Teacher Training
Revised ELA and Math Standards

Math K–2

Tennessee Department of Education | 2017 Summer Teacher Training

Welcome, Teachers!

We are excited to welcome you to this summer's teacher training on the revised math standards. We appreciate your dedication to the students in your classroom and your growth as an educator. As you interact with the math standards over the next two days, we hope you are able to find ways to connect this new content to your own classroom. Teachers perform outstanding work every school year, and our hope is that the knowledge you gain this week will enhance the high-quality instruction you provide Tennessee's children every day.

We are honored that the content of this training was developed by and with Tennessee educators *for* Tennessee educators. We believe it is important for professional development to be informed by current educators, who work every day to cultivate every student's potential.

We'd like to thank the following educators for their contribution to the creation and review of this content:

Dr. Holly Anthony, Tennessee Technological University
Michael Bradburn, Alcoa City Schools
Dr. Jo Ann Cady, University of Tennessee
Sherry Cockerham, Johnson City Schools
Dr. Allison Clark, Arlington Community Schools
Kimberly Herring, Cumberland County Schools
Dr. Joseph Jones, Cheatham County Schools
Dr. Emily Medlock, Lipscomb University

Part 1: The Standards

Module 1: Standards Review Process

Module 2: Tennessee Academic Standards

Module 3: Summary of Revisions

Part 2: Developing a Deeper Understanding

Module 4: Diving into the Standards (KUD)

Part 3: Instructional Shifts

Module 5: Revisiting the Shifts and SMP's

Module 6: Literacy Skills for Mathematical Proficiency

Part 4: Assessment and Materials

Module 7: Connecting Standards and Assessment

Module 8: Evaluating Instructional Materials

Part 5: Putting it All Together

Module 9: Instructional Planning

Notes

Agenda: Day 1

Time	Content
8–11:15 (includes break)	**Part 1: The Standards** • M1: Standards Review Process • M2: TN Academic Standards • M3: Summary of Revisions
11:15–12:30	**Lunch (on your own)**
12:30–4 (includes break)	**Part 2: Developing a Deeper Understanding** • M4: Diving into the Standards (KUD) **Part 3: Instructional Shifts** • M5: Revisiting the Shifts and SMP's • M6: Literacy Skills for Mathematical Proficiency

Goals: Day 1

- Review the standards revision process.

- Highlight changes/revisions to standards.

- Use a KUD exercise to deepen our understanding of the expectations of the standards.

- Discuss the instructional shifts and the Standards for Mathematical Practice (SMPs).

- Explore the Literacy Skills for Mathematical Proficiency.

Agenda: Day 2

Time	Content
8–11:15 (includes break)	**Part 4: Aligned Materials and Assessments** • M7: Assessing Student Understanding
11:15–12:30	**Lunch (on your own)**
12:30–4 (includes break)	• M8: Evaluating Instructional Materials **Part 5: Putting it All Together** • M9: Instructional Planning

Goals: Day 2

- Examine best practices for assessing student learning.

- Develop a process for evaluating instructional materials.

- Connect standards and assessment through instructional planning.
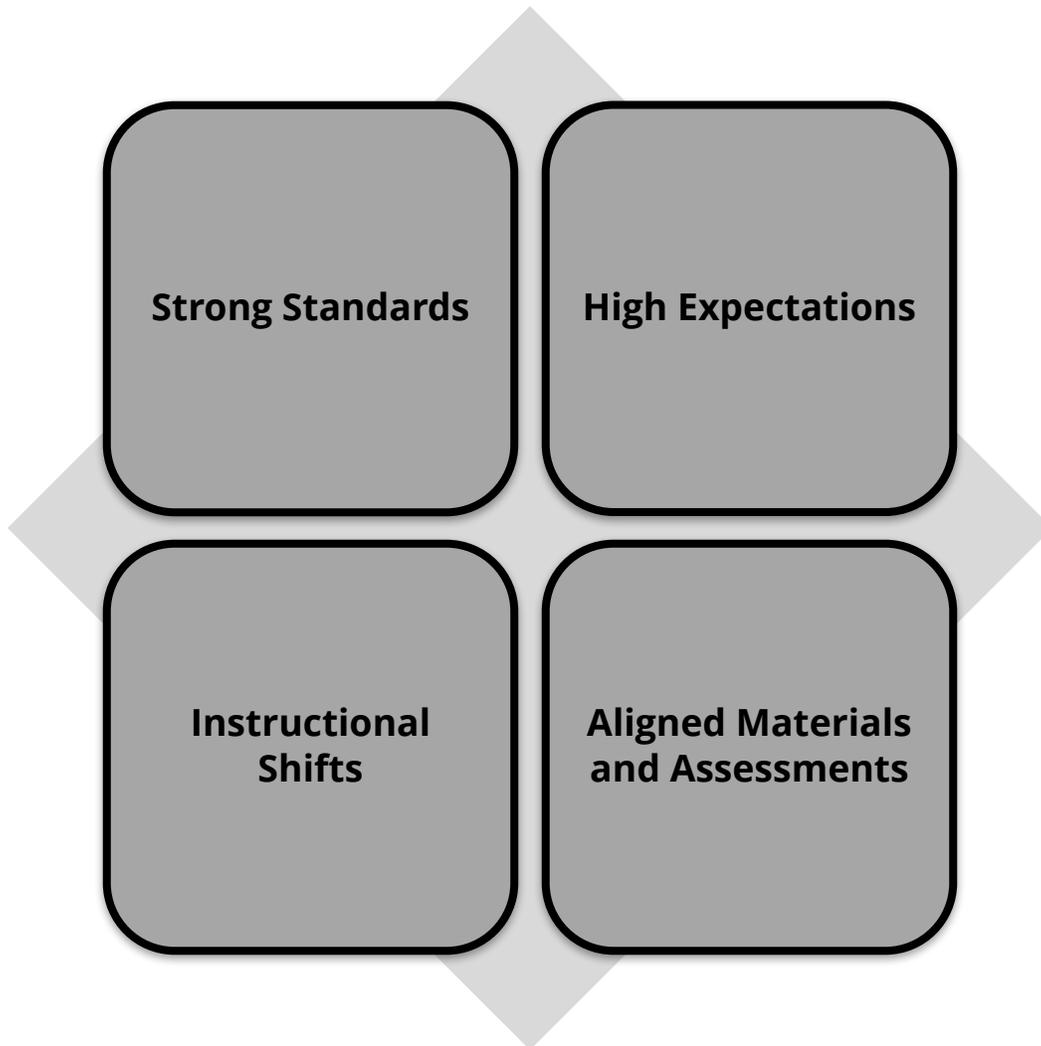
Appointment Time

Make four appointments to meet with fellow participants throughout the training to discuss the content. Record participants' names in the form below and bookmark this page for your reference.

1

2

3

4

Key Ideas for Teacher Training

Strong Standards	**High Expectations**
Instructional Shifts	**Aligned Materials and Assessments**

We know that Tennessee educators are working hard and striving to get better. This summer's teacher training is an exciting opportunity to learn about our state's newly adopted math and ELA standards and ways to develop a deeper understanding of the standards to improve classroom instructional practices. The content of this training is aligned to the standards and is designed to address the needs of educators across our state.

Throughout this training, you will find a series of key ideas that are designed to focus our work on what is truly important. These key ideas align to the training objectives and represent the most important concepts of this course.

Strong Standards

Standards are the bricks that should be masterfully laid through quality instruction to ensure that all students reach the expectation of the standards.

High Expectations

We have a continued goal to prepare students to be college and career ready.

Instructional Shifts

The instructional shifts are an essential component of the standards and provide guidance for how the standards should be taught and implemented.

Aligned Materials and Assessments

Educators play a key role in ensuring that our standards, classroom instructional materials, and assessments are aligned.

TN Department of **Education**

Part 1: The Standards
Module 1: The Standards Review Process

Strong Standards	High Expectations
Strong Standards	High Expectations
Instructional Shifts	Aligned Materials and Assessments

Standards Review Process

The graphic below illustrates Tennessee's standards review process. Here you can see the various stakeholders involved throughout the process.

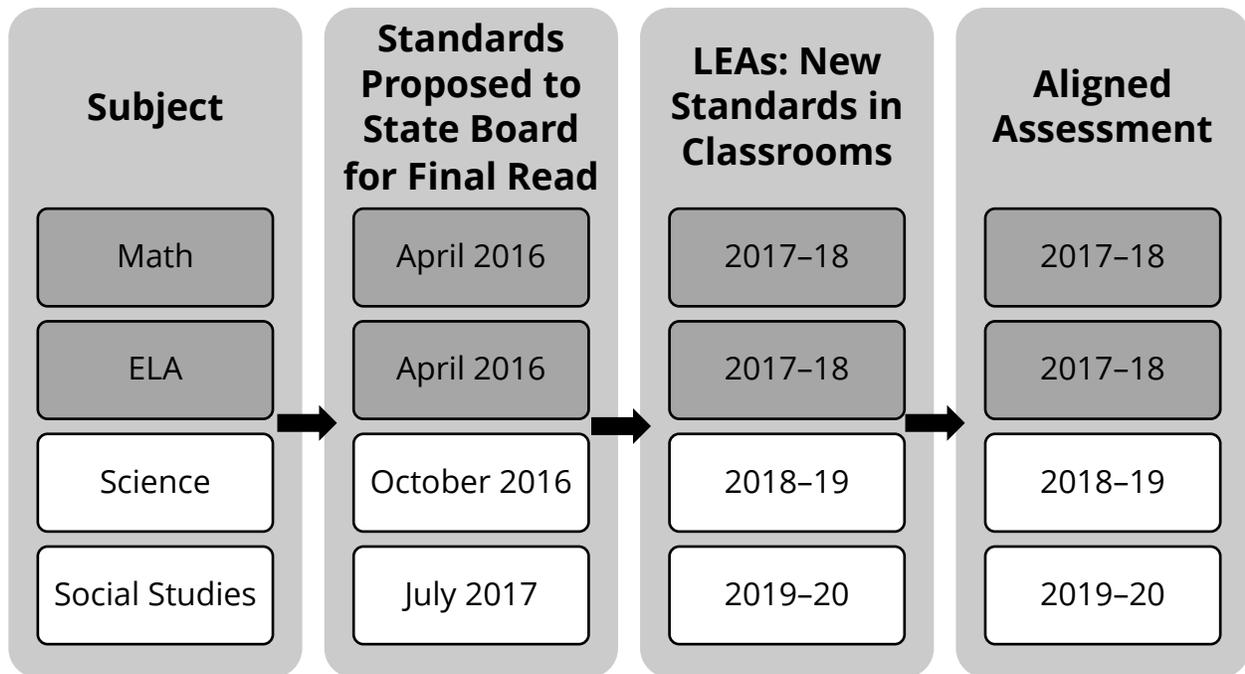| Public Comment Period – November 2014 |
| :---: |
| Educator Advisory Teams Review – April 2015 |
| Standards Review and Development Committee – Fall 2015 |
| Revised Standards Released for Public Comment – October 2015 |
| Standards Recommendation Committee – January 2016 |
| State Board of Education Approval – April 2016 |

- The process begins with a website for public feedback.
- Tennessee educators who are experts in their content area and grade band serve on the advisory panels. These educators review all the public feedback and the current standards, then use their content expertise and knowledge of Tennessee students to draft a revised set of standards.
- The revised standards are posted for a second feedback collection from Tennessee's stakeholders.
- The Standards Recommendation Committee (SRC) consists of 10 members appointed by legislators. This group looks at all the feedback from the website, the current standards, and revised drafts. Recommendations are then made for additional revisions if needed.
- The SRC recommends the final draft to the State Board of Education for approval.

Educator Advisory Team Members
Every part of the state was represented with multiple voices.

Timeline of Standards Adoptions and Aligned Assessments Implementation

Subject	Standards Proposed to State Board for Final Read	LEAs: New Standards in Classrooms	Aligned Assessment
Math	April 2016	2017–18	2017–18
ELA	April 2016	2017–18	2017–18
Science	October 2016	2018–19	2018–19
Social Studies	July 2017	2019–20	2019–20

Standards Revision Key Points

- The instructional shifts remain the same and are still the focus of the standards.

