

For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation.

Element	Exemplars
Standards for Mathematical Practice	• MP 1 Students make sense of problems and persevere in solving them. • MP 2 Students at the primary level often need to manipulate concrete objects to make meaning of numbers and find solutions. • MP 3 Students should have opportunities to explain and justify their thinking through discourse and listening. • MP 4 Students begin to explore the operations of addition and subtraction by using a variety of concrete materials to model specific problem situations. • MP 5 Students strategically use concrete materials and tools, such as linking cubes, square tiles, etc.
Instructional Strategies	• Use problem situations to give students many opportunities to model ways numbers can be decomposed and composed. • Provide a variety of materials for students to use to display their understanding of decomposing and composing numbers. • Represent their concrete models with visual representations (drawings).
Prerequisite Skills	• Count to 10.
Connections Within and Beyond Grade Level	Within: • Students will compose and decompose numbers up to 10. Beyond: • In 1st grade, students will work with addition and subtraction equations to determine the unknown whole number in an addition and 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, and 6 + 6 = ?.
Instructional Examples/Lessons/Tasks	• Use physical models and later drawings to represent ways that 10 can be decomposed. • Match representations to expressions and equations provided by the teacher. • Snap It • How Many are Hiding?

Element	Exemplars
Assessment Examples	● Notice and watch for students who: ○ Are able to compose a number up to 10, from any number 1 to 9. Note which numbers students are able to compose a 10 from. ○ Are able to record the results of their compositions to 10 by using objects, a drawing, or an equation. *Drawings need not show details, but should show the mathematics in the problem. (This applies wherever drawings are mentioned in the Standards.)*

Operations & Algebraic Thinking

Cluster

Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.

NVACS K.OA.A.5 (Major Work)

Fluently add and subtract within 5.

Element	Exemplars
Standards for Mathematical Practice	● MP 1 Students will make sense of problems and persevere in solving them. ● MP 2 Students at the primary level often need to manipulate concrete objects to make meaning of numbers and find solutions. ● MP 3 Students should have the opportunities to explain and justify their thinking through discourse and listening. ● MP 4 Students begin to explore the operations of addition and subtraction by using a variety of concrete materials to model specific problem situations.
Instructional Strategies	*Note: Fluency, as defined by the NVACS, means skill in carrying out procedures flexibly, accurately, efficiently and appropriately. Thus, Students use reasoning strategies to add and subtract within 5. This does not mean memorization or immediate recall.* ● Provide opportunities for students to practice adding and subtracting. ● Give students opportunities to explain their thinking.
Prerequisite Skills	● Understand addition as putting together or adding to and understand subtraction as taking apart and taking from.
Connections Within and Beyond Grade Level	Within: ● Understand the concept of addition as putting together or adding to. ● Understand the concept of subtraction as taking apart and taking from. ● Students will compose or decompose numbers up to 10. Beyond: ● Add and subtract within 20, demonstrating fluency for addition and subtraction within 10 using various mental strategies such as counting on, making ten, decomposing a number leading to a ten, using the relationship between addition and subtraction, and creating equivalent but easier known sums.
Instructional Examples/Lessons/Tasks	● Recognize facts through sums to 5 written by the teacher as expressions or equations. Complete the expressions with a correct sum or difference either orally or in writing. ● My Book of Five ● Many Ways to Do Addition 1
Assessment Examples	● Notice and watch for students who: ○ Accurately answer addition and subtraction problems within 5. ○ Use strategies; including mental strategies when adding and subtracting within 5.

Number & Operations in Base Ten

Domain Overview

Students will compose and decompose numbers from 11–19 focusing on tens and ones. This is the foundation for place value skills.

Cluster

Work with numbers 11–19 to gain foundations for place value.

NVACS K.NBT.A.1 (Major Supporting Work)

Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (such as 18 = 10 + 8); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.

