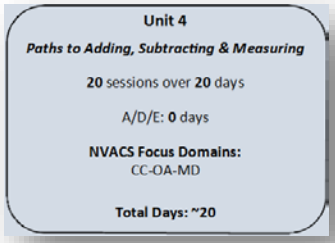
Kindergarten Unit 4: Paths to Adding, Subtracting & Measuring

Big Conceptual Idea: K-5 Progression on Counting and Cardinality and Operations and Algebraic Thinking (pp. 1-11), K-5 Progression on Measurement and Data (Measurement Part) (pp. 1-4, 6-7), K-5 Progression on Measurement and Data (Data Part) (pp. 1-5)

Read the Bridges Unit Overview/Introduction for Unit 4 pp. i-vi. Read each Module Overview for the current week's sessions, and the current Session Summary along with details for the teaching of each session as you work through Unit 3. These Introduction/Overview/Summary sections provide focus, clarity, vocabulary, definitions, and examples for the "big mathematical ideas and understandings" critical to Kindergarten. This information will support your professional decision-making within the Sessions and Modules as needed.



Kindergarten Curriculum Pacing Framework: Balanced Calendar

Mathematical Background: Read Bridges Unit 4 Overview and Introduction (p. i-vi)	Unit Essential Question for the Teacher: How will I use the number line, measurement with non-standard measures, and money (pennies and nickels) to help my students understand the relationships between number, quantities, lengths, and coins to build their flexibility with number understandings and tools?

Instructional note:
Unit 4 gives students opportunity to see and make use of some of the distinct relationships among quantities, lengths, numbers, and coins. Money is used in this Unit to build security and flexibility within 5 using coins (pennies and nickels) as 1s and 5s to supports the use of 5 as a landmark and a sub-base (e.g. 5 and some more, or 10 is made of two 5s). The number line is used initially to model and visually support understanding of the number sequence from 0-10, magnitude, and relationships between numbers (which number is greater than or less than) along a continuum. It also introduces interval counting instead of the discrete counting of objects. The number line also supports understanding of addition and subtraction providing opportunity for connecting number words with written numerals. Use of the inequality symbols such as > and < is an extension within the Bridges instructional materials and is not expected within this grade. Understanding the comparison of quantities and the location of a number on the number line connected to greater than and less than are really the focus within Kindergarten.

Measurement adds an expanded opportunity for students to recognize the distinctions between discrete counting and interval counting, and between discrete attributes in cardinality (counting 4 apples exactly) compared to continuous attributes involved in measurement (unit measures subdivided into smaller and smaller parts). Kindergarten focuses on the measurement of length as a basic geometric measures (volume and area are other measures with geometric attributes but are not introduced in kindergarten). Like with shapes, over time students learn to conserve the concept of length despite orientation. The K-5, Progression on Measurement and Data (Measurement Part - K-5, Geometric Measurement) states, "Geometric measurement connects the two most critical domains of early mathematics, geometry and number, with each providing conceptual support to the other" (p. 2). Students move from recognizing and distinguishing attributes (labeling "big" or "bigger"), to becoming increasingly competent at comparing attributes without measurement ("taller than"), to measuring and indirectly comparing attributes of objects using numbers.

Other measures, such as weight, capacity, or mass (which have nongeometric attributes) are also briefly introduced in kindergarten, but this is only for exposure. The K-5 Progression on Measurement and Data also confirms the reciprocity between the understanding of measurement and estimation, and the crucial understanding of the concept of "unit" as a foundation for higher mathematics. Tools that measure continuous attributes, only gives approximate measurement. There is always room for a degree of error in these measurements. This extends understanding of equality in quantities also to equality in comparisons of various measurable attributes, like length.

Unit 4 also provides opportunity for graphing and probability in Module 4.

The mathematics content of Unit 4:
Children construct understandings in connected and integrated ways, not as isolated, individual pieces. Therefore, continually ask students to explain how they are problem solving ("How did you know?", "What made you think that?", etc.) so you can make explicit the connections students are already making from previous learning, strengthen the synaptic connections being constructed, and encourage the continuance of this sense-making behavior (NVACS, 2010, p. 6).

- Support and instruct the development of the new big mathematical ideas of:
  - Units: Refers to the unit being measured.
  - Measurement (with non-standard units): Units that vary in length (hands, feet).
  - Number writing (Writing numerals using symbols, E.g. 1,2,3).
  - Addition (+) – Add to or joining, comparing, parts and parts.
  - Subtraction (-) – Take from or separate, part of a whole, comparison.

    - Continuous attributes – geometric and non-geometric attributes (length, volume, area vs. capacity, temperature, weight…)
- Watch for students' attempts at thinking about and using these new strategic behaviors/strategies to demonstrate their emerging understandings of the big mathematical ideas:
    - Comparing
    - Estimating
    - Predicting
    - Graphing
    - Money - pennies, nickels, used as models for 1s and 5s

Over time, with supportive and scaffolded instruction and interactions, students employ more efficient and effective use of strategies leading to and confirming deeper and more expanded understandings. Intentionality with the context and range of numbers students work with in mathematics supports this number sense development.