- The revised standards represent a stronger foundation that will support the progression of rigorous standards throughout the grade levels.
- The revised standards improve connections:
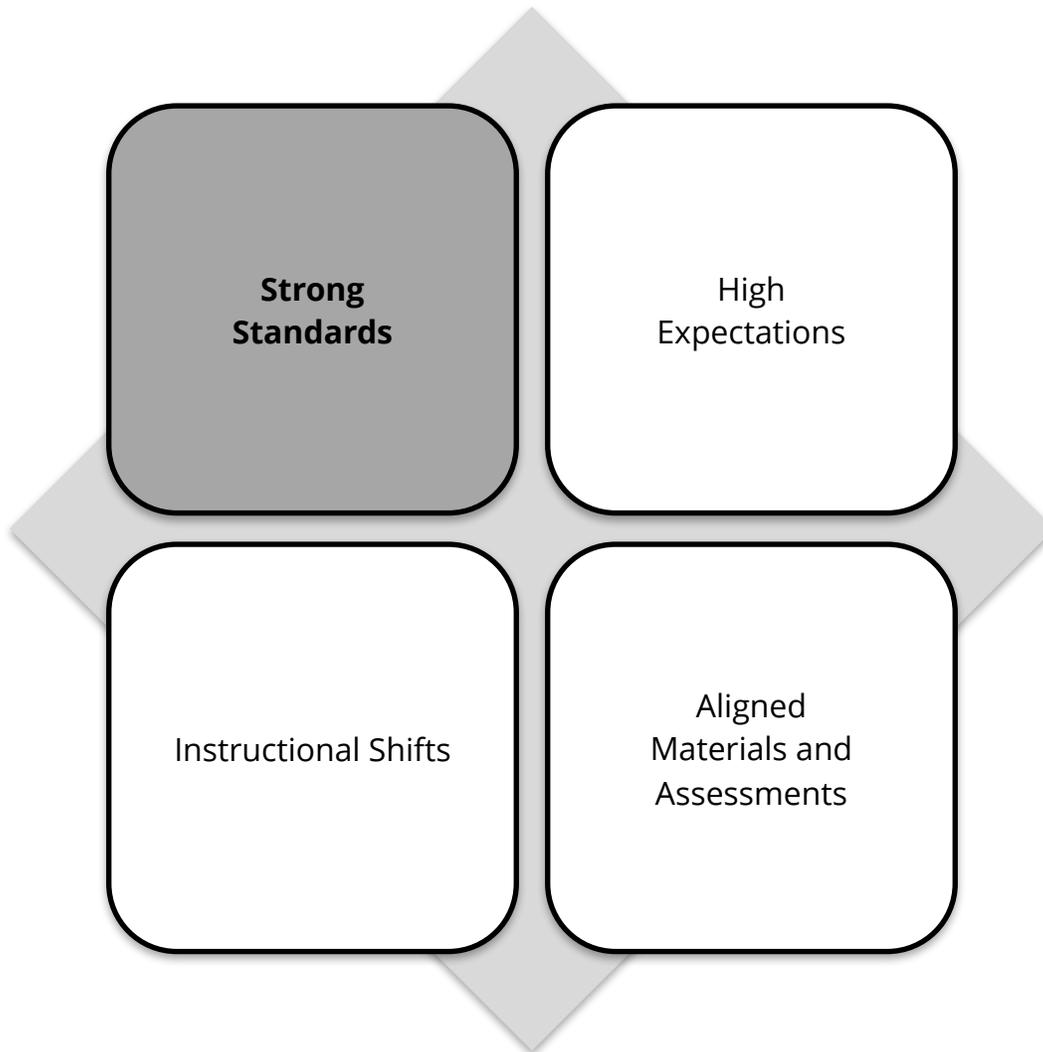 - within a single grade level, and
  - between multiple grade levels.

"Districts and schools in Tennessee will exemplify excellence and equity such that all students are equipped with the knowledge and skills to successfully embark upon their chosen path in life."

What is your role in ensuring that all students are college and career ready?

Part 1: The Standards
Module 2: The Tennessee Mathematics Academic Standards

Strong Standards	High Expectations
Instructional Shifts	Aligned Materials and Assessments

Goals

- Reinforce the continued expectations of the Tennessee Math Academic Standards.

- Revisit the three instructional shifts and their continued *and* connected role in the revised standards.

- Review the overarching changes of the revised Tennessee Math Academic Standards.

Strong Standards

Standards are the bricks that should be masterfully laid through quality instruction to ensure that all students reach the expectation of the standards.

High Expectations

We have a continued goal to prepare students to be college and career ready.

Instructional Shifts

The instructional shifts are an essential component of the standards and provide guidance for how the standards should be taught and implemented.

Aligned Materials and Assessments

Educators play a key role in ensuring that our standards, classroom instructional materials, and assessments are aligned.

Setting the Stage

Directions:

1. Read and annotate the *General Introduction* to the TN Math Standards (pages 1–2) focusing on the "Mathematically Prepared" and "Conceptual Understanding, Procedural Fluency, and Application" sections.
2. After reading and annotating the two parts, write the sentence or phrase you felt was the most important in the box below and your rationale for choosing it.

Most Important Idea:

Rationale:

Key Ideas from Discussion:

What Has <u>NOT</u> Changed

- Students **prepared** for college and career

- K–12 **learning progressions**

- Traditional and integrated **pathways** (for high school)

- Standards for **Mathematical Practice**
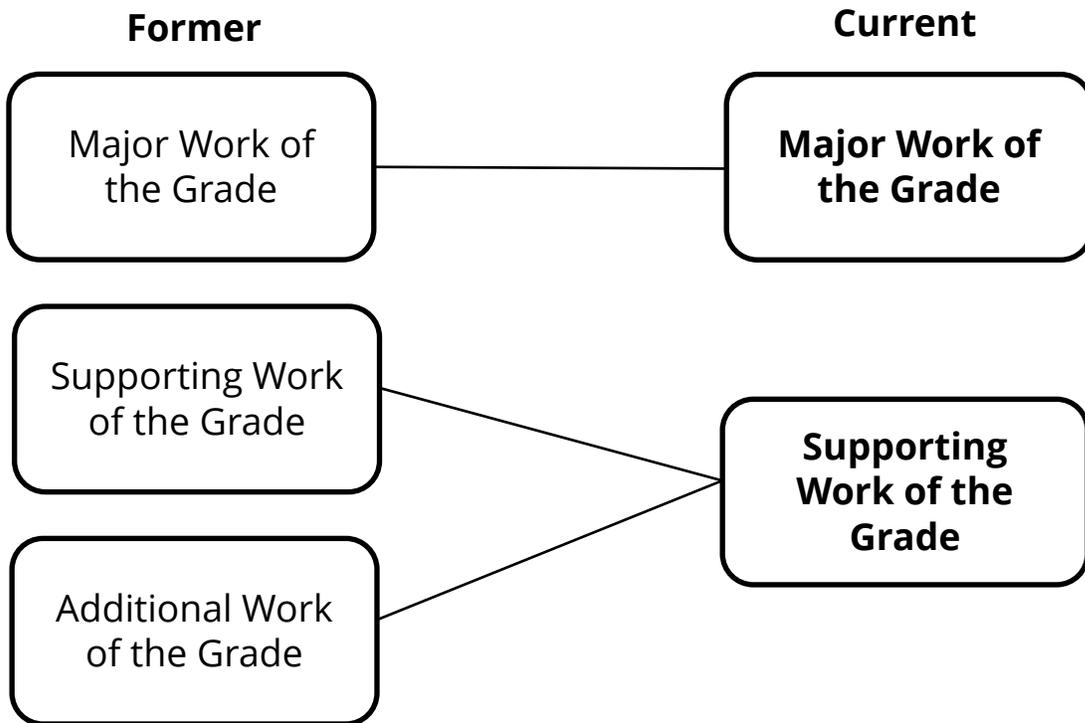
- **Instructional shifts**

Notes:

What <u>HAS</u> Changed

- Category Change

- Revised Structured

- Coding & Nomenclature

- Literacy Skills for Mathematical Proficiency

What <u>HAS</u> Changed

Category Change

Former	Current
Major Work of the Grade	**Major Work of the Grade**
Supporting Work of the Grade	**Supporting Work of the Grade**
Additional Work of the Grade	

Notes:

What <u>HAS</u> Changed

Revised Structure

Operations and Algebraic Thinking (OA)	
Cluster Headings	**Content Standards**
A. Use the four operations with whole numbers to solve problems. (See Table 1 - Addition and Subtraction Situations and Table 2 - Multiplication and Division Situations)	**4.OA.A.1** Interpret a multiplication equation as a comparison (e.g., interpret 35 = 5 × 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5). Represent verbal statements of multiplicative comparisons as multiplication equations. **4.OA.A.2** Multiply or divide to solve contextual problems involving multiplicative comparison, and distinguish multiplicative comparison from additive comparison. *For example, school A has 300 students and school B has 600 students: to say that school B has two times as many students is an example of multiplicative comparison; to say that school B has 300 more students is an example of additive comparison.* **4.OA.A.3** Solve multi-step contextual problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.
B. Gain familiarity with factors and multiples.	**4.OA.B.4** Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite.
C. Generate and analyze patterns.	**4.OA.C.5** Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. *For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.*

	Major Content		Supporting Content

Notes:

What __HAS__ Changed

Revised Structure

Cluster Headings	Content Standards	Scope & Clarifications
B. Solve equations and inequalities in one variable.	**A1.A.REI.B.3** Solve quadratic equations and inequalities in one variable. a. Use the method of completing the square to rewrite any quadratic equation in x into an equation of the form $(x - p)^2 = q$ that has the same solutions. Derive the quadratic formula from this form. b. Solve quadratic equations by inspection (e.g., for $x^2 = 49$), taking square roots, completing the square, knowing and applying the quadratic formula, and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions	*For A1.A.REI.B.3b:* *Tasks do not require students to write solutions for quadratic equations that have roots with nonzero imaginary parts. However, tasks can require the student to recognize cases in which a quadratic equation has no real solutions.* *Note: solving a quadratic equation by factoring relies on the connection between zeros and factors of polynomials. This is formally assessed in Algebra II.*
C. Solve systems of equations.	**A1.A.REI.C.4** Write and solve a system of linear equations in context.	*Solve systems both algebraically and graphically.* *Systems are limited to at most two equations in two variables.*

Notes:

What <u>HAS</u> Changed

Coding and Nomenclature

1.OA.A.1

1	
OA	
A	
1	

K.MD.B.3

K	
MD	
B	
3	

Notes:

What <u>HAS</u> Changed

Literacy Skills for Mathematical Proficiency

Communication in mathematics requires literacy skills in reading, vocabulary, speaking, listening, and writing. Students must be able to:

Literacy Skills for Mathematical Proficiency
1. Use multiple reading strategies.
2. Understand and use correct mathematical vocabulary.
3. Discuss and articulate mathematical ideas.
4. Write mathematical arguments.

Notes:

Module 2 Review

- Reinforce the continued expectations of the Tennessee Math Academic Standards.

- Revisit the three instructional shifts and their continued *and* connected role in the revised standards.

