▸ First Grade Unit 8: Changes, Changes

Big Conceptual Idea: K-5 Progression on Counting and Cardinality and Operations and Algebraic Thinking (pp. 1-7, 12-17), K-5 Progression on Number and Operations in Base Ten (pp. 1-4, 6-7), K-6 Progression on Measurement and Data (Measurement Part) (pp.1-4, 8-11)

Read the Bridges Unit Overview/Introduction for Unit 8 pp. i-vi. Also, 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 8. These Introduction/Overview/Summary sections provide focus, clarity, vocabulary, definitions, and examples for the "big mathematical ideas and understandings" critical to 1ˢᵗ Grade. This information will support your professional decision-making within the Sessions and Modules as needed.

Mathematical Background: Read Bridges Unit 8 Overview pages (pp. i-xii)	Essential Questions for teacher consideration: How will I support students' understanding of change in the context of time, numbers, location, and their own life? How can students apply mathematical understanding to real life situations?

> **Unit 8**
> *Changes, Changes*
>
> 20 sessions over 20 days
> A/D/E: 4 days
>
> NVACS Focus Domains:
> MD-OA
>
> Total Days: ~24

1ˢᵗ Grade Curriculum Pacing Framework: Balanced Calendar

Instructional note:

> "If you learn something deeply, the synaptic activity will create lasting connections in your brain, forming structural pathways, but if you visit an idea only once or in a superficial way, the synaptic connections can "wash away" like pathways made in the sand." (Boaler, 2016, p. 1)

Unit 8 provides an opportunity to blend math with the *National Science Education Standards* (NSES). This *Unit* focuses on the idea that our daily lives and things in it, such as time, location, growth, and distance change. These changes can be measured as a series of iterated units and the different measurement units or quantities compared. This also continues the idea of the understanding of numbers and their relationships to one another. The *Unit* brings to life problem based learning, and teaching through the problem solving encouraged by Van de Walle, Karp, and Bay-Williams (2013), "Doing mathematics in classrooms should closely model the act of doing mathematics in the real world."

Linear measurement is one of four critical content areas identified by *NVACS* (NVACS, 2010, p. 13). The K-6 Progression on Measurement and Data (Measurement Part) states, "The general reasoning processes of seriation, conservation (of length and number) and classification predict success in early childhood as well as later schooling" (p. 8). Longitudinal research has also identified early childhood student success with number and measurement as an indicators for academic success in both mathematics and reading later in life (Duncan et al., 2007; Claessens and Duncan, 2009). Therefore, providing ample opportunities for students to experience and deepen these mathematical ideas is incredibly beneficial and needed. "Data from international studies consistently indicate that children in the United States are weaker in the area of measurement than any other topic" (Van de Walle, Karp, Lovin, Bay-Williams, 2014, p. 269), even though measurement opportunities are prevalent in our daily lives and embedded in many other mathematics, science, social studies, art and music experiences.

The *K-6 Progression on Measurement and Data (Measurement Part)* also addresses a number of early developmental issues.to consider in instruction. It states, "…the use of a variety of different length units, before students understand the concepts, procedures, and usefulness of measurement, may actually deter students' development…Early use of many nonstandard units may actually interfere with students' development of basic measurement concepts required to understand the need for standard units." The use of unifix cubes as a nonstandard yet standardized tool in *Unit 8* acknowledges this warning and provides great opportunity for students to solidify their early understanding of linear measurement (also addressed in the Instructional note for *Unit 6*). The use of a ruler as a standard measure is not expected until second grade. However, comparing lengths, as the intended mathematical understanding for 1ˢᵗ Grade, requires precision of linear measurement. Students are also expected to understand the idea of transitivity (for example: if the table is longer than the rug, and the rug is longer than the book, then the table is longer than the book also). The use of a standardized tool such as unifix cubes supports the construction of these early understandings. The practice of comparing lengths also connects measurement to number with the computing of differences between quantities, incorporating the understanding of subtraction with 2 digit and 1 digit numbers.

Another early developmental challenge when using nonstandard measures is students' understanding that the size of the iterated unit makes a difference in the quantity of units when measuring the length of an object (e.g., the use of unifix cubes to measure the length of a table will result in a larger quantity of units than if unsharpened pencils are used as the unit). The understanding that all iterated units have to be the same length and placed next to each other with no additional space is also challenging. Experience and

exploration, supported with precise teacher understandings, allow for the construction of solid student understandings from the beginning.