On-going enrichment:

- Continue noting the Skills Across the Grade Level chart in the Introduction section (Unit 4 p. iv). K.CC.1, K.CC.2, K.CC.4a & b, K.CC.5, K.MD.1, and K.MD.2 are standard expectations benchmarked to be secure by the end of this Unit. This includes counting to 20, counting forward from a number other than 1, and flexibly counting, tagging, and holding quantity (cardinality) for numbers up to 20. Also secure by the end of the Unit are K.MD.1 and K.MD.2 dealing with measuring and comparing lengths. Writing numerals, comparing written numerals, K.OA standards, and classifying objects are expectations still being introduced or developed throughout this Unit. (See p. iv) This is important information for those day-to-day professional instructional decisions you have to make within each Session as to what discussions or activities to extend or cut short or emphasize or skip or, etc.
- Expect all students to engage in the mathematics.

Essential Academic Vocabulary Use these words consistently during instruction.	
Essential Academic Vocabulary: (first time explicitly taught) *indicates Word Resource Cards are available in the materials	Review Academic Vocabulary: (Vocabulary explicitly taught in previous Units, or Number Corner)
length* after*/before* count on* count back* sum or total* ones* tens* long/longer/lonest* short/shorter/shortest* the same cent* nickel* penny*	*half** *less than** *greater than** *add** *addition* *equation** *between** *subtract** *subtraction* *equal** *longer than/shorter than* *compare** *less*/more**

Additional terminology that students may need support with: *backward/forward,* measure, middle, *left/right*, *order*, *strategies*, minus*, plus, next to*, *graph*, *in all*.

Standards listed in **bold** indicate a focus of the lesson.

NVACS (Content and Practices)	Mathematical Development of the Big Idea	Instructional Clarifications & Considerations
Module 1- Session 1: Building a Number Line		
K.CC.1 K.CC.2 K.MD.1 MP.1 MP.2 MP.7	Access Prior Learning and Connections to Future Learning: • Counting forward and backward from a given number is revisited in Unit 5. • Compare two numbers from 1 to 10 presented as written numerals reappears in Units 5 & 6. • In future grades students will draw on the number line to explore whole numbers, fractions, and decimals. Beginning with the Big Idea and key Strategic Behaviors: • Predicting Developing: • understanding hierarchical inclusion • using 1-to-1 correspondence • counting forwards and backwards • recognizing 0-9 sequence	Guiding Questions: • How can I use a number line to compare numbers? • What do you notice about the size of the number and its location on the number line? Instructional Notes: • Visual models are a created number line, student steps, and numerals. • Interval counting is reinforced in this Session, in which students count the number of equal size intervals between two points. • Note the sidebar note on p. 5 to support K.MP.7. Number Corner Connections: • Counting forward and backward from any number in the range of 10 to 1 is expected to be secure. It continues in all months on *Number Corner*. • Compare two numbers from 1 to 10 presented as written numerals is a developing concept. It reappears in Jan., Mar., Apr., and May.
Module 1- Session 2: X-Ray Vision		
K.CC.1 K.CC.2 K.CC.4 MP.1 MP.2 MP.7	Access Prior Learning and Connections to Future Learning: • Number order from 0 to 10 was previously covered in Unit 3. • Read numbers from 0 to 20 was covered in Units 1-3. • Consider providing additional support through materials in Bridges Intervention Set 1 Volume 1 (online). Beginning with the Big Idea and key Strategic Behaviors: • using number relationships of *before* and *after* • interval counting Developing: • using hierarchical inclusion • 1-to-1 correspondence	Guiding Questions: • Where does the number 5 go on our number line? How do you know? What words can we use to explain where on the number line a number goes? (before, after)? • If all of the numbers on the number line are mixed up, how can they be put back in the correct order? Instructional Notes: • Visual models are a created number line, the numerals to ten display cards, and a drawn number line on the board. • Students are also problem solving *before* and *after.* • Consider focusing on student math strategies (using landmark numbers, number sequence, using 1 more/1 less, counting, interval counting, etc.) to determine hidden numbers on the number line, substituting the idea of X-ray vision. Number Corner Connections: • Order numerals from 0 to 10 is expected to be secure. This was explored in Dec. • Read numbers from 0 to 20 is expected to be secure. This is included in all months. Writing and Enrichment: • *Home Connection* p. 12 and *Home Connection* tab pp. 77-80.
Module 1- Session 3: Introducing Work Place 4A Scrambled Numbers One to Ten		
K.CC.1 K.CC.2 K.CC.3 K.CC.4 K.CC.5 MP.1 MP.2 MP.7	Access Prior Learning and Connections to Future Learning: Beginning with the Big Idea and key Strategic Behaviors: • Understanding hierarchical inclusion • Using 1-to-1 correspondence • counting forwards and backwards	Guiding Questions: • If all of the numbers on the number line are scrambled, how can the class put them in the correct order? What words can we use to describe the relationships among numbers? (before, after) Instructional Notes: • Visual models are the deck of number cards 0-10, and number line. • Digital display tool link (see p. 2) found on the Bridges web site. • Encourage students to use resources in the *Number Corner*, including the number line for this task. *-continues on next page-*