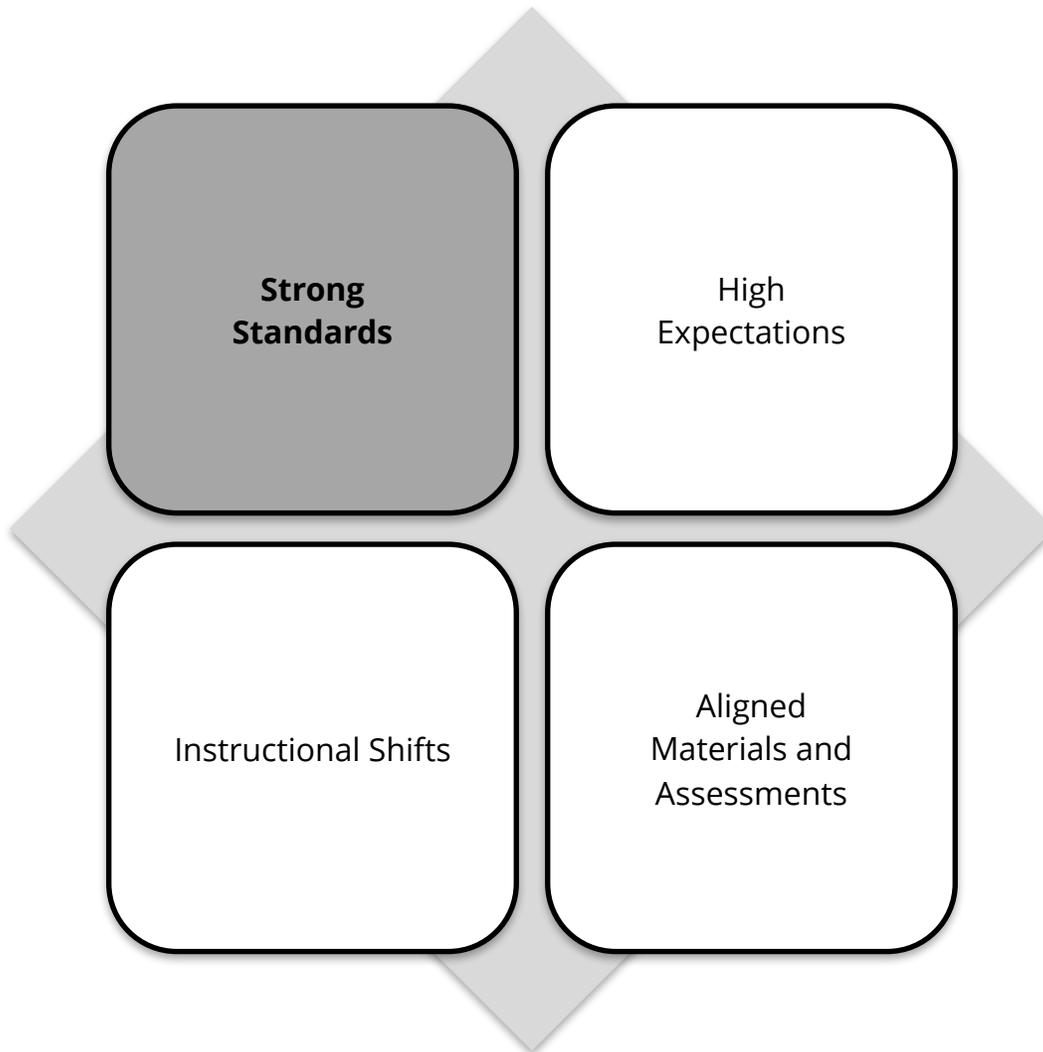- Review the overarching changes of the revised Tennessee Math Academic Standards.

Strong Standards

Standards are the bricks that should be masterfully laid through quality instruction to ensure that all students reach the expectation of the standards.

TN Department of **Education**

Part 1: The Standards
Module 3: Summary of Revisions

Strong Standards

High Expectations

Instructional Shifts

Aligned Materials and Assessments

Goals

- Review a summary of revisions to the math standards by grade band.

- Compare 2016–17 standards to 2017–18 standards.

Strong Standards

Standards are the bricks that should be masterfully laid through quality instruction to ensure that all students reach the expectation of the standards.

High Expectations

We have a continued goal to prepare students to be college and career ready.

Instructional Shifts

The instructional shifts are an essential component of the standards and provide guidance for how the standards should be taught and implemented.

Aligned Materials and Assessments

Educators play a key role in ensuring that our standards, classroom instructional materials, and assessments are aligned.

Why Standards?

"To assess student achievement accurately, teachers and administrators must know and understand the content standards that their students are to master. Again, we cannot teach or assess achievement that we have not defined."

—S. Chappuis, Stiggins, Arter, and J. Chappuis, 2006

What about this quotation sticks out to you?

Notes:

Revisions to the Math Standards

Specific to K–5

- Refined for clarity

- Increased fluency expectations

- Revised examples

Overarching Revisions

- Supporting and additional work of the grade is combined as supporting work of the grade

- Increased fluency expectations

	Increased Fluency Expectations	
	Former Standard	Current Standard
Kindergarten	K.OA.5 Fluently add and subtract within 5.	K.OA.A.5 Fluently add and subtract within 10 using mental strategies.
First Grade	1.OA.6. Add and subtract within 20, demonstrating fluency for addition and subtraction within 10.	1.OA.C.6 Fluently add and subtract within 20 using mental strategies. By the end of Grade 1, know from memory all sums up to 10.
Second Grade	2.OA.2 Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.	2.OA.B.2 Fluently add and subtract within 30 using mental strategies. By the end of Grade 2, know from memory all sums of two one-digit numbers and related subtraction facts.

Revisions to the Math Standards

Specific to K–5

- Refined for clarity

- Increased fluency expectations

- Revised examples

Overarching Revisions

- Added/shifted a small number of standards to strengthen coherence across grade levels

	Former Standard	Current Standard
Kindergarten	No Past Standard	K.MD.B.3 Identify the penny, nickel, dime, and quarter and recognize the value of each.
First Grade	No Past Standard	1.MD.B.4 Count the value of a set of like coins less than one dollar using the ¢ symbol only.
Second Grade	2.MD.8 Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately.	2.MD.C.8 Solve contextual problems involving dollar bills, quarters, dimes, nickels, and pennies using ¢ and $ symbols appropriately.

Revisions to the Math Standards

Specific to K–5

- Refined for clarity

- Increased fluency expectations

- Revised examples

Overarching Revisions

- Added/shifted a small number of standards to strengthen coherence across grade levels

	Former Standard	Current Standard
Fourth Grade	4.MD.1 Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, <u>express measurements in a larger unit in terms of a smaller unit.</u> Record measurement equivalents in a two column table. For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36),…	4.MD.A.1 Measure and estimate to determine relative sizes of measurement units within a single system of measurement involving length, liquid volume, and mass/weight of objects using customary and metric units.
Fifth Grade	5.MD.1 Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.	5.MD.A.1 Convert customary and metric measurement units within a single system by <u>expressing measurements of a larger unit in terms of a smaller unit</u>. Use these conversions to solve multi-step real world problems involving distances, intervals of time, liquid volumes, masses of objects, and money (including problems involving simple fractions or decimals). For example, 3.6 liters and 4.1 liters can be combined as 7.7 liters or 7700 milliliters.

Revisions to the Math Standards

Specific to K–5

- Refined for clarity

- Increased fluency expectations

- Revised examples

Overarching Revisions

- Revised language to provide clarity and continuity

- Highlighted chart for–grade level mastery expectation for addition, subtraction, multiplication and division

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Former Standard

2.NBT.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.

Current Standard

2.NBT.A.3 Read and write numbers to 1000 using **standard form**, **word form**, and expanded form.

Former Standard

4.NBT.3 Use place value understanding to round multi-digit whole numbers to any place.

Current Standard

4.NBT.A.3 Round multi-digit whole numbers to any place **(up to and including the hundred-thousand place)** using understanding of place value.

Focusing on Fluency in K–5

One-minute Free Write: What is fluency?

Focusing on Fluency in K–5

All students should be able to recall and use their math education when the need arises. That is, a student should know certain math facts and concepts such as the multiplication table, how to add, subtract, multiply, and divide basic numbers, how to work with simple fractions and percentages, etc. There is a level of procedural fluency that a student's K–12 math education should provide him or her along with conceptual understanding so that this can be recalled and used throughout his or her life.

—Tennessee Academic Standards for Mathematics

What is Fluency?

• The ability to apply procedures _____ .

• Recognizing when one strategy or procedure is _____ to apply than another.

• Having opportunities to justify both informal strategies and commonly used procedures through distributed practice.

• Procedural fluency includes computational fluency with the four arithmetic operations. In the early grades, students are expected to develop fluency with whole numbers in addition, subtraction, multiplication, and division.

Definition of Fluency

Computational fluency refers to having efficient and accurate methods for computing. Students exhibit computational fluency when they demonstrate flexibility in the computational methods they choose, understand and can explain these methods, and produce accurate answers efficiently.

The computational methods that a student uses should be based on mathematical ideas that the student understands well, including the structure of the base-ten number system, properties of multiplication and division, and number relationships.

Fluency Progression Chart

Focus	K	1	2	3	4	5
Add	Within 10 using mental strategies					

Revisions to the Math Standards

Specific to 6–8

- Refined major work of the grade

- Revised supporting work of the grade, especially in statistics and probability

Overarching Revisions

- Slight revisions made to geometry in grade 8

- Supporting and additional work of the grade is combined as supporting work of the grade

- Revised language to provide clarity and continuity

Former Standard

6.SP.2 Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.

Current Standard

6.SP.A.2 Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center **(mean, median, mode)**, spread **(range)**, and overall shape.

Revisions to the Math Standards

Specific to 6–8

- Refined major work of the grade

- Revised supporting work of the grade, especially in statistics and probability

Overarching Revisions

- Revised a small number of standards to strengthen coherence by condensing, expanding, and removing standards

- Revised a small number of statistics and probability standards

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Former Standard

6.EE.9 Use variables to represent two quantities in a real-world problem that change in relationship to one another. *For example, Susan is putting money in her savings account by depositing a set amount each week (50). Represent her savings account balance with respect to the number of weekly deposits (*s = 50w*, illustrating the relationship between balance amount* s *and number of weeks* w*).* Write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.

Current Standard

6.EE.C.9 Use variables to represent two quantities in a real-world problem that change in relationship to one another. *For example, Susan is putting money in her savings account by depositing a set amount each week (50). Represent her savings account balance with respect to the number of weekly deposits (*s = 50w*, illustrating the relationship between balance amount* s *and number of weeks* w*).*

a. Write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable.

b. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.

Revisions to the Math Standards

Specific to 6–8

- Refined major work of the grade

- Revised supporting work of the grade, especially in statistics and probability

Overarching Revisions

- Revised a small number of standards to strengthen coherence by condensing, expanding, and removing standards

- Revised a small number of statistics and probability standards

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Removed Standard

7.G.3 Describe the two-dimensional figures that result from slicing three dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.

Former Standard

6.SP.5c Summarize numerical data sets in relation to their context, such as by: c. Giving quantitative measures of center (median and/or mean) and variability **(interquartile range and/or mean absolute deviation)**, as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.

Current Standard

6.SP.B.5c Summarize numerical data sets in relation to their context, such as by: c. Giving quantitative measures of center (median and/or mean) and variability **(range)**, as well as describing any overall pattern with reference to the context in which the data were gathered.

Revisions to the Math Standards

Specific to 9–12

- Refined and revised scope and clarifications

- Revisions for Algebra II and Integrated Math III

- Restructured additional math courses to reflect college and career readiness

Overarching Revisions

- Supporting and additional work of the grade is combined as supporting work of the grade

- Removed or shifted a small number of standards to the major work of the grade to streamline vertical progression

- Revised language and examples to provide clarity and continuity

- Shifted a small number of supporting work of the grade standards to additional mathematics courses

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Former Standard

G.SRT.8 Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.

Current Standard

G.SRT.C.8a *Know and* use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.

Moved Standard

A2/M3.F.TF.5 to P.F.TF.A.4 Choose trigonometric functions to model periodic phenomena with specified amplitude, frequency, and midline.

This standard moved from Algebra II/Integrated III to Pre-Calculus.

Revisions to the Math Standards

Specific to 9–12

- Refined and revised scope and clarifications

- Revisions for Algebra II and Integrated Math III

- Restructured additional courses to reflect college and career readiness

Overarching Revisions

- Restructured additional mathematics courses to reflect college and career readiness by removing three courses and adding "Applied Mathematical Concepts"

Rationale:

- High expectations

- Retention of rigorous standards

- Clearly defined and coherent pathways

- Equity and opportunity

- Aligned with student interest in postsecondary fields

- Shift to a discipline and career based pathway

Former:
- Advanced Algebra and Trigonometry
- Discrete Math
- Finite Math
- Bridge Math
- Pre-Calculus
- Statistics
- Calculus

Current:
- **Applied Mathematical Concepts**
- Bridge Math
- Pre-Calculus
- Statistics
- Calculus

Revisions to the Math Standards

New Applied Mathematical Concepts Course

- For students interested in careers that use applied mathematics such as banking, industry, or human resources

- Rich problem solving experience

- Combines standards from Senior Finite Math and Discrete Mathematics

- Designed with industry needs in mind

- Alignment with first three math courses and ACT college and career readiness

- Possible dual credit exam

Problems in Applied Mathematical Concepts

AM.G.L.A.3: Solve a variety of logic puzzles

What's the easiest way to heat a pan of water for 9 minutes when you have only a 6-minute hour-glass timer and a 21-minute hour-glass timer?