Seriation, ordering a set of objects by length, is another idea explored in *Unit 8.* Students might struggle with ordering a large set (more than 6 objects) if the lengths vary by slight differences. Teachers might begin by using smaller sets or using objects with larger differences (K-6 Progression on Measurement and Data (Measurement Part), p. 8).

On-going enrichment:

Take note of the *Skills Across the Grade Level* chart in the Introduction section to each *Unit.* All standards are expected to be secure by the end of this *Unit.* Work throughout this Unit solidifies specifically 1.NBT.3 (comparison of numbers), 1.NBT.5 (mentally find 10, more or less), 1.MD.1 (order three objects by length), 1.MD.2 (length of object), and 1.MD.4 (data) (NVACS, 2010). Continue to expect all students to engage in the problem solving, and in explaining and justifying their thinking. Use Table 1 in the *Nevada Academic Content Standards* (NVACS) titled "Common addition and subtraction situations" (p. 88) to think about intensification and acceleration.

Continue to consider "Support" and "Challenge" options within each *Session,* and "Game Variations", "Differentiate", and "English-Language Learners" ideas in *Work Places.*

Essential Academic Vocabulary	
Use these words consistently during instruction.	
New Academic Vocabulary: (first time explicitly taught) *indicates Word Resource Cards are available in the Bridges materials	**Review Academic Vocabulary:** (Vocabulary from Number Corner or previous units)
Hour (hr.)* Minute (min.)* Second (sec.)*	*Add** *Graph* *Ones** *Clock* *Greater than** *Parallel* *Compare** *Group/groups* *Pattern** *Count** *Half** *Rectangle** *Cube** *Hundreds** *Short/shorter/shortest** *Distance* *Length** *Subtract** *Difference** *Less than** *Subtraction* *Double* *Long/longer/longest** *Sum or Total** *Edge** *Lowest* *T- Chart* *Equal** *Measure* *Tally marks* *Fives* *More than* *Tens** *Number line** *Weight**

Additional terminology that students might need support with: change, circumference, clock face, day, fast, fold, left side, location, minus, minute hand, order, plus, range, right side, rule, second hand, slow, sudden, time, strategies, year

*Collaborative Team Conversations (CTC)

Consider using *one* of the following as part of the formative assessment process at the lesson level to **collect student work** to analyze for evidence of mathematical understanding:

Guiding questions:
"What strategies are students using to represent and solve for the amount of time passing on an analog clock?"
"What different strategies are students using to add two-digit numbers?"
"What different strategies are students using to compare up to 3 numbers and find differences?"
"What tools do students choose to support their problem-solving?"
"What evidence demonstrates fluent understanding of 5, 10, and/or 10 and some more?"
"How do students show they are searching for patterns, looking for relationships, looking for predictable change, testing their theories, and discovering patterns for predicting future events?"
"How do students show they are making sense of the problems and deepening their understanding of the number system to 120?"
"If needed, what intensification interactions will support the use of a variety of strategies and tools for problem solving?"

Lesson	Evidence	Look for
U8M2S4 *Time and Change Checkpoint* TG p. 24	*Time and Change Checkpoint* observations and student record sheet (TG U8M2S4 pp. T6-T7) *Time and Change Checkpoint Scoring Guide* (AG Bridges Unit Assessments pp. 85-87)	Focus CTC around conceptual understandings of the big idea and strategies used: • adding two-digit numbers • using multiples of 5 and 10 • using counting strategies with 1s, 5s, and/or 10s • counting by 5s or 10s on or off the decade • jumping to the nearest 10; counting 10s and 1s • comparing two-digit numbers; using 10s and 1s • making sense of the number system (seeing and using 1s, 5s, and/or 10s) • monitoring own confusions and self-correcting • persevering and explaining thinking
U8M3S6 *Unit 8 Assessment #5 & 6* TG p. 31	*Unit 8 Assessment #5 & 6* observation and student record sheet (TG U8M3S6 p. T4) *Unit 8 Assessment Scoring Guide #5 & 6* (AG Bridges Unit Assessments pp. 89-91)	Focus CTC around conceptual understandings of the big idea and strategies used: • adding two-digit numbers • using multiples of 5 or 10 • using counting strategies with 1s, 5s, and/or 10s • counting by 5s or 10s on or off the decade • jumping to the nearest 10; counting 10s and 1s • comparing two-digit numbers; using 10s and 1s • making sense of the number system (seeing and using 1s, 5s, and/or 10s) • monitoring own confusions and self-correcting • persevering and explaining thinking