	• recognizing 1-9 sequence	• Rather than sitting in a circle, consider having all students sitting on one side of the number cards so all students see the numbers and number sequence in the correct orientation. • During partner work, consider having students sit side by side so both students see the numbers and number sequence in the correct orientation. Number Corner Connection: • Order numerals from 0 to 10 is expected to be secure at this time. This is explored in Dec. • Read numbers from 0 to 20 is expected to be secure. This is explored in all months. Writing and Enrichment: • See *Teacher Masters* (p. T1) of the *Work Place Guides for Differentiation* ideas. • See *Work Place Instructions* (p. T2) for game variations. • Optional *Work Place Log* (p. T3).
Module 1- Session 4: Read My Mind, Part 1		
K.CC.3 K.CC.4 K.CC.5 K.CC.7 MP.1 MP.2 MP.7	Access Prior Learning and Connections to Future Learning: • Compare two numbers from 1 to 10 presented as written numerals reappears in Units 5 & 6. Beginning with the Big Idea and key Strategic Behaviors: • understanding hierarchical inclusion • recognizing magnitude • recognizing 1-9 sequence • writing numbers	Guiding Questions: • How can words be used to compare numbers? • How do the terms greater than or less than help you determine the number in my mind? Instructional Notes: • Visual models are a deck of number cards 0-10 (used for the CHECKPOINT and as a student scaffold if needed). Literature Connections: • *More or Less* by Stuart J Murphy Number Corner Connections: • Compare two numbers from 1 to 10 presented as written numerals is a developing concept. It reappears in Jan., Mar., Apr., and May. Child Watching and Assessment: • Numeral Order CHECKPOINT – done individually (see p. 19 and T4). Also see reteaching suggestion in the Assessment Binder, Bridges Unit Assessments tab p. 39.
Module 1- Session 5: Read My Mind, Part 2		
K.CC.3 K.CC.4 K.CC.5 K.CC.7 MP.1 MP.2 MP.	Access Prior Learning and Connections to Future Learning: • Compare two numbers from 1 to 10 presented as written numerals reappears in Units 5 & 6. • Compare numbers from 0-20 and compare two digit numbers are both covered in grade 1. Beginning with the Big Idea and key Strategic Behaviors: • understanding hierarchical inclusion • recognizing magnitude • identifying 1-9 sequence • number writing	Guiding Questions: • How can words be used to compare numbers? • How do the terms greater than or less than help you determine the number in my mind? Instructional Notes: • Visual model is the deck of number cards 0-20 (if appropriate). • Scrambled Numbers One to Ten has a variety of differentiation options in Unit 4 Binder p. T1. Once students have mastered ordering and saying the number sequence from 1-10, consider introducing a die to provide opportunities to count starting from a number other than 0 or 1. Literature Connections: • *Hopping on the Number Line* by Nancy Allen Number Corner Connections: • Compare two numbers from 1 to 10 presented as written numerals is a developing concept. It reappears in Jan, Mar, Apr, and May. Compare two digit numbers is an introductory concept and covered in grade 1. Writing and Enrichment: • Note the CHALLENGE idea (p. 22) provided in *Problems & Investigations*. • *Home Connection* p. 23 and *Home Connection* tab pp. 81-82.
Module 2- Session 1: Foxes & Dens		
K.CC.2 K.CC.4 K.CC.5 K.OA.1 K.OA.2 MP.1 MP.6	Access Prior Learning and Connections to Future Learning: • Represent addition with objects, fingers, verbal explanations, expressions and equations is revisited in Units 2, 4, 6, 7, and 8. • Keep in mind that being able to count forward, beginning from a given number is a prerequisite	Guiding Questions: • How can I find the total when I put two quantities together? What is a strategy? What strategy can I use to find the total? *-continues on next page-*