AM.D.ID.A.2: Use a variety of counting methods to organize information, determine probabilities, and solve problems.

Given a group of students: G = {Allen, Brenda, Chad, Dorothy, Eric} list and count the different ways of choosing the following officers or representatives for student congress. Assume that no one can hold more than one office.

A president, a secretary, and a treasurer, if the president must be a woman and the other two must be men.

AM.N.NQ.B.6: Solve contextual problems involving financial decision-making.

The cash price of a fitness system is $659.99. The customer paid $115 as a down payment. The remainder will be paid in 36 monthly installments of $19.16 each. Find the amount of the finance charge.

Revisions to the Math Standards

Standards Comparison Activity

Compare the former standards to the current standards.

Directions:

1. Highlight any changes you notice between the former standards and the current standards in the column on the right.

2. Use the included chart to compare the former standards with the current standards.

Notes:

Kindergarten Standards Comparison Activity

Coding	Former TN Standards	Current TN Standards
K.CC.A.1	Count to 100 by ones and by tens.	**K.CC.A.1** Count to 100 by ones, fives, and tens. Count backward from 10.
K.CC.A.2	Count forward beginning from a given number within the known sequence (instead of having to begin at 1).	**K.CC.A.2** Count forward beginning from a given number within the known sequence (instead of having to begin at 1).
K.CC.A.3	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).	**K.CC.A.3** Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20.
K.CC.B.4	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. 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. c. Understand that each successive number name refers to a quantity that is one larger.	**K.CC.B.4** Understand the relationship between numbers and quantities; connect counting to cardinality. a. When counting objects, say the number names in the standard order, using one-to-one correspondence. Recognize that the last number name said tells the number of objects counted. b. The number of objects is the same regardless of their arrangement or the order in which they were counted. c. Recognize that each successive number name refers to a quantity that is one greater.
K.CC.B.5	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.	**K.CC.B.5** Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, a circle, or as many as 10 things in a scattered configuration. Given a number from 1-20, count out that many objects.
K.CC.C.6	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. (Include groups with up to ten objects.)	**K.CC.C.6** Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group.
K.CC.C.7	Compare two numbers between 1 and 10 presented as written numerals.	**K.CC.C.7** Compare two given numbers up to 10, when written as numerals, using the terms greater than, less than, or equal to.
K.OA.A.1	Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal	**K.OA.A.1** Represent addition and subtraction with objects, fingers, mental images, drawings, sounds, acting out situations, verbal

	explanations, expressions, or equations. (Drawings need not show details, but should show the mathematics in the problem.)	explanations, expressions, or equations.
K.OA.A.2	Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.	**K.OA.A.2** Add and subtract within 10 to solve contextual problems using objects or drawings to represent the problem.
K.OA.A.3	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).	**K.OA.A.3** Decompose numbers less than or equal to 10 into addend pairs in more than one way (e.g., 5 = 2 + 3 and 5 = 4 + 1) by using objects or drawings. Record each decomposition using a drawing or writing an equation.
K.OA.A.4	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.	**K.OA.A.4** Find the number that makes 10, when added to any given number, from 1 to 9 using objects or drawings. Record the answer using a drawing or writing an equation.
K.OA.A.5	Fluently add and subtract within 5.	**K.OA.A.5** Fluently add and subtract within 10 using mental strategies.
K.NBT.A.1	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 (e.g., 18 = 10 + 8); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.	**K.NBT.A.1** Compose and decompose numbers from 11 to 19 into ten ones and some more ones by using objects or drawings. Record the composition or decomposition using a drawing or by writing an equation.
K.MD.A.1	Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.	**K.MD.A.1** Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.
K.MD.A.2	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.*	**K.MD.A.2** 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.*

		K.MD.B.3 Identify the penny, nickel, dime, and quarter and recognize the value of each.
K.MD.B.3	Classify objects into given categories; count the numbers of objects in each category and sort the categories by count. (Limit category counts to be less than or equal to 10).	**K.MD.C.4** Sort a collection of objects into a given category, with 10 or less in each category. Compare the categories by group size.
K.G.A.1	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.	**K.G.A.1** Describe objects in the environment using names of shapes. Describe the relative positions of these objects using terms such as above, below, beside, in front of, behind, between, and next to.
K.G.A.2	Correctly name shapes regardless of their orientations or overall size.	**K.G.A.2** Correctly name shapes regardless of their orientations or overall size.
K.G.A.3	Identify shapes as two-dimensional (lying in a plane, "flat") or three-dimensional ("solid").	**K.G.A.3** Identify shapes as two-dimensional or three-dimensional.
K.G.B.4	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).	**K.G.B.4** Describe similarities and differences between two- and three-dimensional shapes, in different sizes and orientations.
K.G.B.5	Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.	**K.G.B.5** Model shapes in the world by building and drawing shapes.
K.G.B.6	Compose simple shapes to form larger shapes. For example, "Can you join these two triangles with full sides touching to make a rectangle?"	**K.G.B.6** Compose larger shapes using simple shapes and identify smaller shapes within a larger shape.

Grade 1 Standards Comparison Activity

Coding	Former TN Standards	Revised TN Standards
1.OA.A.1	1. Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.	**1.OA.A.1** Add and subtract within 20 to solve contextual problems, with unknowns in all positions, involving situations of *add to*, *take from*, *put together/take apart*, and *compare*. Use objects, drawings, and equations with a symbol for the unknown number to represent the problem. (See Table 1 - Addition and Subtraction Situations)
1.OA.A.2	2. Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.	**1.OA.A.2** Add three whole numbers whose sum is within 20 to solve contextual problems using objects, drawings, and equations with a symbol for the unknown number to represent the problem.
1.OA.B.3	3. Apply properties of operations as strategies to add and subtract. *Examples: If 8 + 3 = 11 is known, then 3 + 8 = 11 is also known. (Commutative property of addition.) To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12. (Associative property of addition.)* (Students need not use formal terms for these properties.)	**1.OA.B.3** Apply properties of operations (additive identity, commutative, and associative) as strategies to add and subtract. (Students need not use formal terms for these properties.)
1.OA.B.4	4. Understand subtraction as an unknown-addend problem. *For example, subtract 10 – 8 by finding the number that makes 10 when added to 8.*	**1.OA.B.4** Understand subtraction as an unknown-addend problem. *For example, to solve 10 – 8 = _____, a student can use 8 + ____ = 10.*
1.OA.C.5	5. Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).	**1.OA.C.5** Add and subtract within 20 using strategies such as counting on, counting back, making 10, using fact families and related known facts, and composing/decomposing numbers with an emphasis on making ten (e.g., 13 - 4 = 13 - 3 - 1 = 10 - 1 = 9 or adding 6 + 7 by creating the known equivalent 6 + 4 + 3 = 10 + 3 = 13).
1.OA.C.6	6. Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13).	**1.OA.C.6** Fluently add and subtract within 20 using mental strategies. By the end of 1st grade, know from memory all sums up to 10.

1.OA.D.7	7. Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. *For example, which of the following equations are true and which are false? 6 = 6, 7 = 8 – 1, 5 + 2 = 2 + 5, 4 + 1 = 5 + 2.*	**1.OA.D.7** Understand the meaning of the equal sign (e.g., 6 = 6; 5 + 2 = 4 + 3; 7 = 8 - 1). Determine if equations involving addition and subtraction are true or false.
1.OA.D.8	8. Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations 8 + ? = 11, 5 = ☐ – 3, 6 + 6 = ☐.*	**1.OA.D.8** Determine the unknown whole number in an addition or subtraction equation, with the unknown in any position (e.g., 8 + ? = 11, 5 = ? - 3, 6 + 6 = ?).
1.NBT.1	Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.	**1.NBT.A.1** Count to 120, starting at any number. Read and write numerals to 120 and represent a number of objects with a written numeral. Count backward from 20.

1.NBT.2	Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases:
	  a. 10 can be thought of as a bundle of ten ones — called a "ten."
	  b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.
	  c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).
		1.NBT.B.2 Know that the digits of a two-digit number represent groups of tens and ones (e.g., 39 can be represented as 39 ones, 2 tens and 19 ones, or 3 tens and 9 ones).

1.NBT.3	Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <.	**1.NBT.B.3** Compare two two-digit numbers based on the meanings of the digits in each place and use the symbols >, =, and < to show the relationship.
1.NBT.4	Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.	**1.NBT.C.4** Add a two-digit number to a one-digit number and a two-digit number to a multiple of ten (within 100). Use concrete models, drawings, strategies based on place value, properties of operations, and/or the relationship between addition and subtraction to explain the reasoning used.
1.NBT.5	Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.	**1.NBT.C.5** Mentally find 10 more or 10 less than a given two-digit number without having to count by ones and explain the reasoning used.

1.NBT.6	Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.	**1.NBT.C.6** Subtract multiples of 10 from multiples of 10 in the range 10-90 using concrete models, drawings, strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
1.MD.A.1	1. Order three objects by length; compare the lengths of two objects indirectly by using a third object.	**1.MD.A.1** Order three objects by length. Compare the lengths of two objects indirectly by using a third object. *For example, to compare indirectly the heights of Bill and Susan: if Bill is taller than mother and mother is taller than Susan, then Bill is taller than Susan.*
1.MD.A.2	2. Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. *Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.*	**1.MD.A.2** Measure the length of an object using non-standard units and express this length as a whole number of units.
1.MD.B.3	3. Tell and write time in hours and half-hours using analog and digital clocks.	**1.MD.B.3** Tell and write time in hours and half-hours using analog and digital clocks.
		1.MD.B.4 Count the value of a set of like coins less than one dollar using the ¢ symbol only.
1.MD.C.4	4. Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.	**1.MD.C.5** Organize, represent, and interpret data with up to three categories. Ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.
1.G.1	Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes.	**1.G.A.1** Distinguish between attributes that define a shape (e.g., number of sides and vertices) versus attributes that do not define the shape (e.g., color, orientation, overall size); build and draw two-dimensional shapes to possess defining attributes.

1.G.2	Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape.	**1.G.A.2** Create a composite shape and use the composite shape to make new shapes by using two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, rectangular prisms, cones, and cylinders).
1.G.3	Partition circles and rectangles into two and four equal shares, describe he shares using the words *halves*, *fourths*, and *quarters*, and use the phrases *half of*, *fourth of*, and *quarter of*. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.	**1.G.A.3** Partition circles and rectangles into two and four equal shares, describe the shares using the words *halves*, *fourths*, and *quarters*, and use the phrases *half of*, *fourth of*, and *quarter of*. Describe the whole as *two of*, or *four of* the shares. Understand for these examples that partitioning into more equal shares creates smaller shares.

Grade 2 Standards Comparison Activity

Notation	Former TN Standards	Revised TN Standards
2.OA.A.1	Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.	**2.OA.A.1** Add and subtract within 100 to solve one- and two-step contextual problems, with unknowns in all positions, involving situations of *add to*, *take from*, *put together/take apart*, and *compare*. Use objects, drawings, and equations with a symbol for the unknown number to represent the problem. (See Table 1 - Addition and Subtraction Situations)
2.OA.A.2	Fluently add and subtract within 20 using mental strategies. (See standard 1.OA.6 for a list of mental strategies.) By end of Grade 2, know from memory all sums of two one-digit numbers.	**2.OA.B.2** Fluently add and subtract within 30 using mental strategies. By the end of 2nd grade, know from memory all sums of two one-digit numbers and related subtraction facts.
2.OA.C.3	Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.	**2.OA.C.3** Determine whether a group of objects (up to 20) has an odd or even number of members by pairing objects or counting them by 2s. Write an equation to express an even number as a sum of two equal addends.
2.OA.C.4	Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.	**2.OA.C.4** Use repeated addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.
2.NBT.A.1	Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases: a. 100 can be thought of as a bundle of ten tens — called a "hundred." b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).	**2.NBT.A.1** Know that the three digits of a three-digit number represent amounts of hundreds, tens, and ones (e.g., 706 can be represented in multiple ways as 7 hundreds, 0 tens, and 6 ones; 706 ones; or 70 tens and 6 ones).
2.NBT.A.2	Count within 1000; skip-count by 5s, 10s, and 100s.	**2.NBT.A.2** Count within 1000. Skip-count within 1000 by 5s, 10s, and 100s, starting from any number in its skip counting sequence.
2.NBT.A.3	Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.	**2.NBT.A.3** Read and write numbers to 1000 using standard form, word form, and expanded form.
2.NBT.A.4	Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.	**2.NBT.A.4** Compare two three-digit numbers based on the meanings of the digits in each place and use the symbols >, =, and < to show the relationship.