Learning Cycle Assessments (summative)	*Number Corner Checkup 4* NC TG Vol. 3 May, pp. 43-46 *Number Corner Checkup 4 Interview Response Sheet & Written Assessment* NC TG Vol. 3 May, pp. T6-T10; AG Number Corner Assessments pp. 27-31	Use *Number Corner Checkup 4 Scoring Guide* AG Number Corner Assessments p. 32

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: Time Tests		
1.NBT.1 **MP.4** MP.7	**Access Prior Learning:** • Time was not an expectation in the kindergarten standards. In 1st grade Number Corner, students worked with time on both analog/digital clocks, to the hour and half hour. **Securing the Big Idea and key Strategic Behaviors:** • measuring and comparing the passing of time – second, minute, hour • **understanding number relationships** • understanding part/whole relationships	**Guiding Question:** • What do you know about time? **Instructional Notes:** • Send home the *Family Letter* found here. • "Time is different from most other attributes that are commonly measured in school because it cannot be seen or felt and because it is more difficult for children to comprehend units of time or how those units are matched against a given time period or duration. As with other attributes, for children to adequately understand the attribute of time, they should make comparisons of events that have different durations" (Van de Walle, et al., 2014, pp. 286-287). • The intent of the activities is to allow students opportunities to experience the passing of time. **Enrichment:** • See the *Extensions* activities in the margin (p. 7). **Child Watching:** • Identify students using appropriate vocabulary. • Identify students making connections to their daily lives.

Module 1- Session 2: A Second, A Minute, or An Hour

1.NBT.1 1.MD.3 **MP.4** **MP.5** MP.7	**Access Prior Learning:** • Time was not an expectation in the kindergarten standards. • In 1st grade Number Corner, students worked with time on both analog/digital clocks, to the hour and half hour. **Securing the Big Idea and key Strategic Behaviors:** • measuring and comparing the passing of time – second, minute, hour • **understanding and using number relationships** • understanding and using part/whole relationships	**Guiding Questions:** • How do you know how long something will take? • What do you know that takes a long time? • What do you know that takes a short time? **Enrichment:** • There is a blog titled *Finish Strong & Carry On* suggested on the Educator Site with ideas for Unit 8. **Child Watching:** • Identify students using appropriate vocabulary. • Identify students making connections to their daily lives.

Module 1- Session 3: How Long Does it Take?

1.MD.4 **MP.4** MP.7	**Access Prior Learning:** • Time was not an expectation in the kindergarten standards. In 1st grade Number Corner, students worked with time on both analog/digital clocks, to the hour and half hour. **Securing the Big Idea and key Strategic Behaviors:** • measuring and comparing the passing of time – second, minute, hour • **understanding and using number relationships** • understanding and using part/whole relationships • collecting data and graphing	**Guiding Question:** • How can we sort and categorize activities? **Instructional Note:** • "Time is different from most other attributes that are commonly measured in school because it cannot be seen or felt and because it is more difficult for children to comprehend units of time or how those units are matched against a given time period or duration. As with other attributes, for children to adequately understand the attribute of time. They should make comparisons of events that have different durations" (Van de Walle, et al., 2014, pp. 286-287). **Enrichment:** • Consider having students ask and answer questions about their graph. How many more activities are in the second column compared to the minute column? **Child Watching:** • Identify students using appropriate vocabulary. • Identify students making connections to their daily lives.

Module 1- Session 4: An Hour or Bust!

1.NBT.1 **1.NBT.3** **1.NBT.4** 1.G.3 **MP.2** MP.3	**Access Prior Learning:** • Connect to previous work with counting by 5s and adding multiples of 5. **Securing the Big Idea and key Strategic Behaviors:** • **understanding and using part/whole relationships** • counting by 5s • reasoning with "how many more" to get to 60 – finding the difference • adding two-digit numbers – place value understanding	**Guiding Questions:** • What do you know about counting on a clock? • How do you know how much more time you have before the next hour? **Instructional Notes:** • See the *Work Place* sentence frames for Unit 8 here. • Online digital tools for the *Work Place* are provided on the Educator Site. • Utilize the opportunity to work with adding two-digit numbers by asking the questions suggested, such as "I got 20+10+15+15. Can you figure out my total?" **Enrichment:** • See the Game Variations on Work Place Instructions (p. T3). **Child Watching:** • Identify students who are using strategies to add mentally the numbers. • Identify students using the commutative property, and changing the order of the numbers to create easier-to-add combinations.