Element	Exemplars
Standards for Mathematical Practice	● MP 3 Students explain their reasoning and listen to the ideas of others. ● MP 4 Students will use concrete models and visual representations that are later connected to symbolic notation. ● MP 7 Students will explore the meaning of place value and mathematical structures.
Instructional Strategies	● Support building structure of 10 through using various tools such as 10 frames and number lines. ● Describe a 10 as containing ten ones. ● Have students record the use of objects and drawings to equations showing 10 plus some more ones. *Note: Avoid describing the 10 ones as "one ten" and instead call it a group of 10 ones. Focus on 10 ones and some more ones. For example, 14 is 10 ones and one, two, three, four more ones.*
Prerequisite Skills	● Understand that a 10 is made from 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 ones.
Connections Within and Beyond Grade Level	Within: ● Understand that a 10 is made of ones. ● Understand that numbers may be composed from other numbers. ● Understand that numbers may be decomposed from other numbers. Beyond: ● Compose a ten and name it as one "ten". ● Understand the numbers 11–19 are composed of a ten and 1, 2, 3, 4, 5, 6, 7, 8 or nine ones. ● Understand that 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).

Element	Exemplars
Instructional Examples/Lessons/Tasks	• Experience putting together and taking apart numbers from 11 to 19 with a variety of manipulatives. • Counting and Cardinality Lesson • What Makes a Teen Number? *Note: Since this concept is the foundation for future work developing place value in Grades 1 and 2, the concept should be developed over the entire year.*

Assessment Examples	• Notice and watch for students who:
	  ○ Are able to use objects or drawings to record each composition or decomposition.
	  ○ Are able to explain that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.
	  ○ Progress to recording each composition or decomposition from using objects and/or drawings to connect to the written equation.

Measurement & Data

Domain Overview

Kindergartners will learn to describe measurable attributes of objects, such as length, weight, and height.

Cluster

Describe and compare measurable attributes.

NVACS K.MD.A.1 (Additional Work)

Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.

Element	Exemplars
Standards for Mathematical Practice	● MP 2 Students use reasoning to compare objects and determine which object is longer. ● MP 3 Students will construct arguments to describe measurable attributes of an object. ● MP 6 Students will apply precision when aligning the endpoints of objects to compare their length. Students will use vocabulary terms such as taller, shorter, lighter, heavier and other similar descriptive terms.
Instructional Strategies	● Students need multiple and varied hands-on opportunities to explore measurement concepts throughout the school year. ● Provide opportunities for students to develop an understanding that the length of the object is defined by the number of units, iterated end to end, that make up the distance from one point to another. ● Allow students to measure a variety of things they find in the classroom with nonstandard measurement tools. ● Read pg. 330–334 from Van de Walle, J.A., Karp, K.S., Lovin, L.H., & Bay-Williams, J.M. (2018). Teaching Student Centered Mathematics: K–2 (Third Edition). New York, NY: Pearson.
Prerequisite Skills	● Counting ● Understand that we measure objects in daily life.
Connections Within and Beyond Grade Level	Within: ● Directly compare two objects with a measurable attribute in common to determine which object has “more of”/“less of” the attribute, and describe the difference. Beyond: ● Use their understanding of linear measure to order three objects by length. Compare the lengths of two objects indirectly using a third object. ● 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-sized length units that span it with no gaps or overlaps.

Element	Exemplars
Instructional Examples/Lessons/Tasks	● Which is Heavier? ● Activity 15.23 from Van de Walle, J.A., Karp, K.S., Lovin, L.H., & Bay-Williams, J.M. (2018). Teaching Student Centered Mathematics: K–2 (Third Edition). New York, NY: Pearson.
Assessment Examples	● Notice and watch for students who: ○ Are able to describe the different attributes of an object.

Measurement & Data

Cluster

Describe and compare measurable attributes.