2.NBT.B.5	Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.	**2.NBT.B.5** Fluently add and subtract within 100 using properties of operations, strategies based on place value, and/or the relationship between addition and subtraction.
2.NBT.B.6	Add up to four two-digit numbers using strategies based on place value and properties of operations.	**2.NBT.B.6** Add up to four two-digit numbers using properties of operations and strategies based on place value.
2.NBT.B.7	Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.	**2.NBT.B.7** Add and subtract within 1000 using concrete models, drawings, strategies based on place value, properties of operations, and/or the relationship between addition and subtraction to explain the reasoning used.
2.NBT.B.8	Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.	**2.NBT.B.8** Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100– 900.
2.NBT.B.9	Explain why addition and subtraction strategies work, using place value and the properties of operations. (Explanations may be supported by drawings or objects.)	**2.NBT.B.9** Explain why addition and subtraction strategies work using properties of operations and place value. (Explanations may include words, drawing, or objects.)
2.MD.A.1	Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.	**2.MD.A.1** Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.
2.MD.A.2	Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.	**2.MD.A.2** Measure the length of an object using two different units of measure and describe how the two measurements relate to the size of the unit chosen.
2.MD.A.3	Estimate lengths using units of inches, feet, centimeters, and meters.	**2.MD.A.3** Estimate lengths using units of inches, feet, yards, centimeters, and meters.

2.MD.A.4	Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.	**2.MD.A.4** Measure to determine how much longer one object is than another and express the difference in terms of a standard unit of length.
2.MD.B.5	Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.	**2.MD.B.5** Add and subtract within 100 to solve contextual problems involving lengths that are given in the same units by using drawings and equations with a symbol for the unknown to represent the problem.
2.MD.B.6	Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram.	**2.MD.B.6** Represent whole numbers as lengths from 0 on a number line and know that the points corresponding to the numbers on the number line are equally spaced. Use a number line to represent whole number sums and differences of lengths within 100.
2.MD.C.7	Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.	**2.MD.C.7** Tell and write time in quarter hours and to the nearest five minutes (in a.m. and p.m.) using analog and digital clocks.
2.MD.C.8	Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. *Example: If you have 2 dimes and 3 pennies, how many cents do you have?*	**2.MD.C.8** Solve contextual problems involving dollar bills, quarters, dimes, nickels, and pennies using ¢ and $ symbols appropriately.
2.MD.D.9	Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.	**2.MD.D.9** Generate measurement data by measuring lengths of several objects to the nearest whole unit. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.
2.MD.D.10	Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put together, take-apart, and compare problems using information presented in a bar graph.	**2.MD.D.10** Draw a pictograph and a bar graph (with intervals of one) to represent a data set with up to four categories. Solve addition and subtraction problems related to the data in a graph.
2.G.A.1	Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons,	**2.G.A.1** Identify triangles, quadrilaterals, pentagons, hexagons, and cubes. Draw two-dimensional shapes having specified attributes (as determined directly or visually, not by

	and cubes. (Sizes are compared directly or visually, not compared by measuring.)	measuring), such as a given number of angles or a given number of sides of equal length.
2.G.A.2	Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.	**2.G.A.2** Partition a rectangle into rows and columns of same-size squares and count to find the total number of squares.
2.G.A.3	Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words *halves*, *thirds*, *half of*, *a third of*, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.	**2.G.A.3** Partition circles and rectangles into two, three, and four equal shares, describe the shares using the words *halves, thirds, fourths, half of, a third of, and a fourth of*, and describe the whole as *two halves, three thirds, four fourths*. Recognize that equal shares of identical wholes need not have the same shape.

TN Department of
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Standards Comparison Chart

Standard Coding	Dropped from Course	Added to Course	Revised	No change

Revisions to the Math Standards

Standards Comparison Activity

1. If you had to summarize the revisions to these selected standards in twenty words or less, what would you say?

Notes:
Small Group Consensus:
Whole Group Consensus:

Appointment with Peers

Please meet with your first partner to discuss the following:

- How will these changes impact your classroom?

- What are your takeaways from modules 1–3?

- How does this align to your observation rubric?

Notes:

Module 3 Review

- The instructional expectations remain the same and are still the focus of the standards.

- The revised standards represent a stronger foundation that will support the progression of rigorous standards throughout the grade levels.

- The revised standards improve connections:

    – within a single grade level, and

    – between multiple grade levels.

Strong Standards

Standards are the bricks that should be masterfully laid through quality instruction to ensure that all students reach the expectation of the standards.

TN Department of **Education**

Part 2: Developing a Deeper Understanding
Module 4: Diving Into K–2 Math

Strong Standards

High Expectations

Instructional Shifts

Aligned Materials and Assessments

Goals

• Concisely describe a course based on its introduction.

• Develop a means for deconstructing standards to determine the mathematical emphasis of the standard—its intent and purpose.

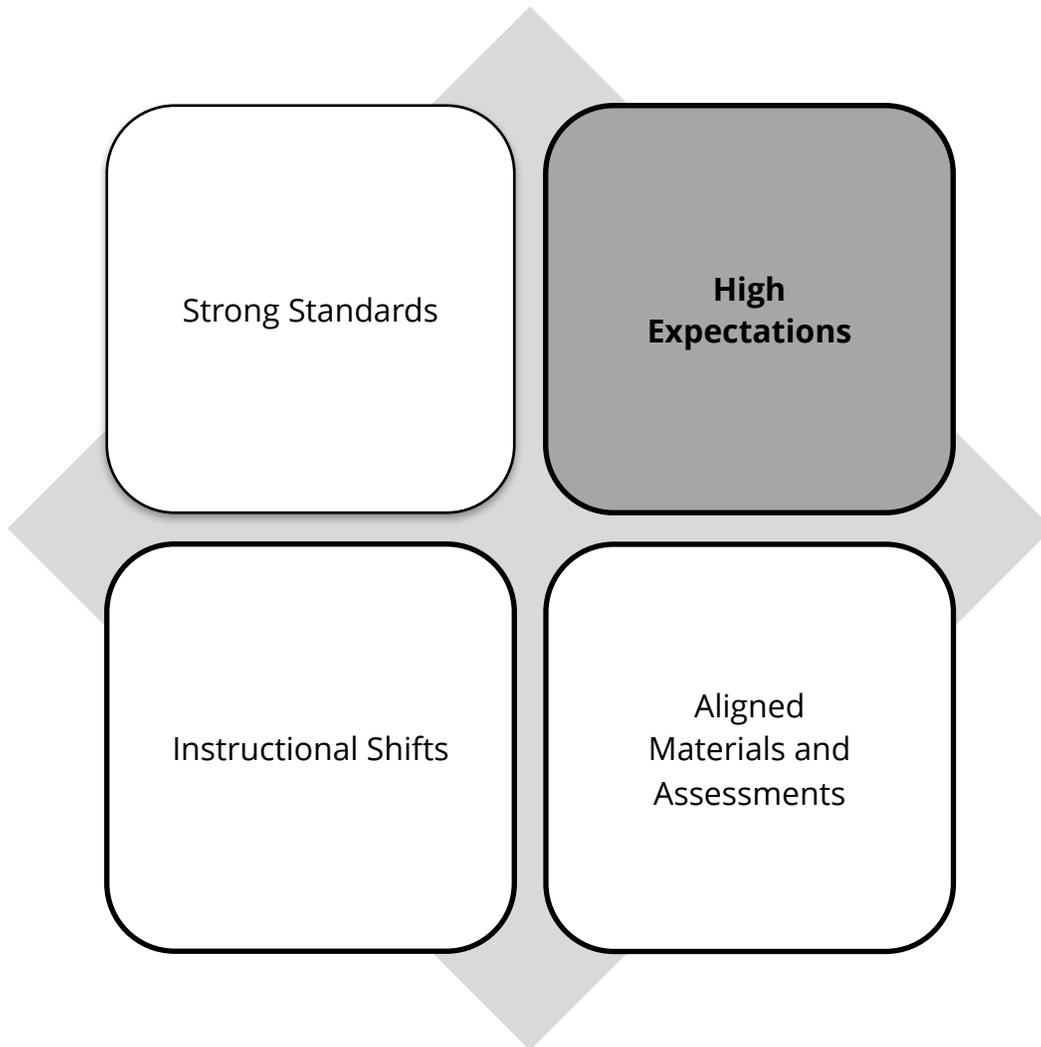• Use the KUD approach to guide planning, instruction, and assessment.

Strong Standards

Standards are the bricks that should be masterfully laid through quality instruction to ensure that all students reach the expectation of the standards.

High Expectations

We have a continued goal to prepare students to be college and career ready.

Instructional Shifts

The instructional shifts are an essential component of the standards and provide guidance for how the standards should be taught and implemented.

Aligned Materials and Assessments

Educators play a key role in ensuring that our standards, classroom instructional materials, and assessments are aligned.

Closer Look

Take a few minutes to read the overview page for your grade level and think about how this relates to the overarching revisions we have just seen.

Notes:

Now summarize your course in 140 characters. Write your tweet to inform others regarding what is included in your grade.

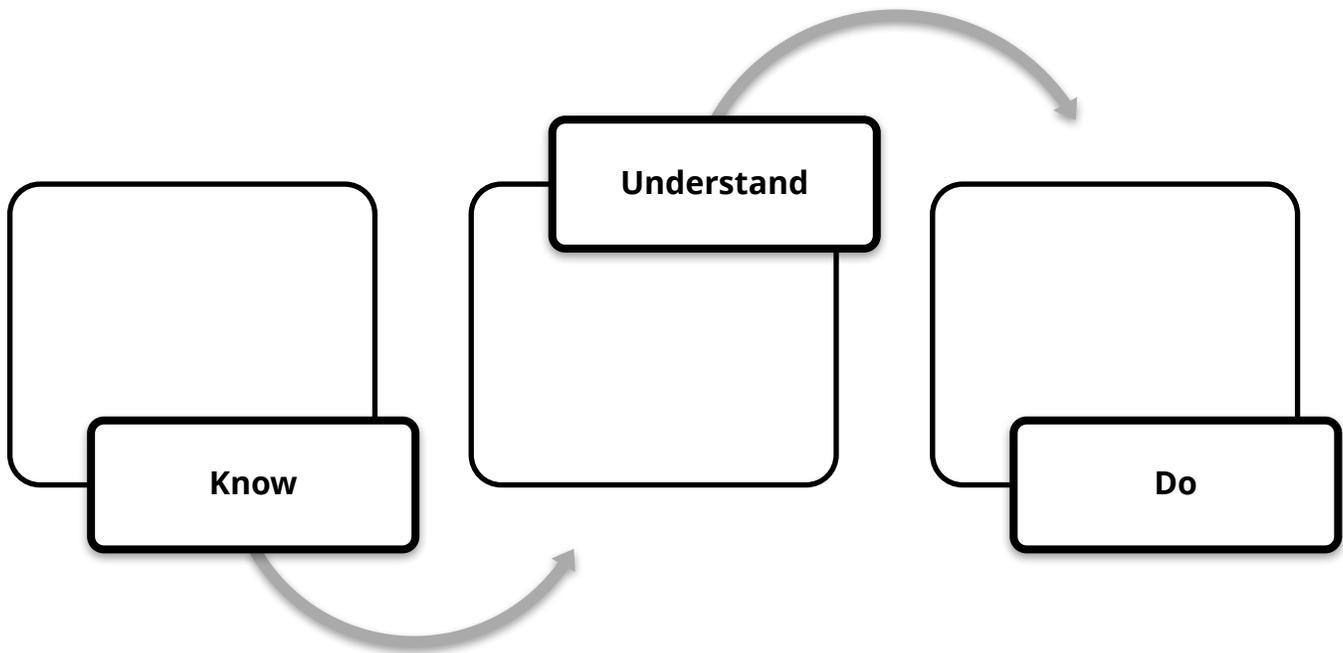| My Tweet: |
|---|
| |

![TN Department of Education logo]

We are going to look closely at K.CC.B.4.

Know (facts, vocabulary)	Understand (concepts, generalizations)	Do (verbs, skills)

Essential Questions:

Instruction & Assessment (What does the math look like?)