MP.7	for counting on. Understanding that each successive number name refers to a quantity that is one greater is the conceptual beginning for Grade 1 counting on. • Through Bicycle Races Workplace, some students may have foundations for counting on (e.g. roll 3, put 3 in my head and 4, 5, 6. The total is 6.) Beginning with the Big Idea and key Strategic Behaviors: • recognizing equivalence • counting on Developing: • using 1-to-1 correspondence • understanding cardinality • composing/decomposing	Instructional Notes: • Visual models are dot die, numeral die, dominoes game board, and fingers. • The counting on strategy is emphasized in this game. However, counting on as a strategy is not a kindergarten standard. It is a grade 1 standard: 1.OA.C.6. Counting on is considered an advanced method (Level 2) because students apply an abstract principle: the understanding that a counting word represents a group of objects that are added and addends become embedded within the total (OA Progressions, p. 5). • Consider using two dot dice verses one dot die and one numeral die if needed to support student development. • "Note on vocabulary: The term "total" is used here instead of the term "sum." "Sum" sounds the same as "some," but has the opposite meaning. "Some" is used to describe problem situations with one or both addends unknown, so it is better in the earlier grades to use "total" rather than "sum."" (OA Progressions, p. 8). • Digital display tool link on the Bridges web site. Literature Connections: • *Animals in Winter* by Henrietta Bancroft & Richard G Van Gelder - builds background knowledge of foxes and dens. • *City Foxes* by Wendy Shattil - builds background knowledge of foxes and dens in an urban context. Number Corner Connections: • Dec. – May *Number Corner* months revisit representing addition in various ways. Writing and Enrichment: • See Bridges Educator Site, Resources tab, Unit 4 M2 for additional resources for this Module.
Module 2- Session 2: Introducing Work Place 4B Foxes & Dens		
K.CC.2 K.CC.4 K.CC.5 K.OA.1 K.OA.2 MP.1 MP.6 MP.7	Access Prior Learning and Connections to Future Learning: Beginning with the Big Idea and key Strategic Behaviors: • recognizing equivalence • counting on Developing: • using 1-to-1 correspondence • understanding cardinality • composing/decomposing	Guiding Questions: • How can I find the total when I put two quantities together? • What is a strategy? What strategy can I use to find the total? Instructional Notes: • Visual models are the five-frame, cubes, and fingers. • The counting on strategy is emphasized in this game. However, counting on as a strategy is not a kindergarten standard. It is a grade 1 standard: 1.OA.C.6. Counting on is considered an advanced method (Level 2) because students apply an abstract principle: the understanding that a counting word represents a group of objects that are added and addends become embedded within the total (OA Progressions, p. 5). • Consider using two dot dice verses one dot die and one numeral die if needed to support student development. Literature Connections: • *Animals in Winter* by Henrietta Bancroft & Richard G Van Gelder - builds background knowledge of foxes and dens. • *City Foxes* by Wendy Shattil - builds background knowledge of foxes and dens in an urban context. Writing and Enrichment: • See *Teacher Masters* (M2 S2 p. T11) of the *Work Place Guides for Differentiation* ideas. • See *Work Place* Instructions (p. T2) for game variations. • *Home Connections* p. 8 and *Home Connection* tab pp. 83-84.
Module 2- Session 3: The Forest Game		
K.CC.2 K.CC.4 K.CC.5 K.OA.1 K.OA.2 MP.1 MP.6 MP.7	Access Prior Learning and Connections to Future Learning: • Represent addition and subtraction with objects, fingers, verbal explanations, expressions and equations is revisited in Units 7 and 8. Beginning with the Big Idea and key Strategic Behaviors: • recognizing equivalence Developing: • composing/decomposing	Guiding Questions: • How can I represent addition and subtraction problems? • How can I find what is left over when I take one quantity away from another? • How can I find the total when I put two quantities together? • What happens to the amount every time I add one? (The result is the next number in the counting sequence) • What happens to the amount every time I subtract one? (The result is the previous number in the counting sequence). *-continues on next page-*

		Instructional Notes: • There are limited visual models. Some students may need additional manipulatives. • The Forest Game has a very weak connection to solving addition and subtraction story problems (K.OA.2). Besides the game using a forest/squirrel premise, students focus more on the + or – symbols and numerals when playing the game. There isn't a "story" being told or problem context with action. • This will become a *Home Connection* in Session 5. Consider adding this game as an additional work place before it is sent home. • Digital Display tool link on the Bridges web site. Literature Connections: • *Scaredy Squirrel* by Melanie Watts (Use this literature link to build an engaging context. Book summary: From his home in the nut tree, Scaredy Squirrel is equipped for any sort of disaster or emergency, and rather than adventuring outside of his tree to experience the world, Scaredy Squirrel stays home to watch for danger day after day. The squirrels in The Forest Game hop in and out of the forest to get nuts and seeds. Number Corner Connections: • Represent addition and subtraction with objects, fingers, verbal explanations, expressions and equations is a developing concept. Dec. – May *Number Corner* months revisit representing addition subtraction in various ways. Writing and Enrichment: • Students can write an addition or subtraction number story based on the forest context. Example: In the morning 8 squirrels were in the forest. In the afternoon, 2 more squirrels came to the forest. How many squirrels are in the forest now? • Provide students with opportunities to act out the Forest context with other students during Dramatic Play. Squirrel cut outs on sticks or felt squirrels on flannel board work well. Have students act out and retell the different number combinations in the game. • Scoring and Reteaching suggestions aligned with the Checkpoint assessment can be found in the Assessment binder, Bridges Unit Assessment tab, pp.41-42. Child Watching and Assessment: • Foxes & Dens CHECKPOINT – observe students at a time playing the game (see p. 12 and T4). Also see scoring and reteaching suggestion in the Assessment Binder, Bridges Unit Assessments tab pp. 41-42.
Module 2- Session 4: Beat You to Twenty		
K.CC.2 K.CC.4 K.CC.5 K.OA.1 K.OA.2 MP.1 MP.6 MP.7	Access Prior Learning and Connections to Future Learning: • Count up 20 objects arranged in line, rectangular array or circle to answer how many is addressed again in Units 6 & 7. • Decompose numbers less than or equal to 10 into pairs in more than one way is addressed in all units. Beginning with the Big Idea and key Strategic Behaviors: • counting on Developing: • using the five-structure • using the ten-structure • understanding hierarchical inclusion to 20 Secure: • understanding 1-to-1 correspondence • counting forwards	Guiding Questions: • How can benchmark numbers help me when adding? • Why is grouping the cubes into towers of 10 helpful? Find out who is ahead, by how much, what number to hope to roll. Instructional Notes: • Visual models are cubes and written numerals. • The counting on strategy is emphasized in this game through teacher notes. However, counting on as a strategy is not a kindergarten standard. It is a grade 1 standard: 1.OA.6. Counting on is considered an advanced method (Level 2) because students apply an abstract principle: the understanding that a counting word represents a group of objects that are added, and the addends become embedded within the total (OA Progressions, p. 5). Number Corner Connections: • Expected to be secure - count up 20 objects arranged in line, rectangular array or circle to answer how many. Addressed in Feb., Mar. and April. • Developing - decompose numbers less than or equal to 10 into pairs in more than one way is a developing concept. Months Oct.-May cover this concept.