NVACS K.MD.A.2 (Additional Work)

Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. *For example, directly compare the heights of two children and describe one child as taller/shorter.*

Element	Exemplars
Standards for Mathematical Practice	● MP 2 Students use reasoning to compare objects and determine which object is longer. ● MP 3 Students will describe measurable attributes and reason about how to compare its lengths. ● MP 6 Students will apply precision when aligning the endpoints of objects to compare their length. Students will use vocabulary terms such as taller, shorter, lighter, heavier and other similar descriptive terms.
Instructional Strategies	● Students need multiple and varied hands-on opportunities to explore measurement concepts throughout the school year. ● Provide opportunities for students to develop an understanding that the length of the object is defined by the number of units, iterated end to end, that make up the distance from one point to another. ● Allow students to measure a variety of things they find in the classroom with nonstandard measurement tools.
Prerequisite Skills	● Understand that objects have measurable attributes.
Connections Within and Beyond Grade Level	Within: ● Describe measurable attributes of objects. Beyond: ● Use their understanding of linear measure to order three objects by length. Compare the lengths of two objects indirectly using a third object. ● 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-sized length units that span it with no gaps or overlaps.
Instructional Examples/Lessons/Tasks	● Activity 15.24 & 15.25 from Van de Walle, J.A., Karp, K.S., Lovin, L.H., & Bay-Williams, J.M. (2018). Teaching Student Centered Mathematics: K–2 (Third Edition). New York, NY: Pearson. ● Size Shuffle ● Which Weighs More? Which Weighs Less? ● Longer or Shorter? ● Which is Longer? ● Which is Heavier? ● Lil-Sister

Element	Exemplars
Assessment Examples	● Notice and watch for students who: ○ Are able to identify the same measurable attribute for two objects so that they are able to compare. ○ Line objects up in a manner to show which is longer/shorter or have “more of”/“less of” the attribute being measured.

Measurement & Data

Cluster

Classify objects and count the number of objects in each category.

NVACS K.MD.B.3 (Supporting Work)

Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.[1]

Element	Exemplars
Standards for Mathematical Practice	● MP 2 Students will sort using a variety of criteria and sorting rules that promote logical reasoning. ● MP 6 Students will use appropriate vocabulary to describe their sorts.
Instructional Strategies	[1]*Note: Limit category counts to be less than or equal to 10.* ● Provide various experiences for students to classify and sort objects. ● Provide opportunities for the students to explain how the objects were sorted and labeled. ● After sorting and counting, have students compare the groups of objects using the appropriate vocabulary words (least, same, alike, and most).
Prerequisite Skills	● Sort objects by various attributes including size, color etc. ● Compare sets of objects to determine which set has more or less. ● Count a set of objects to 10.
Connections Within and Beyond Grade Level	Within: ● Count up to 20 objects. ● Compare sets of objects. ● Describe measureable attributes. Beyond: ● 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 another.
Instructional Examples/Lessons/Tasks	● Goodie Bag ● Sort and Count 1 ● Sort and Count II
Assessment Examples	● Notice and watch for students who: ○ Classify objects into given categories and can explain the classification. ○ Count the number of objects in each category. ○ Compare and sort the categories by count (greater than, less than, or equal too).

Geometry

Domain Overview

Kindergartens will identify, name, and describe two- and three-dimensional shapes.

Cluster

Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).

NVACS K.G.A.1 (Additional Work)

Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as *above*, *below*, *beside*, *in front of*, *behind*, and *next to*.

Element	Exemplars
Standards for Mathematical Practice	• MP 6 Students begin to learn to communicate with clear, precise language during discourse with others and in their own reasoning. • MP 7 Students begin to understand geometric structures as they experience discourse about attributes of shapes.
Instructional Strategies	*Note: It is important that teachers use instructional precision when working with geometric concepts. Keep the following in mind:* • Use a variety of non-prototypical shapes (for example use other types of triangles besides equilateral or right triangles). • Provide multiple and varied work and exposure to shapes in different orientations. • Be precise when describing 2- or 3-dimensional shapes and figures. For example, pattern blocks are not 2-dimensional shapes. The "footprint" or outline of the pattern block if we traced it would make a 2-dimensional shape. • Understand that 2-dimensional shapes are composed of their sides only. The middle area of a shape is not part of the shape. Consider using tools or components to build shapes that highlight this such as straws as the sides and pipe cleaners to connect the straws (vertices). • Use informal language (corners) bridged with precise academic language (vertices) when describing shapes during instruction; yet students do not need to use the academic language when they discuss or describe the shapes. • Use concrete objects to model relative positions comparing two objects. For example, use a stuffed bear and a box. Place the bear on the box. Place the bear next to the box, where else might I place the bear so he is next to the box? What if I place the bear here (behind the of the box)? Where is the bear? Let's say that together, "The bear is sitting behind the box." Some students might say he is next to the box which would also be correct.
Prerequisite Skills	• Counting (sides)