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From Standard to Instruction: KUD

Know, Understand, and Do

- What is it that the standard wants the student to know, understand, and do?

- KUD – helps to maintain focus in differentiated instruction

  – **Know**: facts, vocabulary, properties, procedures, etc.

  – **Understand**: concepts, ideas, etc.

  – **Do**: tasks, approaches, assessment problems, etc.

- The two go together: What is the intent and purpose of the standard, and how do I put this into instructional form?

Understand

Know

Do

You Try One.

Know (facts, vocabulary)	Understand (concepts, generalizations)	Do (verbs, skills)

Essential Questions:

Instruction & Assessment (What does the math look like?)

Module 4 Review

- Concisely describe a course based on its introduction.

- Develop a means for deconstructing standards to determine the mathematical emphasis, intent, and purpose of the standard.

- Use the KUD approach to guide planning, instruction, and assessment.

High Expectations

We have a continued goal to prepare students to be college and career ready.

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Part 3: Instructional Shifts
Module 5: Revisiting the SMP's and Instructional Expectations

Strong Standards

High Expectations

Instructional Shifts

Aligned Materials and Assessments

Goals

- Revisit the concepts of focus, coherence, and rigor and how they play out in instruction.

- Discuss the purpose and place of the content and practice standards.

- Explore students' mathematical mindsets.

- Share instructional strategies related to the Standards for Mathematical Practice.

- Discuss research on the influence of mindsets in the math classroom.

Strong Standards

Standards are the bricks that should be masterfully laid through quality instruction to ensure that all students reach the expectation of the standards.

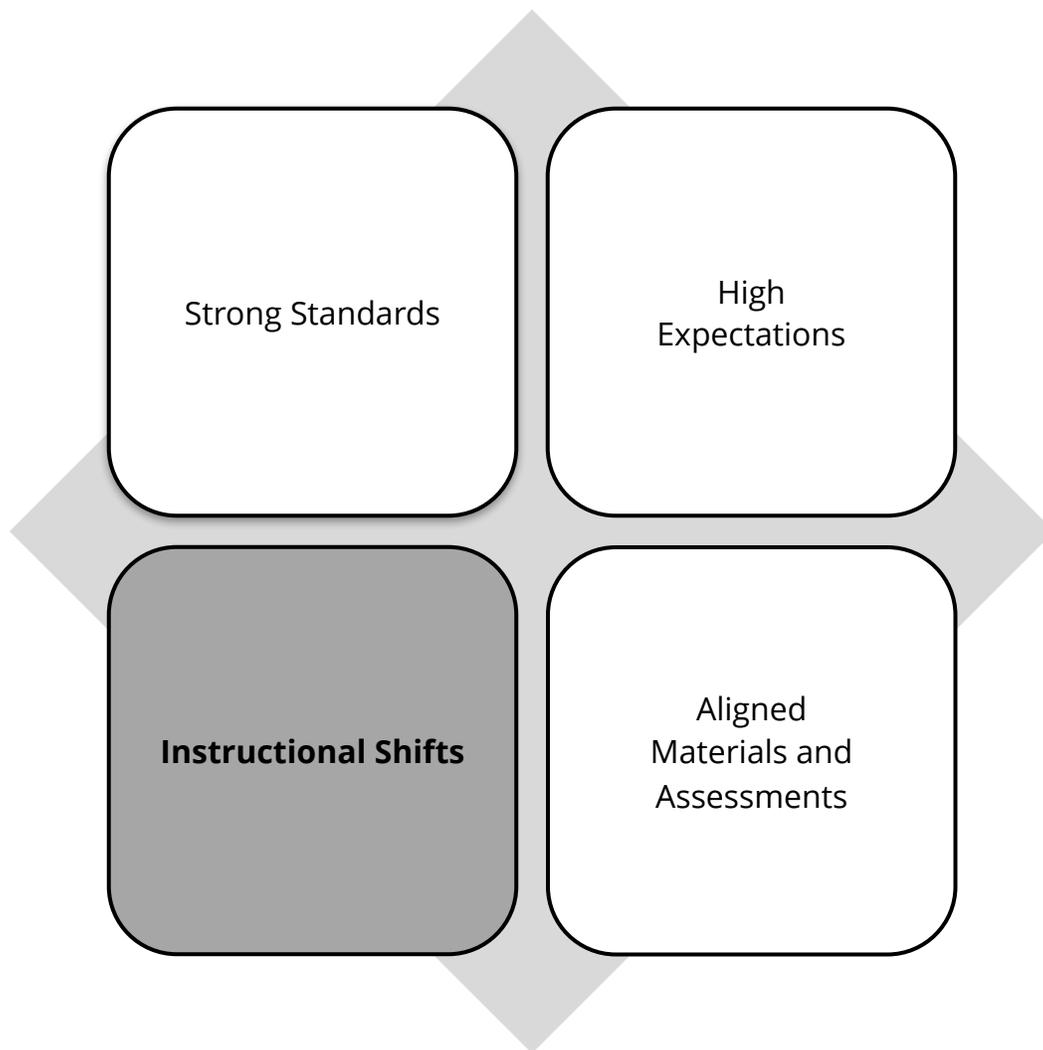**High Expectations**

We have a continued goal to prepare students to be college and career ready.

Instructional Shifts

The instructional shifts are an essential component of the standards and provide guidance for how the standards should be taught and implemented.

Aligned Materials and Assessments

Educators play a key role in ensuring that our standards, classroom instructional materials, and assessments are aligned.

Why Standards for Mathematical Practice?

"Beginning to experiment with small changes to one's teaching practice and collaborating with colleagues can help move students toward the vision of mathematical proficiency described in the Standards for Mathematical Practice"

—Mateas, 2016

- Tell us what students should know and be able to do

- So, what should students know and do?

  - Content Standards

  - Standards for Mathematical Practice

  - Literacy Skills

- **Knowing that these are *what* students need to learn, teachers determine *how* to teach these.**

Standards for Mathematical Practice

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

2. Reason abstractly and quantitatively.

3. Construct viable arguments and critique the reasoning of others.

4. Model with mathematics.

5. Use appropriate tools strategically.

6. Attend to precision.

7. Look for and make use of structure.

8. Look for and express regularity in repeated reasoning.

Mindset

- The TN Academic Standards for Mathematics may seem challenging for students whose mindsets have been fixed by their past experiences in mathematics classrooms.
- As teachers, we are best positioned to influence students' mathematical mindsets through our actions and practices in the mathematics classroom.

_____ -Intelligence is a fixed trait. You cannot change it.

_____ -You can grow your intelligence through effort.

Notes:

Why Address Mindsets?

"If there's a threat of being wrong every time I raise my hand, and being wrong is a bad thing, then very quickly I decide math isn't for me, I don't like this, I'm not a smart person."

—Noah Heller, Harvard Graduate School of Education, 2016

Everyone can learn math to the highest levels	Mistakes are valuable	Questions are important

Math is about creativity and making sense	Math is about connections and communicating	Math class is about learning not preforming	Depth is more important than speed

Notes:

![TN Department of Education logo]

Instructional Expectations

Focus

1. In your grade-level groups, discuss ways you could respond if someone asks you the following question: "Why focus? There's so much math that students could be learning. Why limit them?"

2. Review the table below and answer the questions, "Which two of the following represent areas of major focus for the indicated grade?"

K	Compare numbers	Use tally marks	Understand the meaning of addition and subtraction
1	Add and subtract within 20	Measure lengths indirectly and by iterating length units	Create and extend patterns and sequences
2	Represent and solve problems involving addition and subtraction	Understand place value	Identify line of symmetry in two dimensions

TN Department of
Education

Instructional Shifts

Coherence

In the space below, copy all of the standards for your assigned domain and note how coherence is evident in the vertical progression of these standards.

Grade	Standard	Summary of the Standard (If the standard has sub-parts, summarize each sub-part.)

TN Department of
Education

Instructional Shifts

Rigor

1. Make a true statement: *Rigor* = _____ + _____ + _____

2. In your groups, discuss ways to respond to one of the following comments: "These standards are expecting that we just teach rote memorization. Seems like a step backwards to me." Or "I'm not going to spend time on fluency—it should just be a natural outcome of conceptual understanding."

3. The shift towards rigor is required by the standards. Find and copy in the space below standards which specifically set expectations for each component of rigor.

Standard	Evidence

What do the instructional shifts look like in the classroom?
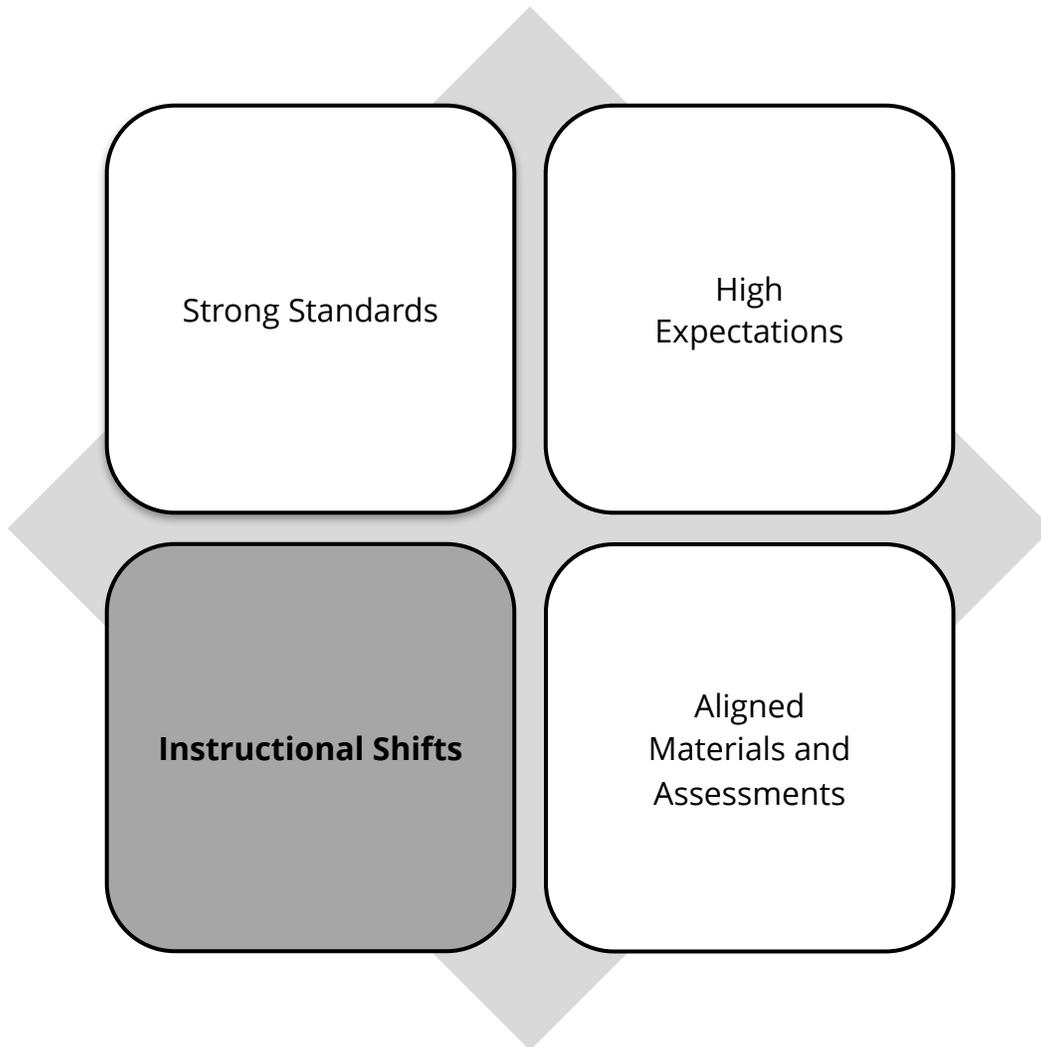
Module 5 Review

- We connected the instructional shifts to the standards and our classroom practices.

- We explored students' mathematical mindsets.

- We shared instructional strategies related to the Standards for Mathematical Practice.

Instructional Shifts

The instructional expectations are an essential component of the standards and provide guidance for how the standards should be taught and implemented.

Part 3: Instructional Shifts
Module 6: Literacy Skills for Mathematical Proficiency

Strong Standards

High Expectations

Instructional Shifts

Aligned Materials and Assessments

Goal

- Develop a better understanding of the Literacy Skills for Mathematical Proficiency.