Module 1- Session 5: Introducing Work Place 8A An Hour or Bust!

1.OA.8 1.NBT.1 **1.NBT.3** **1.NBT.4** 1.G.3 **MP.2** MP.3	**Access Prior Learning:** • Connect to previous work with counting by 5s and adding multiples of 5. **Securing the Big Idea and key Strategic Behaviors:** • **understanding and using part/whole relationships** • counting by 5s • reasoning with "how many more" to get to 60 – finding the difference • adding two-digit numbers – place value understanding	**Guiding Questions:** • What do you know about counting on a clock? • How do you know how much more time you have before the next hour? **Enrichment:** • See the Game Variations on Work Place Instructions (p. T3). **Child Watching:** • Identify students who are using strategies to add mentally the numbers. • Identify students using the commutative property, and changing the order of the numbers to create easier-to-add combinations.

Module 2- Session 1: Grandma's Picnic Basket

1.OA.1 **1.OA.6** 1.NBT.4 1.G.3 **MP.2** **MP.4** MP.7	**Access Prior Learning:** • Connect to known strategies for adding and subtracting within 20. • Students worked on doubles previously. **Securing the Big Idea and key Strategic Behaviors:** • **understanding and using number relationships** • **using doubles** • **using combinations within 20** • understanding and using number patterns • comparing quantities • reasoning with data	**Guiding Question:** • What do you notice? • What predictions can you make with the in and out chart? • How can you make a reasonable prediction for what the next number will be? **Instructional Notes:** • Read the *Math Practices in Action* in the margin (p. 8). • In the *Bridges Overview* for this *Unit,* you will find the *Algebra Connections in This Unit* (p. vi). Consider revisiting this as you launch into work with the big idea of algebraic functions. **Enrichment:** • Encourage students to challenge themselves with a larger number to double, or to make multiple pages for the book. **Child Watching:** • Identify students seeing and using the structures and patterns they see on the T-chart.

Module 2- Session 2: The Change Box, Day 1

1.OA.5 **1.OA.6** MP.2 **MP.7** **MP.8**	**Access Prior Learning:** • Connect to known strategies for adding and subtracting within 20. • Students worked with seeing and adding/subtracting 1, 2, and 3 to/from a number. **Securing the Big Idea and key Strategic Behaviors:** • understanding and using number relationships • **understanding and using number patterns** • **using combinations within 20** • gathering and using data • predicting	**Guiding Questions:** • What do you notice? • How can you make a reasonable prediction for what the next number will be? **Instructional Notes:** • Continuously reinforce strategies that involve adding and subtracting. • Math Practices 7 & 8 both begin with "look for" which implies that "children who are mathematically proficient pay attention to patterns as they do mathematics." These lessons provide opportunities for students to work on these two math practices. "Children should be engaged in looking for, describing, and extending patterns to help them develop the skills to look for structure and express regularity in all mathematical situations." (Van de Walle, et al., 2014, p. 243). • These skills support understanding of relationships between numbers, developing the big idea of algebraic functions. • See the blog titled *The Ins & Outs of the Change Box* on the Educator Site for step-by-step directions and picture support to create your change box. **Enrichment:** • See Step 10 (p.16). **Child Watching:** • Identify students seeing and using the structures and patterns they see on the T-chart.

Module 2- Session 3: The Change Box, Day 2

1.OA.6 MP.2 MP.7	**Access Prior Learning:** • Connect to known strategies for adding and subtracting within 20. • Students previously worked with adding/subtracting 1, 2, and 3 to/from a number. **Securing the Big Idea and key Strategic Behaviors:** • understanding and using number relationships • **understanding and using number patterns** • **using combinations within 20** • gathering and using data • predicting	**Guiding Questions:** • What do you notice? • How can you make a reasonable prediction for what the next number will be? **Instructional Notes:** • Continuously reinforce strategies that involve adding and subtracting. • Math Practices 7 & 8 both begin with "look for" which implies that "children who are mathematically proficient pay attention to patterns as they do mathematics." These lessons are powerful opportunities for students to work on these two math practices. "Children should be engaged in looking for, describing, and extending patterns to help them develop the skills to look for structure and express regularity in all mathematical situations." (Van de Walle, et al., 2014, p. 243). • These skills support understanding of relationships between numbers, developing the big idea of algebraic functions. **Enrichment:** • See Steps 9 & 11 (p. 20); see Extensions in the margin (p. 20). **Child Watching:** • Identify students seeing and using the structures and patterns they see on the T-chart.