Element	Exemplars
Connections Within and Beyond Grade Level	Within: ● Correctly name shapes regardless of their orientations or overall size. ● Identify shapes as two-dimensional or three-dimensional. ● Analyze and compare two- and three-dimensional shapes and figures. ● Model shapes in the world by building shapes from components. ● Compose simple shapes to form larger shapes. Beyond: ● Distinguish between defining and non-defining shape attributes. ● Build and draw shapes to possess defining attributes. ● Compose two- or three-dimensional shapes and figures to create a composite shape, and compose new shapes from the composite shape. Partition circles and rectangles into two and four equal squares, describing the shares using words: half, fourth, quarters etc.
Instructional Examples/Lessons/Tasks	● Shape Hunt Part 1 ● Shape Hunt Part 2 ● Activity 16.4, 16.6 & 16.7 from Van de Walle, J.A., Karp, K.S., Lovin, L.H., & Bay-Williams, J.M. (2018). Teaching Student Centered Mathematics: K–2 (Third Edition). New York, NY: Pearson.
Assessment Examples	● Notice and watch for students who: ○ Are able to correctly identify a variety of shapes in the environment using correct terminology. ○ Use relative position words in their play and social interactions to describe object location. ○ Correctly name shapes and describe what makes the shapes. For example, if a student states that the clock is a circle then state “If we trace our finger around the outline of the clock the outline does make a circle”.

Geometry

Cluster

Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).

NVACS K.G.A.2 (Additional Work)

Correctly name shapes regardless of their orientations or overall size.

Element	Exemplars
Standards for Mathematical Practice	● MP 6 Students begin to learn to communicate with clear, precise language during discourse with others and in their own reasoning. ● MP 7 Students begin to understand geometric structure as they experience discourse about attributes of shapes.
Instructional Strategies	*Note: It is important that teachers use instructional precision when working with geometric concepts. Keep the following in mind:* ● Use a variety of non-prototypical shapes (for example use other types of triangles besides equilateral or right triangles). ● Provide multiple and varied work and exposure to shapes in different orientations. ● Be precise when describing 2- or 3-dimensional shapes and figures. For example, pattern blocks are not 2-dimensional shapes. The "footprint" or outline of the pattern block if we traced it would make a 2-D shape. ● Understand that 2-D shapes are composed of their sides only. The middle area of a shape is not part of the shape. Consider using tools or components to build shapes that highlight this such as straws as the sides and pipe cleaners to connect the straws (vertices). ● Use informal language (corners) bridged with precise academic language (vertices) when describing shapes during instruction; yet students do not need to use the academic language when they discuss or describe the shapes. ● Focus conversations on defining attributes of shapes. Why is this a hexagon? Does it matter if it is big or small? What if we turn it this way?
Prerequisite Skills	● Describe measureable attributes of objects.

Element	Exemplars
Connections Within and Beyond Grade Level	Within: ● Correctly name shapes regardless of their orientations or overall size. ● Identify shapes as two-dimensional or three-dimensional. ● Analyze and compare two- and three-dimensional shapes. ● Model shapes in the world by building shapes from components. ● Compose simple shapes to form larger shapes. Beyond: ● Distinguish between defining and non-defining shape attributes. ● Build and draw shapes to possess defining attributes. ● Compose two- or three-dimensional shapes and figures to create a composite shape, and compose new shapes from the composite shape. Partition circles and rectangles into two and four equal squares, describing the shares using words: half, fourth, quarters etc.
Instructional Examples/Lessons/Tasks	● Activity 16.4 & 16.5 from Van de Walle, J.A., Karp, K.S., Lovin, L.H., & Bay-Williams, J.M. (2018). Teaching Student Centered Mathematics: K–2 (Third Edition). New York, NY: Pearson.
Assessment Examples	● Notice and watch for students who: ○ Are able to correctly identify a variety of shapes using correct terminology. ○ Are only able to identify circles, triangles and squares. ○ Are only able to identify prototypical shapes (equilateral triangle); yet fail to identify triangles in different sizes, orientations or that are not equilateral. *Note: If a student states that a square is a rectangle. Ask students an assessing question to find out what they are thinking. If they state that all rectangles have 4 sides and 4 corners and thus the square is a rectangle then clarify and support that squares are a special case (or type) of rectangle.*

Geometry

Cluster

Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).