Module 2- Session 5: Introducing Work Place 4C Beat You to Twenty		
K.CC.2 K.CC.4 K.CC.5 K.OA.1 K.OA.2 MP.1 MP.6 MP.7	Access Prior Learning and Connections to Future Learning: Beginning with the Big Idea and key Strategic Behaviors: • counting on Developing: • using the five-structure • using the ten-structure • understanding hierarchical inclusion to 20 Secure: • using 1-to-1 correspondence • counting forward	Guiding Questions: • How can benchmark numbers help me when adding? • Why is grouping the cubes into towers of 10 helpful? Find out who is ahead, by how much, what number to hope to roll. Instructional Notes: • Visual models are cubes and the game board with written numerals. • Digital display tool link on the Bridges web site. Number Corner Connections: • Counting backwards from any number in the range of 10 to 1 is an introductory skill. It continues in all months on Number Corner. • Dec. – May *Number Corner* months revisit representing subtraction in various ways. Child Watching and Assessment: • See *Teacher Masters* (M2 S5 p. T5) of the *Work Place Guides for Differentiation* ideas. • See *Work Place Instructions* (T6) for game variations. • *Home Connection* p. 19 and *Home Connection* tab pp. 85-89.
Module 3- Session 1: Longer, Shorter, or the Same?		
K.CC.1 K.CC.2 K.CC.6 K.MD.1 K.MD.2 MP.1 MP.6	Access Prior Learning and Connections to Future Learning: • Describe measureable attributes of objects, such as length or weight and describe several measurable attributes of a single object are covered in Unit 8 also. • Directly compare two objects with a measureable attribute in common, to see which object has “more of”/”less of” the attribute, and describe the difference are also covered in Unit 8. • Compare two numbers from 1 to 10 presented as written numerals reappears in Units 5 & 6. Beginning with the Big Idea and key Strategic Behaviors: • writing > and < equations Developing: • measuring length with non-standard measures • comparing • recognizing magnitude	Guiding Questions: • How do we know whether one object is longer or shorter than another? • Why do we need to use identical measurement units to get accurate results? • Why does one unit of measure give a different result than another? • What attributes of an object can be measured? • What does it mean to measure something? Does how I measure matter? • How can I compare 2 or 3 objects by their size? • How do you know which is longer? Shorter? Same? Instructional Notes: • Visual models are ribbons, cubes, and < > symbols. • Students problem solve *longer, shorter*, and *the same.* • Note time and materials needed for preparation for this Session. Number Corner Connections: • Expected to be secure - Describe measureable attributes of objects, such as length or weight. Describe several measureable attributes of a single object. Topic is explored in Nov. • Directly compare two objects with a measureable attribute in common, to see which object has “more of”/”less of” the attribute, and describe the difference. This topic is addressed in Nov. Writing and Enrichment: • Investigation: Measure the height of 3 classmates using a non-standard unit (e.g. dominoes, playing cards, paper clips, etc.). Have each person lie down and measure the from head to toe. Show what you used as your measuring unit and how many you used to measure each person. Draw a picture of your group from shortest to tallest. Use math vocabulary to write about what you learned (shortest, tallest, taller than, shorter than).
Module 3- Session 2: How Long?		
K.CC.1 K.CC.2 K.CC.6 K.MD.1 K.MD.2 MP.1 MP.6	Access Prior Learning and Connections to Future Learning: • Describe measurable attributes of objects, such as length or weight, describe several measurable attributes of a single object are covered in Unit 8. • Directly compare two objects with a measureable attribute in common, to see which object has “more of”/”less of” the attribute, and describe the difference are also covered in Unit 8.	Guiding Questions: • What attributes of an object can be measured? • What does it mean to measure something? Does how I measure matter? • How can I compare 2 or 3 objects by their size? • How do you know which is longer? Shorter? Same? Instructional Notes: • Visual models are an object, cut strings, and cubes. • Students problem solve *longer than*, *shorter than*, and *the same as.* *-continues on next page-*