Strong Standards

Standards are the bricks that should be masterfully laid through quality instruction to ensure that all students reach the expectation of the standards.

High Expectations

We have a continued goal to prepare students to be college and career ready.

Instructional Shifts

The instructional shifts are an essential component of the standards and provide guidance for how the standards should be taught and implemented.

Aligned Materials and Assessments

Educators play a key role in ensuring that our standards, classroom instructional materials, and assessments are aligned.

Literacy in your Math Classroom

Reflect on ways literacy skills are already present in your mathematics classroom.

Literacy Skills for Math Proficiency

Communication in mathematics requires literacy skills in reading, vocabulary, speaking, listening, and writing.

Literacy Skills for Mathematical Proficiency

1. Use multiple reading strategies.

2. Understand and use correct mathematical vocabulary.

3. Discuss and articulate mathematical ideas.

4. Write mathematical arguments.

Literacy Skills for Math Proficiency

Categorize the strategies you listed and discussed with your table partners in the chart below.

Reading	
Vocabulary	
Speaking & Listening	
Writing	

Literacy Skills for Mathematical Proficiency

1. Read and annotate your assigned section from pages 13–14 of the TN Math Standards. Work with your group to present this information to your colleagues.

2. Use the chart below to take notes and highlight the main ideas of each section.

Reading	
Vocabulary	
Speaking & Listening	
Writing	

Four Stages of Word Knowledge

1. Students have never encountered the word before.

2. Students have seen/heard the word but do not know the definition.

3. Students know the word but rely on context to define it.

4. Students know the word and can use it comfortably.

Mathematics Vocabulary

Notes:

Making Connections

![TN Department of Education logo]

Module 6 Review

- Literacy skills in the math classroom will support students' understanding of the content standards.

- When students can read, write, and speak about math ideas, connections are being made between concepts.

Instructional Shifts

The instructional shifts are an essential component of the standards and provide guidance for how the standards should be taught and implemented.
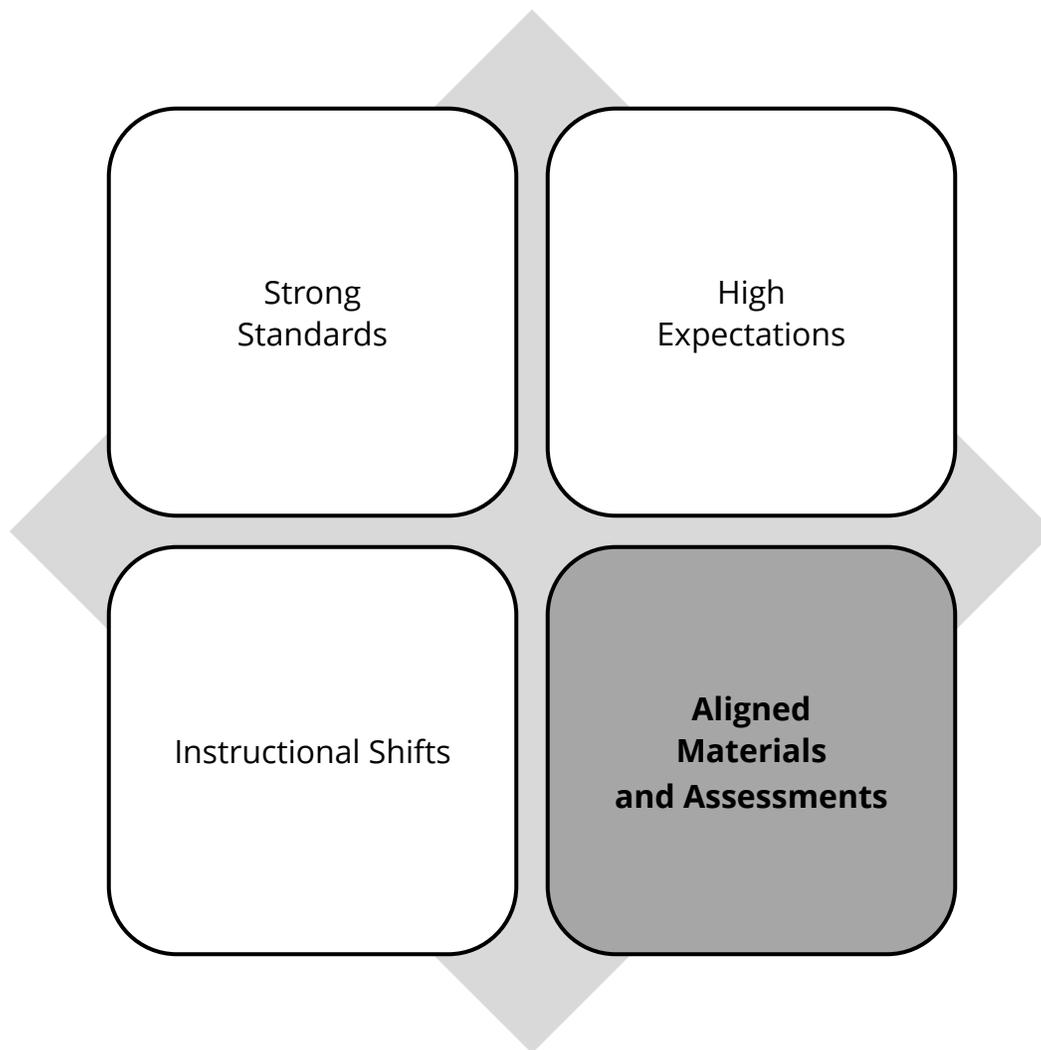
![TN Department of Education logo]

Appointment with Peers

Please meet with your second partner to discuss:

- What are your key takeaways from today?

- How does the align to your observation rubric?

Notes:

Part 4: Assessment and Materials
Module 7: Connecting Standards and Assessment

Strong Standards

High Expectations

Instructional Shifts

Aligned Materials and Assessments

![TN Department of Education logo]

Goals

- Discuss the role assessment plays in the integrated system of learning.

- Discuss the cycle of assessment.

- Discuss the areas of focus for standards-aligned assessments.

- Review and write mathematics assessment items.

Strong Standards

Standards are the bricks that should be masterfully laid through quality instruction to ensure that all students reach the expectation of the standards.

High Expectations

We have a continued goal to prepare students to be college and career ready.

Instructional Shifts

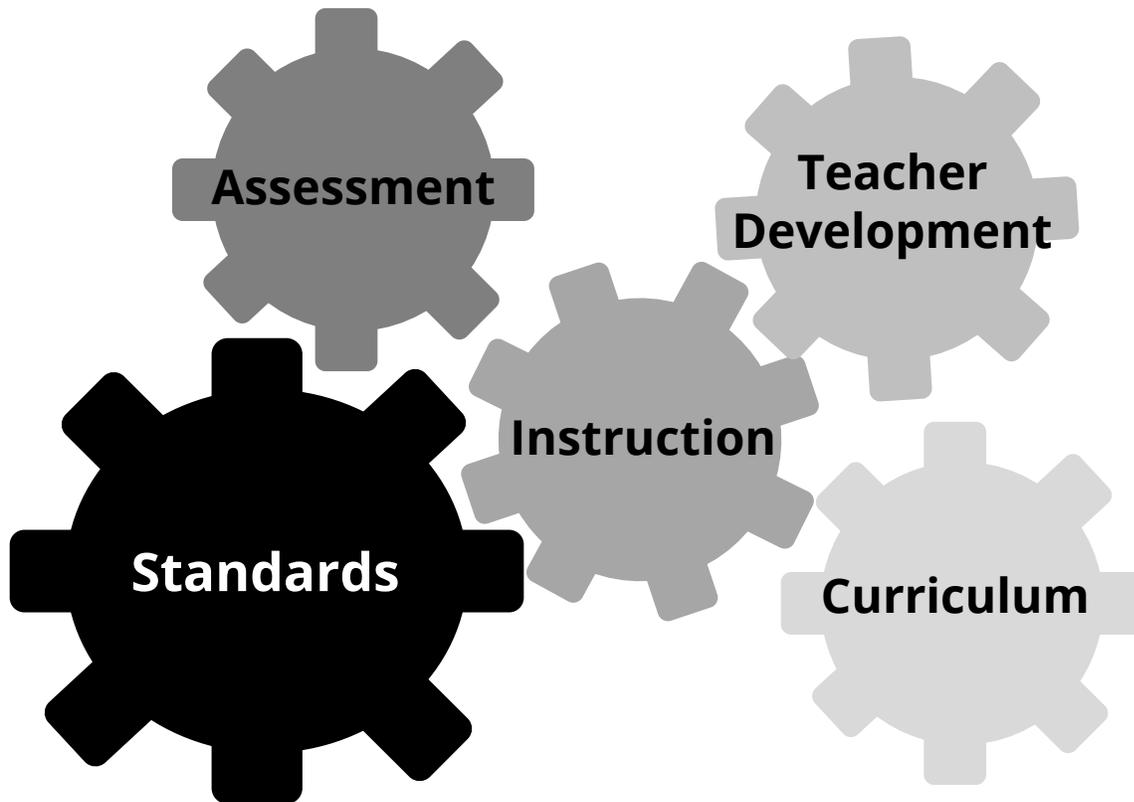The instructional shifts are an essential component of the standards and provide guidance for how the standards should be taught and implemented.

Aligned Materials and Assessments

Educators play a key role in ensuring that our standards, classroom instructional materials, and assessments are aligned.
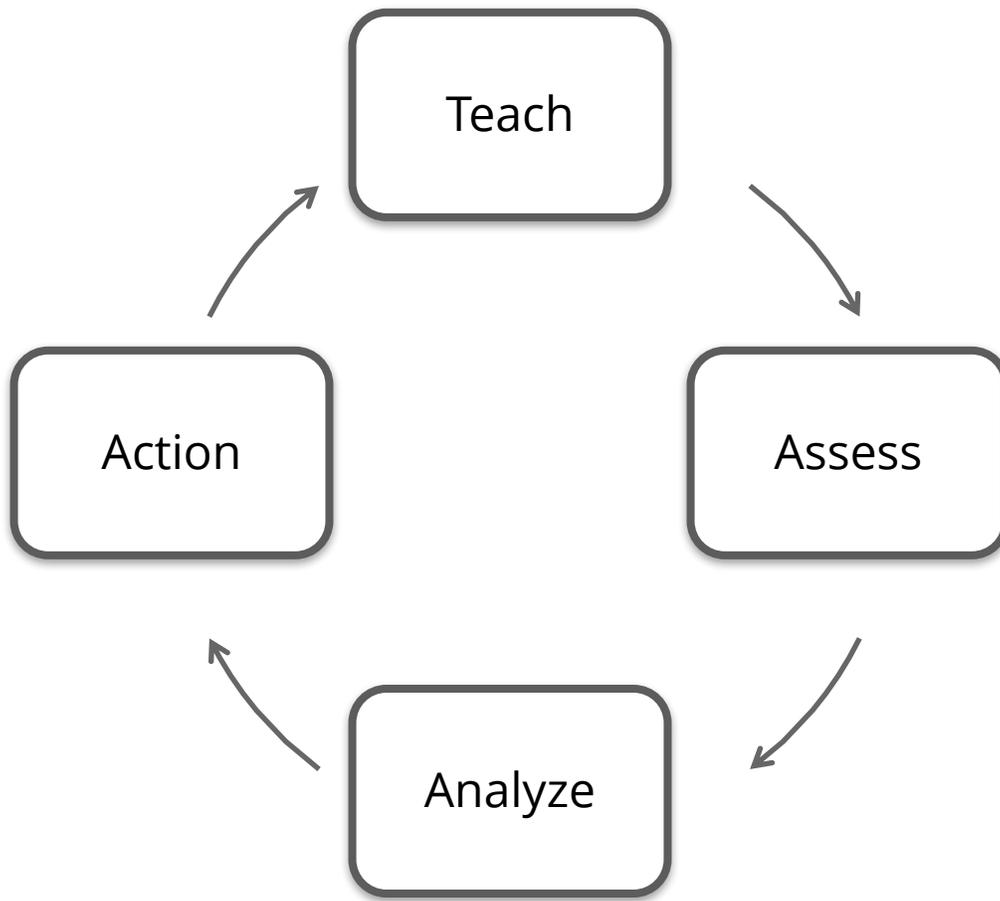
Connecting Standards and Assessment