NVACS K.G.A.3 (Additional Work)

Identify shapes as two-dimensional (lying in a plane, "flat") or three-dimensional ("solid").

Element	Exemplars
Standards for Mathematical Practice	● MP 6 Students begin to learn to communicate with clear, precise language during discourse with others and in their own reasoning. ● MP 7 Students begin to understand geometric structure as they experience discourse about attributes of shapes.
Instructional Strategies	*Note: It is extremely important that teachers use instructional precision when working with geometric concepts. Keep the following in mind:* ● Use a variety of non-prototypical shapes (for example use other types of triangles besides equilateral or right triangles). ● Provide multiple and varied work and exposure to shapes in different orientations. ● Be precise when describing 2- or 3-dimensional shapes and figures. For example, pattern blocks are not 2-dimensional shapes. The “footprint” or outline of the pattern block if we traced it would make a 2-D shape. ● Understand that 2-D shapes are composed of their sides only. The middle area of a shape is not part of the shape. Consider using tools or components to build shapes that highlight this such as straws as the sides and pipe cleaners to connect the straws (vertices). ● Use informal language (corners) bridged with precise academic language (vertices) when describing shapes during instruction; yet students do not need to use the academic language when they discuss or describe the shapes.
Prerequisite Skills	● Describe measureable attributes of objects.

Element	Exemplars
Connections Within and Beyond Grade Level	Within: ● Correctly name shapes regardless of their orientations or overall size. ● Identify shapes and figures as two-dimensional or three-dimensional. ● Analyze and compare two- and three-dimensional shapes and figures. ● Model shapes in the world by building shapes from components. ● Compose simple shapes to form larger shapes. Beyond: ● Distinguish between defining and non-defining shape attributes. ● Build and draw shapes to possess defining attributes. ● Compose two- or three-dimensional shapes and figures to create a composite shape, and compose new shapes from the composite shape. Partition circles and rectangles into two and four equal squares, describing the shares using words: half, fourth, quarters etc.
Instructional Examples/Lessons/Tasks	● Shape Hunter Part 1 ● Shape Hunter Part 2
Assessment Examples	● Notice and watch for students who: ○ Are able to correctly identify 2-D shapes and describe what makes the shape 2-D. ○ Are able to correctly identify 3-D figures and discuss what makes the figure 3-D. ○ Are able to communicate the difference between 2-D shapes and 3-D figures.

Geometry

Cluster

Analyze, compare, create, and compose shapes.

NVACS K.G.B.4 (Supporting Work)

Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/"corners") and other attributes (e.g., having sides of equal length).

Element	Exemplars
Standards for Mathematical Practice	● MP 4 Students will create their own representations with concrete materials and pictures. Spatial reasoning will be applied to model objects in their environment and to construct more complex shapes. ● MP 6 Students will use academic vocabulary such as vertices/corners to analyze and describe shapes and figures. ● MP 7 Students will use examples and non-examples of geometric shapes.
Instructional Strategies	*Note: It is important that teachers use instructional precision when working with geometric concepts. Keep the following in mind:* ● Use a variety of non-prototypical shapes (for example, use other types of triangles besides equilateral or right triangles). ● Provide multiple and varied work and exposure to shapes in different orientations. ● Be precise when describing 2- or 3-dimensional shapes or figures. For example, pattern blocks are not 2-dimensional shapes. The "footprint" or outline of the pattern block if we traced it would make a 2-D shape. ● Understand that 2-D shapes are composed of their sides only. The middle area of a shape is not part of the shape. Consider using tools or components to build shapes that highlight this such as straws as the sides and pipe cleaners to connect the straws (vertices). ● Use informal language (corners) bridged with precise academic language (vertices) when describing shapes during instruction; yet students do not need to use the academic language when they discuss or describe the shapes.
Prerequisite Skills	● Identify 2-D shapes and 3-D figures. ● Counting (sides) ● Describe measureable attributes of objects.