	Beginning with the Big Idea and key Strategic Behaviors: • measuring length with non-standard measures • comparing length • recognizing magnitude	Number Corner Connections: • Expected to be secure - Describe measureable attributes of objects, such as length or weight. Describe several measureable attributes of a single object. This topic is explored in Nov. • Directly compare two objects with a measureable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. This is explored in Nov. • Developing - Compare two numbers from 1 to 10 presented as written numerals. It reappears in Jan., Mar., Apr., and May. Writing and Enrichment: • How tall is your toy investigation: Measure your favorite stuffed toy, teddy bear or doll using non-standard units (e.g. paper clips, coins, dominoes, or anything else you have that you lay end to end). • Choose a non-standard unit that you will use to measure how tall your toy is. Measure your toy lengthwise (e.g. head to toe). Repeat with a different non-standard unit. Was your measurement the same or different from the first unit you used? • *Home Connection* p. 12 and *Home Connection* tab pp. 91-92.
Module 3- Session 3: Animal Paths		
K.CC.2 K.CC.4 K.CC.6 K.MD.1 K.MD.2 MP.1 MP.5 MP.6 MP.7	Access Prior Learning and Connections to Future Learning: • Expected to be mastered: Describe measureable attributes of objects, such as length or weight. Describe several measureable attributes of a single object. Unit 8 covers this concept also. • Directly compare two objects with a measureable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. Unit 8 covers this concept also. Beginning with the Big Idea and key Strategic Behaviors: • measuring length with non-standard measures • comparing length • recognizing magnitude	Guiding Questions: • How can I compare 2 or 3 objects by their size? • How do you know which is longer? Shorter? Same? Instructional Notes: • Visual models are heel-to-toe steps, taped paths, and cubes. • If appropriate use animals that are more familiar to your class. Number Corner Connections: • Expected to be secure - Describe measureable attributes of objects, such as length or weight. Describe several measureable attributes of a single object. This is explored in Nov. • Directly compare two objects with a measureable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. This is a focus in Nov. Child Watching and Assessment: • Counting & Writing Numbers CHECKPOINT – work with students individually (see p.15 and T1). Also see scoring and reteaching suggestion in the Assessment Binder, Bridges Unit Assessments tab pp. 44-45.
Module 3- Session 4: Compare, Spin & Win		
K.CC.2 K.CC.4 K.CC.6 K.MD.1 K.MD.2 MP.1 MP.6 MP.7	Access Prior Learning and Connections to Future Learning: • Describe measurable attributes of objects, such as length or weight, describe several measurable attributes of a single object are covered in Unit 8. • Directly compare two objects with a measureable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference are covered again in Unit 8. • Compare two numbers from 1-10 presented as written numerals reappear in Units 5 & 6. *-continues on next page-*	Guiding Questions: • Does how I measure matter? • How can I compare 2 or 3 objects by their size? How do you know which is longer? Shorter? Same? Instructional Notes • Visual models are craft sticks. • Note objects needed for this Session. • Digital display tool link on the Bridges web site. Number Corner Connections: • Expected to be secure - Describe measureable attributes of objects, such as length or weight. Describe several measureable attributes of a single object. Topic is explored in Nov. • Directly compare two objects with a measureable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. This is featured in Nov. • Developing - Compare two numbers from 1 to 10 presented as written numerals. It reappears in Jan., Mar., Apr., and May. Writing and Enrichment: • Refer to the Word Resource Cards to support the use of vocabulary.

	Beginning with the Big Idea and key Strategic Behaviors: • measuring length with non-standard measures • comparing length • recognizing magnitude	
Module 3- Session 5: How Many Cubes? How Many Sticks?		
K.CC.2 K.CC.4 K.CC.6 K.MD.1 K.MD.2 MP.1 MP.6 MP.7	Access Prior Learning and Connections to Future Learning: • Describe measurable attributes of objects, such as length or weight, describe several measurable attributes of a single object are covered in Unit 8. • 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 are covered in Unit 8. Beginning with the Big Idea and key Strategic Behaviors: • Estimating Developing: • measuring length with non-standard measures • comparing length • recognizing magnitude	Guiding Questions: • How do you know which is longer? Shorter? Same? • Why does it take fewer sticks than cubes to measure these items? • What is the difference in measurement when using large units and small units? Instructional Notes: • Visual models are craft sticks and cubes. • Clarification on p. 22 *Problems & Investigations* – in Step 7 the image is not what is intended. Change the word "whiteboard" to "table" so students are measuring the same object with different units. • Digital display tool link on the Bridges web site. Literature Connections: • *Measuring Penny* by Loreen Leedy Number Corner Connections: • Expected to be secure - Describe measureable attributes of objects, such as length or weight. Describe several measureable attributes of a single object. This is included in Nov. • Directly compare two objects with a measureable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. This topic is included in Nov. Writing and Enrichment: • In journals or on paper have students respond to, "Why does it take few sticks than cubes to measure these items?" • *Home Connections* p. 23 and *Home Connection* tab pp. 93-94 (may need some introduction before being sent home).
Module 4- Session 1: Which Coin Will Win?		
K.CC.5 K.CC.6 K.OA.3 K.MD.3 MP.1 MP.7 MP.8	Access Prior Learning and Connections to Future Learning: • Decompose numbers less than or equal to 10 into pairs in more than one way is covered in all units. • Classify objects into categories and count the number of objects in different categories is covered in Units 1, 5, & 7. Beginning with the Big Idea and key Strategic Behaviors: • using the five-structure • counting on • recognizing coins by name • categorizing & comparing	Guiding Questions: • What is a number relationship? How can they help me? • Why is it important that I can build the number combinations for the number 5? 10? Instructional Notes: • Visual models are coins. Consider having available actual coins that students can manipulate. • Student will identify nickels and pennies, however, the value of the coins is the focus for this session as ones and fives. • The five-structure is reinforced by use of the graph. The graph also emphasizes practice with counting "5 and some more" and the idea that 10 is composed of two sets of 5. • Graphing and probability is covered in this activity but is not the main focus of the lesson. • Digital display tool link on the Bridges web site. Literature Connections: • *Hunter's Money Jar* by Charlotte Guillain Number Corner Connections: • Decompose numbers less than or equal to 10 into pairs in more than one way is a developing concept. Months Oct.-May explroe this concept. • Classify objects into categories and count the number of objects in different categories is a developing concept. This is included in Oct., Dec., Mar., Apr. & May.