Module 2- Session 4: Introducing Work Place 8B Change Cards

1.NBT.4 1.NBT.5 1.NBT.6 MP.2 MP.7	**Access Prior Learning:** • Connect to known strategies for adding and subtracting within 20. • Students worked with doubles previously. • Students also previously worked with adding and subtracting 1 or 2 to/from a number. **Securing the Big Idea and key Strategic Behaviors:** • understanding and using number relationships • **understanding and reasoning with number patterns** • **adding/subtracting 10 on and off the decade** • gathering and reasoning with data • predicting	**Guiding Question:** • How can you figure out the "rule"? **Instructional Note:** • The assessment binder under the Bridges Unit Assessment Tab provides the scoring guide for the Time & Change Checkpoint (p. 84). **Enrichment:** • See step 10 (p. 23). **Child Watching:** • Use the Checkpoint Scoring Guide to inform your instruction. Pull small groups as needed to support students in areas they are not secure.

Module 3- Session 1: Folding & Flying Paper Gliders

1.G.3 MP.1 MP.6	**Access Prior Learning:** • Students previously worked with composing simple shapes to form larger shapes. • Unit 5 provided opportunities for students to secure geometry standards. **Securing the Big Idea and key Strategic Behaviors:** • constructing paper gliders	**Guiding Questions:** • What do you already know about making paper airplanes? • What other things do you know how to make from paper? • How important is precision and why? **Instructional Notes:** • Read the *Math Practices in Action* in the margin (p. 6). • Keep gliders for the entire Module. • Consider making cross content connections with the Next Generation Science Standards for this module. **Child Watching:** • Identify students struggling to create their glider and support as needed.

Module 3- Session 2: Constructing Runways

1.NBT.2 1.NBT.5 **1.MD.2** MP.1 MP.7	**Access Prior Learning:** • Students previously directly compared two objects with a measurable attribute in common. • Students had experience with measuring in the Penguin modules, Units 4 and 6. **Securing the Big Idea and key Strategic Behaviors:** • measuring distance in a series of iterated units • **comparing measurements** • gathering and reasoning with data	**Guiding Questions:** • What do you already know about measuring? • How can you measure distance? **Instructional Notes:** • Consider providing students the first opportunity to devise a plan to measure the distance of flight for their gliders (thus moving toward DOK 4 thinking). Students will likely come up with the idea of using cubes to mark a runway or you can guide them in that direction after they have brainstormed other ideas and reasoned through the pros and cons. Leaving this more open-ended creates opportunity for common measurement misconceptions to present themselves for discussion and for deeper understandings to develop. • Having students cut a length of string to represent the distance and spend time measuring the string might create additional opportunities to compare distances. **Child Watching:** • Observe for student misconceptions about measurement including: leaving gaps between units; having overlaps (if using tools like popsicle sticks); not starting and ending at the object's beginning or ending; not attending to the linear aspect (following a curved shape of flight pattern); assuming an item is longer than another same-sized item if the measuring unit choice resulted in a larger quantity; comparing measurements that were measured using different-sized units (popsicle sticks versus unifix cubes).

Module 3- Session 3: Gliders in Flight

1.NBT.1 1.NBT.3 1.NBT.4 **1.MD.1** **1.MD.2** MP.1 MP.2	**Access Prior Learning:** • Students previously directly compared two objects with a measurable attribute in common. • Students had experience with measuring in the Penguin modules, Units 4 and 6. **Securing the Big Idea and key Strategic Behaviors:** • measuring distance in a series of iterated units • **comparing measurements** • **gathering and reasoning with data** • writing comparison expressions • determining difference	**Guiding Questions:** • Can different distances be compared? • How can you compare distances? **Instructional Note:** • Provide students the opportunity to discover that, in order to compare distances with each other, a common unit of measure must be used. Cubes then become an efficient tool to use to compare measurements of distance. **Enrichment:** • Students could begin engineering different paper airplanes and determining which design of airplanes flies further. **Child Watching:** • Observe for student misconceptions about measurement including: leaving gaps between units; having overlaps (if using tools like popsicle sticks); not starting and ending at the object's beginning or ending; not attending to the linear aspect (following a curved shape of flight pattern); assuming an item is longer than another same-sized item if the measuring unit choice resulted in a larger quantity; comparing measurements that were measured using different-sized units (popsicle sticks versus unifix cubes).