Element	Exemplars
Connections Within and Beyond Grade Level	Within: ● Correctly name shapes regardless of their orientations or overall size. ● Identify shapes and figures as two-dimensional or three-dimensional. ● Analyze and compare two- and three-dimensional shapes and figures. ● Model shapes in the world by building shapes from components. ● Compose simple shapes to form larger shapes. Beyond: ● Distinguish between defining and non-defining shape attributes. ● Build and draw shapes to possess defining attributes. ● Compose two- or three-dimensional shapes and figures to create a composite shape, and compose new shapes from the composite shape. Partition circles and rectangles into two and four equal squares describing the shares using words half, fourth, quarters etc.
Instructional Examples/Lessons/Tasks	● Alike or Different Game ● Activity 16.4, 16.5, 16.6, and 16.7 from Van de Walle, J.A., Karp, K.S., Lovin, L.H., & Bay-Williams, J.M. (2018). Teaching Student Centered Mathematics: K–2 (Third Edition). New York, NY: Pearson. ● Use various manipulatives, such as geoboards, for students to create triangles, squares, and rectangles to use for descriptions and comparisons of attributes. ● Take students on scavenger hunts to discuss and find properties of two-dimensional shapes and three-dimensional figures.
Assessment Examples	● Notice and watch for students who: ○ Are able to correctly identify 2-D shapes and describe what makes the shape 2-D. ○ Are able to correctly identify 3-D figures and discuss what makes the figure 3-D. ○ Are able to communicate the difference between 2-D shapes and 3-D figures. ○ Are able to describe similarities, differences, parts, and attributes.

Geometry

Cluster

Analyze, compare, create, and compose shapes.

NVACS K.G.B.5 (Supporting Work)

Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.

Element	Exemplars
Standards for Mathematical Practice	● MP 4 Students will create their own representations with concrete materials and pictures. Spatial reasoning will be applied to model objects in their environment and to construct more complex shapes. ● MP 6 Students will use academic vocabulary such as vertices/corners to analyze and describe shapes and figures. ● MP 7 Students will use examples and non-examples of geometric shapes.
Instructional Strategies	*Note: It is important that teachers use instructional precision when working with geometric concepts. Keep the following in mind:* ● Use a variety of non-prototypical shapes (for example use other types of triangles besides equilateral or right triangles). ● Provide multiple and varied work and exposure to shapes in different orientations. ● Be precise when describing 2- or 3-dimensional shapes and figures. For example, pattern blocks are not 2-dimensional shapes. The "footprint" or outline of the pattern block if we traced it would make a 2-D shape. ● Understand that 2-D shapes are composed of their sides only. The middle area of a shape is not part of the shape. Consider using tools or components to build shapes that highlight this such as straws as the sides and pipe cleaners to connect the straws (vertices). ● Use informal language (corners) bridged with precise academic language (vertices) when describing shapes during instruction; yet students do not need to use the academic language when they discuss or describe the shapes.
Prerequisite Skills	● Identify 2-D and 3-D shapes and figures. ● Counting (sides) ● Describe measureable attributes of objects.