Module 4- Session 2: Introducing Work Place 4D Which Coin Will Win?		
K.CC.5 K.CC.6 K.OA.3 K.MD.3 MP.1 MP.7 MP.8	Access Prior Learning and Connections to Future Learning: • Decompose numbers less than or equal to 10 into pairs in more than one way is a developing concept. All units cover this concept. • Classify objects into categories and count the number of objects in different categories is a developing concept. It is covered in Units 1,5,&7 Beginning with the Big Idea and key Strategic Behaviors: • using the five-structure • counting on • recognizing coins by name • categorizing & comparing	Guiding Questions: • What is a number relationship? How can they help me? • Why is it important that I can build the number combinations for the number 5? 10? Instructional Notes: • Consider having available actual coins that students can manipulate. • This activity emphasizes practice with counting "5 and some more" and the idea that 10 is composed of two sets of 5. • Graphing and probability is covered in this activity but is not the main focus of the lesson. Literature Connections: • *The Penny Pot* by Stuart J Murphy Number Corner Connections: • Decompose numbers less than or equal to 10 into pairs in more than one way is a developing concept. Months Oct.-May explore this concept. • Classify objects into categories and count the number of objects in different categories is a developing concept. See the following months: Oct., Dec., Mar., Apr. & May. Writing and Enrichment: • See *Teacher Masters* (M4 S2 p. T2) of the *Work Place Guides for Differentiation* ideas. • See *Work Place Instructions* (p. T3) for game variations. • *Home Connection* p. 9 and *Home Connection* tab pp. 95-96.
Module 4- Session 3: Money March		
K.CC.5 K.CC.6 K.OA.3 MP.1 MP.7 MP.8	Access Prior Learning and Connections to Future Learning: • Count up 20 objects arranged in line, rectangular array or circle to answer how many is addressed again in Units 6, & 7. • Decompose numbers less than or equal to 10 into pairs in more than one way is covered in all units. Beginning with the Big Idea and key Strategic Behaviors: • using the five-structure • counting on • recognizing coins by name and value • composing	Guiding Questions: • Why is it important that I can build the number combinations for the number 5? 10? • How can I use different combinations of numbers to represent the same quantity? Instructional Notes: • Visual models are coins. • Consider having available actual coins that students can manipulate. • Students will problem solve with pennies and nickels. • The counting on strategy is emphasized in this game through teacher notes. However, counting on as a strategy is not a kindergarten standard. It is a grade 1 standard: 1.OA.C.6. Counting on is considered an advanced method (Level 2) because students apply an abstract principle: the understanding that a counting word represents a group of objects that are added and addends become embedded within the total (OA Progressions, p. 5). • Digital display tool link on the Bridges web site. Literature Connections: • *Benny's Pennies* by Pat Brisson Number Corner Connections: • Expected to be secure - count up 20 objects arranged in line, rectangular array or circle to answer how many. This is addressed in February, March and April. • Developing - decompose numbers less than or equal to 10 into pairs in more than one way is a developing concept. Months Oct.-May include this concept.
Module 4- Session 4: Money March Partner Game		
K.CC.5 K.CC.6 K.OA.3 MP.1 MP.7 MP.8	Access Prior Learning and Connections to Future Learning: • Count up 20 objects arranged in line, rectangular array or circle to answer how many is addressed again in Units 6, & 7. • Decompose numbers less than or equal to 10 into pairs in more than one way is covered in all units. Beginning with the Big Idea and key Strategic Behaviors: • using the five-structure • counting on • recognizing coins by name and value	Guiding Questions: • Why is it important that I can build the number combinations for the number 5? 10? • How can I use different combinations of numbers to represent the same quantity? Instructional Notes: • Visual models are game spinners and game board. • Consider having available actual coins that students can manipulate. • The counting on strategy is emphasized in this game through teacher notes. However, counting on as a strategy is not a kindergarten standard. It is a grade 1 standard: 1.OA.C.6. Counting on is considered an advanced method (Level 2) because students apply an abstract principle: the understanding that a counting word represents a group of objects that are added and addends become embedded within the total (OA Progressions, p. 5). • Consider playing this game during your small group instruction or as an additional Work Place, so you can provide prompting to count coin combinations. *-continues on next page-*