Module 3- Session 4: Analyzing the Flight Data

1.NBT.1 1.NBT.3 1.NBT.4 **1.MD.4** MP.1 MP.2	**Access Prior Learning:** • Students previously directly compared two objects with a measurable attribute in common. • Students also previously worked with sorting, classifying, and counting objects. • Students had experience with measuring in the Penguin modules, Units 4 and 6. **Securing the Big Idea and key Strategic Behaviors:** • constructing paper gliders • **comparing measurements** • **gathering and reasoning with data**	**Guiding Questions:** • How do you organize and read data? • What does data tell you? **Instructional Note:** • Read the Math Practices in Action in the margin (p. 22). **Enrichment:** • See Step 10 or ask students to ask and answer their own questions about the data (p. 23). **Child Watching:** • Observe for use of addition and subtraction strategies as they compare data points.

Module 3- Session 5: More Glider Flights

1.NBT.1 1.NBT.3 1.NBT.4 **1.MD.1** **1.MD.2** MP.1 MP.2	**Access Prior Learning:** • Students previously directly compared two objects with a measurable attribute in common. • Students had experience with measuring in the Penguin modules, Units 4 and 6. **Securing the Big Idea and key Strategic Behaviors:** • **measuring distance in a series of iterated units** • **comparing measurements** • **gathering and reasoning with data** • writing comparison expressions • determining difference	**Guiding Questions:** • What do you notice about your new glider? • What do you observe about your data? **Enrichment:** • Students could begin engineering different paper airplanes and determining which design of airplanes flies further. **Child Watching:** • Observe for student misconceptions about measurement.

Module 3- Session 6: Analyzing the Second Round of flight Data

1.NBT.1 1.NBT.3 1.NBT.4 **1.MD.4** **MP.1**	**Access Prior Learning:** • Students previously directly compared two objects with a measurable attribute in common. • Students also previously worked with sorting, classifying, and counting objects. • Students had experience with measuring in the Penguin modules, Units 4 and 6. **Securing the Big Idea and key Strategic Behaviors:** • **comparing measurements** • **gathering and reasoning with data**	**Guiding Questions:** • How do you organize and read data? • What does data tell you? **Instructional Notes:** • The *Assessment Guide* under the *Bridges Unit Assessments* tab provides the scoring guide for the for *Unit 8 Assessment* (p. 91) • Standards 1.NBT.3, 1.NBT.5, 1.MD.1, 1.MD.2, & 1.MD.4 are targeted for mastery according to the *Grade 1 Assessment Map* in the *Assessment Binder* under the *Assessment Overview* tab (pp. 13-15). • The assessment provides another opportunity to assess 1.NBT.4, 1.NBT.6, & 1.NBT.1, which were targeted for security in previous units. **Enrichment:** • See Step 11 (p. 24). **Child Watching:** • See Assessment Binder, Bridges Unit Assessment tab, p. 61 for information regarding students who may be struggling. Watch for students struggling with solving addition and subtraction story problems within 20, counting on and counting back to solve addition and subtraction combinations within 20, adding and subtracting with sums and minuends to 10 using strategies that are efficient, accurate and flexible, working from familiar facts such as doubles, make 10s, and add tens, counting to 120, reading and writing numbers to 100, and understanding that whole numbers between 10 and 100 are composed of 10s and 1s. • Any students struggling with these standards at this point could benefit from use of the Bridges Intervention materials.