Element	Exemplars
Connections Within and Beyond Grade Level	Within: ● Correctly name shapes regardless of their orientations or overall size. ● Identify shapes as two-dimensional or three-dimensional. ● Analyze and compare two- and three-dimensional shapes and figures. ● Model shapes in the world by building shapes from components. ● Compose simple shapes to form larger shapes. Beyond: ● Distinguish between defining and non-defining shape attributes. ● Build and draw shapes to possess defining attributes. ● Compose two- or three-dimensional shapes and figures to create a composite shape, and compose new shapes from the composite shape. Partition circles and rectangles into two and four equal squares, describing the shares using words: half, fourth, quarters etc.
Instructional Examples/Lessons/Tasks	● Activity 16.8 from Van de Walle, J.A., Karp, K.S., Lovin, L.H., & Bay-Williams, J.M. (2018). Teaching Student Centered Mathematics: K–2 (Third Edition). New York, NY: Pearson. ● Plan activities for students to draw two-dimensional squares, rectangles, and triangles with various mediums, such as shaving cream, sand and pencil/paper. ● Have students bring a shape from home and have the class classify the shape and explain why it is two-dimensional or three-dimensional. ● Build three-dimensional figures with various materials, such as clay, straws, gum drops, toothpicks, etc. and name their shape.
Assessment Examples	● Notice and watch for students who: ○ Are able to collect and choose components to create a shape. ○ Combine the components to build a shape. ○ Are able to correctly name and tell about the shape that they build. ○ Watch for students who attempt to draw shapes and can explain where the attributes are in their drawing. *Developmentally, drawing precise shapes without tools is very difficult for young children. Expect there to be a lack of precision; yet make sure that if they say they drew a triangle that they can show you where their sides are and describe drawing only three sides.*

Geometry

Cluster

Analyze, compare, create, and compose shapes.

NVACS K.G.B.6 (Supporting Work)

Compose simple shapes to form larger shapes. *For example, "Can you join these two triangles with full sides touching to make a rectangle*?"

Element	Exemplars
Standards for Mathematical Practice	• MP 4 Students will create their own representations with concrete materials and pictures. Spatial reasoning will be applied to model objects in their environment and to construct more complex shapes. • MP 6 Students will use academic vocabulary such as vertices/corners to analyze and describe shapes and figures. • MP 7 Students will use examples and non-examples of geometric shapes.
Instructional Strategies	*Note: It is important that teachers use instructional precision when working with geometric concepts. Keep the following in mind:* • Use a variety of non-prototypical shapes (for example use other types of triangles besides equilateral or right triangles). • Provide multiple and varied work and exposure to shapes in different orientations. • Be precise when describing 2- or 3-dimensional shapes and figures. For example, pattern blocks are not 2-dimensional shapes. The "footprint" or outline of the pattern block if we traced it would make a 2-D shape. • Understand that 2-D shapes are composed of their sides only. The middle area of a shape is not part of the shape. Consider using tools or components to build shapes that highlight this such as straws as the sides and pipe cleaners to connect the straws (vertices). • Use informal language (corners) bridged with precise academic language (vertices) when describing shapes during instruction; yet students do not need to use the academic language when they discuss or describe the shapes.
Prerequisite Skills	• Identify 2-D and 3-D shapes and figures. • Counting (sides) • Describe measureable attributes of objects.

Element	Exemplars
Connections Within and Beyond Grade Level	Within: ● Correctly name shapes regardless of their orientations or overall size. ● Identify shapes and figures as two-dimensional or three-dimensional. ● Analyze and compare two- and three-dimensional shapes and figures. ● Model shapes in the world by building shapes from components. ● Compose simple shapes to form larger shapes. Beyond: ● Distinguish between defining and non-defining shape attributes. ● Build and draw shapes to possess defining attributes. ● Compose two- or three-dimensional shapes and figures to create a composite shape, and compose new shapes from the composite shape. Partition circles and rectangles into two and four equal squares, describing the shares using words: half, fourth, quarters etc.
Instructional Examples/Lessons/Tasks	● Activity 16.11 & 16. 12 from Van de Walle, J.A., Karp, K.S., Lovin, L.H., & Bay-Williams, J.M. (2018). Teaching Student Centered Mathematics: K–2 (Third Edition). New York, NY: Pearson. ● Provide experiences with tangrams or pattern blocks for students to join shapes and create new shapes. ● Use puzzle outlines for students to explore covering the shape with tangrams or pattern blocks.
Assessment Examples	● Notice and watch for students who: ○ Are able to compose a larger shape from simple shapes and can tell what the new shape is and what shapes they used to compose it. ○ Are able to put two shapes together to make a new shape; yet are unable to tell what the new shape is that they composed. ○ Are able to put two shapes together such as a square and triangle and describe the new shape as a “house” versus students who put two triangles together and describe the new shape as a “rectangle” noting the different level of geometric reasoning that these two students are at (Van Hiele levels of geometric thought).

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