		Literature Connections: • *Bunny Money* by Rosemary Wells Number Corner Connections: • Expected to be secure - count up 20 objects arranged in line, rectangular array or circle to answer how many. Addressed in Feb., Mar. and April. • Developing - decompose numbers less than or equal to 10 into pairs in more than one way is a developing concept. Months Oct.-May address this concept. Child Watching and Assessment: • Money March Partner Game CHECKPOINT – watch small groups during the game (see p. 16 and T7). Also see the reteaching suggestion in the Assessment Binder, Bridges Unit Assessments tab p. 47.
Module 4- Session 5: Introducing Work Place 4E Race You to 15 cents		
K.CC.2 K.OA.1 K.MD.3 MP.1 MP.7 MP.8	Access Prior Learning and Connections to Future Learning: • Fluently add and subtract within 5 is covered in all units. Beginning with the Big Idea and key Strategic Behaviors: • using fluency Developing: • using the five-structure • composing • counting on • naming coins and values	Guiding Questions: • Why is it important that I can build the number combinations for the number 5? 10? • How can I use different combinations of numbers to represent the same quantity? Instructional Notes: • Visual models are coins. • The counting on strategy is emphasized in this game through teacher notes. However, counting on as a strategy is not a kindergarten standard. It is a grade 1 standard: 1.OA.C.6. Counting on is considered an advanced method (Level 2) because students apply an abstract principle: the understanding that a counting word represents a group of objects that are added and addends become embedded within the total (OA Progressions, p. 5). • Race You to 15 Cents might not be an independent workplace yet. Consider playing this game during your small group instruction instead so that you can provide prompting to trade 5 pennies for a nickel. Trading and grouping is an important concept for place value foundations. Consider providing teacher support to explore this concept. Make explicit how amounts greater than 5 can be seen as a group of 5 and some more ones. Discuss with students how some coins are worth more than others (e.g. some students look at two nickels and one penny and conclude the total is 3, while others report that the total is 11 cents.). • Digital display tool link Bridges web site. Literature Connections: • *Lemonade in Winter* by Emily Jenkins Number Corner Connections: • Fluently add and subtract within 5 is an introductory concept. Months Oct.-May help develop this concept. Writing and Enrichment: • See *Teacher Masters* (p. T8) of the *Work Place Guides for Differentiation* ideas • *Home Connection* p. 20 and *Home Connection* tab pp. 97-98.

References

Battista, M. T. (2012). *Cognition-based assessment & teaching of addition and subtraction: Building on students' reasoning.* Portsmouth, NH: Heinemann.

Boaler, J. (2016). *Mathematical mindsets: Unleashing students' potential through creative math, inspiring messages, and innovative teaching.* San Francisco, CA: Jossey-Bass & Pfeiffer Imprints.

Boaler, J. (n.d.). *Seeing as understanding: The importance of visual mathematics for our brain and learning.* Retrieved March 15, 2019, from https://bhi61nm2cr3mkdgk1dtaov18-wpengine.netdna-ssl.com/wp-content/uploads/2017/03/Visual-Math-Paper-vF.pdf

Carpenter, T., Fennema, E., Loef Franke, M., Levi, L., Empson, S.B. (2015). *Children's mathematics: Cognitively guided instruction* (2nd ed.). Portsmouth, NH: Heinemann.

Chapin, S. H., & Johnson, A. (2006). *Math matters: Understanding the math you teach, Grades K-8.* Sausalito, CA: Math Solutions Publications.

Common Core Standards Writing Team. (2011, May 29). *Progressions for the Common Core State Standards in Mathematics (draft). K, Counting and Cardinality; Grades K-5, Operations and Algebraic Thinking.* Tucson, AZ: Institute for Mathematics and Education, University of Arizona.

Common Core State Standards Writing Team. (2015, March 6). *Progressions for the Common Core State Standards in Mathematics (draft). K-3, Categorical Data; Grades 2-5, Measurement Data.* Tucson, AZ: Institute for Mathematics and Education, University of Arizona.

Council of Chief State School Officers. (2010). The Nevada Academic Content Standards. Retrieved from http://www.doe.nv.gov/uploadedFiles/nde.doe.nv.gov/content/Standards_Instructional_Support/Nevada_Academic_Standards/Math_Documents/mathstandards.pdf.

Fosnot, C. T., & Dolk, M. (2001). *Young mathematicians at work: constructing number sense, addition, and subtraction*. Portsmouth, N.H.: Heinemann.

Fosnot, C. T., & Dolk, M. (2001). Landscape of learning. Retrieved from: http://www.contextsforlearning.com/samples/k3LandscapeofLearning.pdf

National Council of Teachers of Mathematics (NCTM). (2014). Procedural fluency in mathematics: A position of the National Council of Teachers of Mathematics. Retrieved from *www.nctm.org.*

Van de Walle, J.A., Karp, K.S., & Bay-Williams, J.M. (2016). *Elementary and middle school mathematics: Teaching developmentally*. Boston, MA: Pearson.

Van de Walle, J., Karp, K., Lovin, L., & Bay-Williams, J. (2014). *Teaching student-centered mathematics: Developmentally appropriate instruction for grades Pre-K-2* (2nd ed.). Boston, MA: Pearson.