Module 4- Session 1: Baby Lengths

1.NBT.1 **1.NBT.3** **1.MD.1** 1.MD.2 **MP.6**	**Access Prior Learning:** • Students previously directly compared two objects with a measurable attribute in common. • Students also previously worked with sorting, classifying, and counting objects. • Students had experience with measuring in the Penguin modules, Units 4 and 6. **Securing the Big Idea and key Strategic Behaviors:** • **measuring length in a series of iterated units** • **comparing measurements**	**Guiding Questions:** • What do you already know about measuring length? • What strategies can you use to compare lengths? **Instructional Notes:** • Attend to culturally responsive practices when planning for this module. In analyzing the make-up of your class, be aware of any students who might not have knowledge of their birth details, or family history. Teachers might brainstorm with student's ways to participate by using a baby's length from another child. • Read the *Math Practices in Action* in the margin (p. 4). • The Big Idea of transitivity can be discussed during this session when ordering the lengths (if length A is bigger than B, and B is bigger than C, logically we can assume A is bigger than C). Allow students to directly compared lengths, if needed, to grasp the understanding of this idea. Students will later be able to engage in this process by visualizing the length attribute of each object and mentally comparing. *-continues on next page-*

	• **gathering and reasoning with data** • determining difference	**Enrichment:** • See Extension in the margin (p. 6). **Child Watching:** • Observe for student misconceptions about measurement.

Module 4- Session 2: How We Have Grown

1.OA.3 1.NBT.1 **1.NBT.3** **1.NBT.4** 1.NBT.5 MP.1 **MP.5**	**Access Prior Learning:** • Students previously directly compared two objects with a measurable attribute in common. • Students also previously worked with sorting, classifying, and counting objects. • Students had experience with measuring in the Penguin modules, Units 4 and 6. **Securing the Big Idea and key Strategic Behaviors:** • **comparing measurements** • determining difference • determining strategies and tools	**Guiding Questions:** • What do you already know about measuring length? • What strategies can you use to compare lengths? **Instructional Note:** • Read the Math Practices in Action in the margin (p. 11). **Child Watching:** • Observe for students' strategies when adding and subtracting. • Observe for students' written methods as they describe their strategies. • Continue to observe for measurement misconceptions.

Module 4- Session 3: How Big is This Baby?

1.NBT.2 1.NBT.3 1.NBT.4 **1.MD.1** **1.MD.2** 1.MD.4 MP.4 **MP.6**	**Access Prior Learning:** • Students previously directly compared two objects with a measurable attribute in common. • Students also previously worked with sorting, classifying, and counting objects. • Students had experience with measuring in the Penguin modules, Units 4 and 6. **Securing the Big Idea and key Strategic Behaviors:** • measuring length in a series of iterated units • **comparing measurements** • **gathering and reasoning with data** • determining difference	**Guiding Questions:** • What can you measure? • How much bigger are you than your little brother or sister? **Instructional Note:** • Students are moving into understanding of indirect measurement. As the baby leaves, students no longer have opportunity for making a direct comparison. **Child Watching:** • Observe for student understandings of ordering lengths (seriation) and transitivity. • Observe for student misconceptions about measurement.

Module 4- Session 4: The Baby & Me

1.OA.3 1.NBT.1 **1.NBT.4** **1.NBT.5** 1.MD.2 MP.1 **MP.5**	**Access Prior Learning:** • Students previously directly compared two objects with a measurable attribute in common. • Students also previously worked with sorting, classifying, and counting objects. • Students had experience with measuring in the Penguin modules, Units 4 and 6. **Securing the Big Idea and key Strategic Behaviors:** • comparing measurements • gathering and reasoning with data • **determining difference** •	**Guiding Question:** • How can you compare yourself to others? **Instructional Note:** • Comparing measurements that are not a typical straight length is the big idea of these experiences, as students engage in finding the circumference of their heads. Students must transfer that measurement to the string and then compare the measurements. **Enrichment:** • See Step 11 (p. 20). **Child Watching:** • Observe for use of addition and subtraction strategies as students compare data points. • Observe for student misconceptions about measurement as noted in previous session.

Module 4- Session 5: Time & Change

MP.4	**Access Prior Learning:** • Students previously directly compared two objects with a measurable attribute in common and worked with sorting, classifying, and counting objects. **Securing the Big Idea and key Strategic Behaviors:** • discovering patterns • predicting future events using data	**Guiding Question:** • How do you change over time? By the second? By the day? By the year? **Instructional Note:** • This lesson can provide opportunities for student reflection about their learning over time. This would be an opportunity to visit student math portfolios, if they have them, and add items to the gallery walk from their portfolios. **Child Watching:** • Celebrate with students celebrating their own learning and success!

References

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