Assessment is

_____.

Considering this definition of assessment, what are educators "making a judgement about" when assessing students?
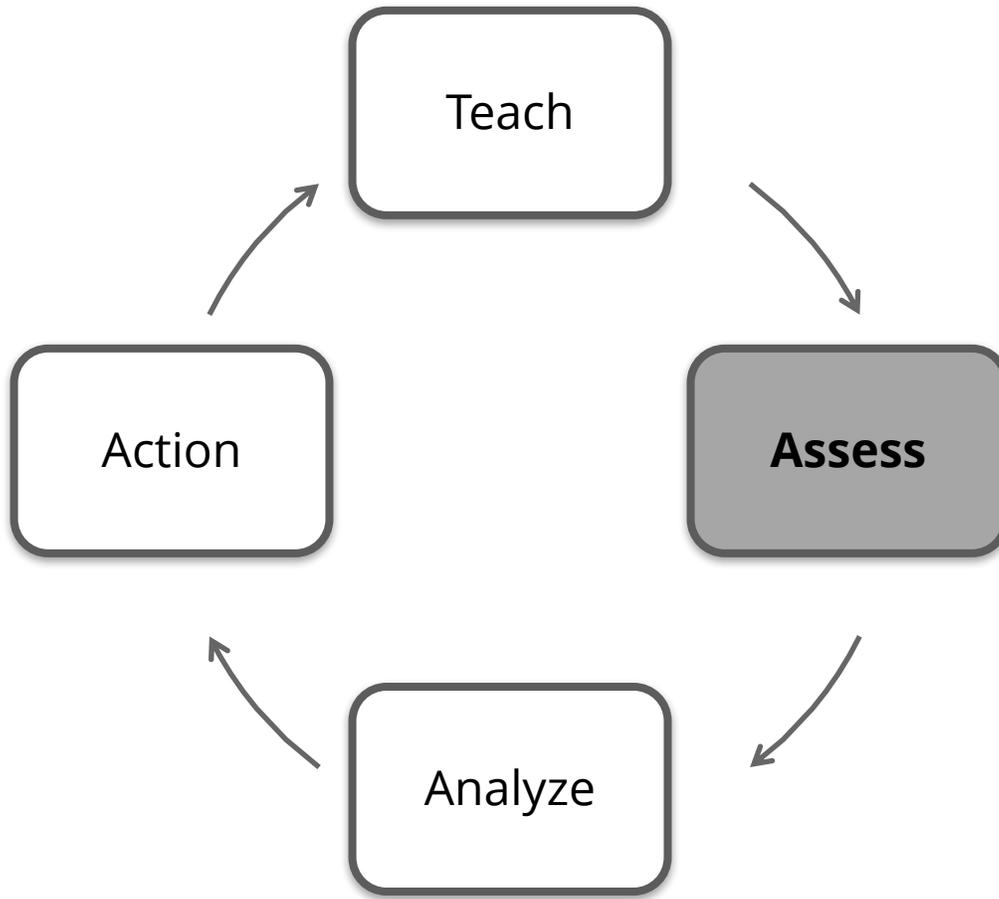
The Cycle of Assessment

```
        ┌─────────┐
        │  Teach  │
        └─────────┘
    ↗                ↘
┌─────────┐      ┌─────────┐
│ Action  │      │ Assess  │
└─────────┘      └─────────┘
    ↖                ↙
        ┌─────────┐
        │ Analyze │
        └─────────┘
```

"The good news is that research has shown for years that consistently applying principles of assessment for learning has yielded remarkable, if not unprecedented, gains in student achievement, especially for low achievers."

—Black & Wiliam, 1998

The Cycle of Assessment

```
         ┌─────────┐
         │  Teach  │
         └─────────┘
   ┌─────────┐    ┌─────────┐
   │ Action  │    │ Assess  │
   └─────────┘    └─────────┘
         ┌─────────┐
         │ Analyze │
         └─────────┘
```

Standards Aligned Assessment

Areas of Focus

1. Intent of the Assessment
   - Summative
   - Formative
2. Content and structure of Assessments
3. Analysis of Assessments

Intent of Assessments

Areas of Focus

1. **Intent of the Assessment**

    • **Summative**

    • **Formative**

2. Content and Structure of Assessments

3. Analysis of Assessments

How are the results used?

Formative	Summative

"Benchmark assessments, either purchased by the district or from commercial vendors or developed locally, are generally meant to measure progress toward state or district content standards and to predict performance on large-scale summative tests. A common misconception is that this level of assessment is automatically formative."

—Stephen and Jan Chappuis 2012

Intent of Assessments

Areas of Focus

1. Intent of the Assessment

    • Summative

    • Formative

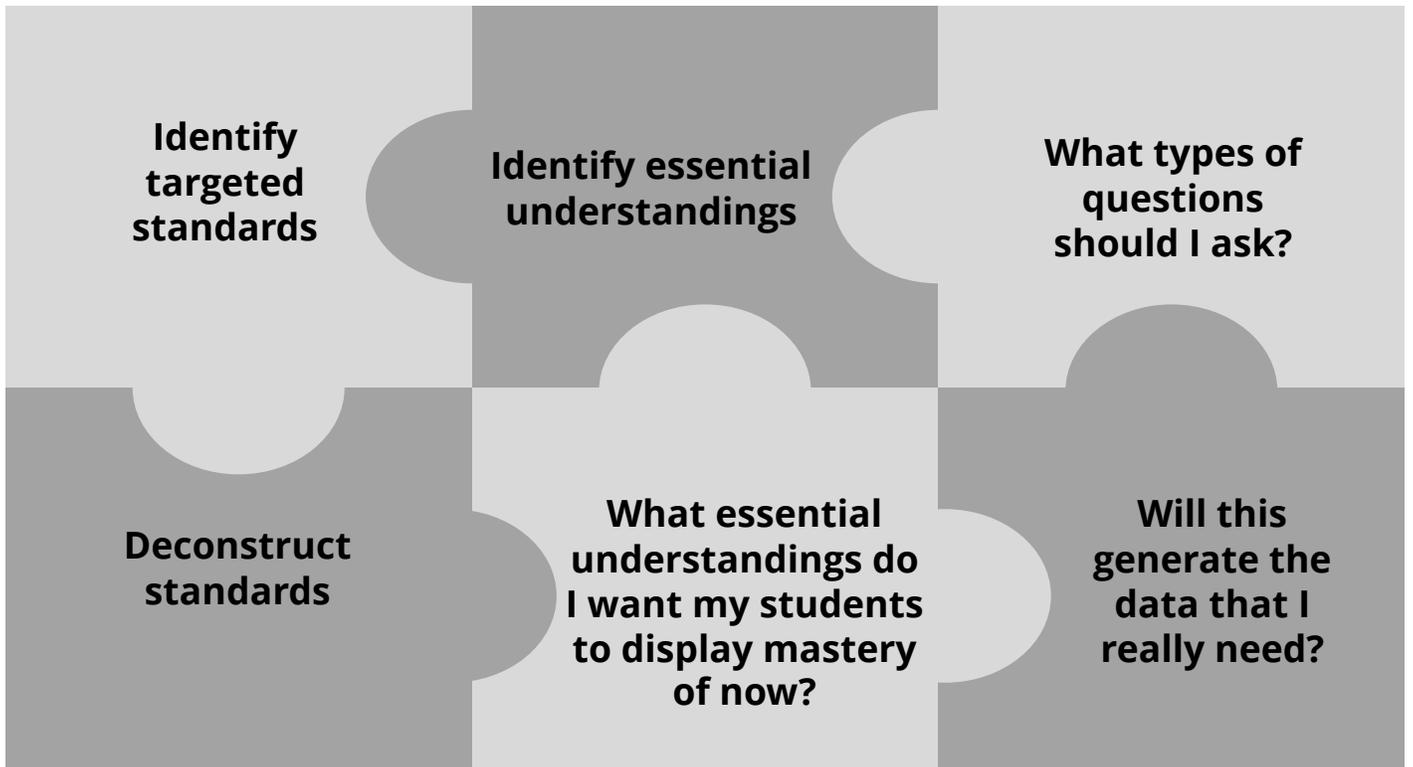2. **Content and Structure of Assessments**

3. Analysis of Assessments

Things to think about...

Universal Design Principles:

• No barriers

• Accessible for all students
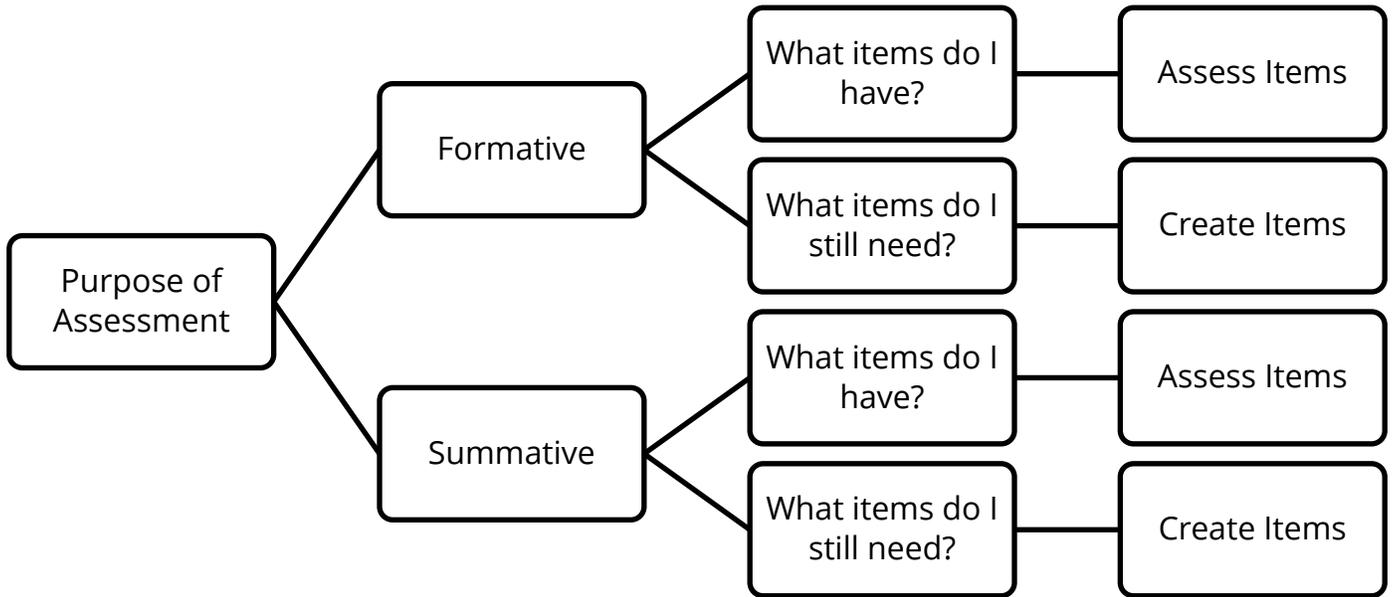
• Upholds the expectations of our state standards

Notes:

TN Department of **Education**

Developing a Classroom Assessment

Identify targeted standards	Identify essential understandings	What types of questions should I ask?
Deconstruct standards	What essential understandings do I want my students to display mastery of now?	Will this generate the data that I really need?

Notes:

Inventory for a Classroom Assessment

```
Purpose of Assessment
  ├── Formative
  │     ├── What items do I have? ── Assess Items
  │     └── What items do I still need? ── Create Items
  └── Summative
        ├── What items do I have? ── Assess Items
        └── What items do I still need? ── Create Items
```

Notes:

Item Review

Standard:

1.OA.A.1: Add and subtract within 20 to solve contextual problems, with unknowns in all positions, involving situations of add to, take from, put together/take apart, and compare. Use objects, drawings, and equations with a symbol for the unknown number to represent the problem. (See Table 1 - Addition and Subtraction Situations).

Which item is better?

Item 1: John has some baseball cards. • His friend gave him 5 more baseball cards • John now has 12 baseball cards. How many baseball cards did John have before? A. 5 B. 6 C. 7 D. 8

Item 2: John has some baseball cards. • His friend gave him 5 more baseball cards • John now has 12 baseball cards. How many baseball cards did John have before? A. 7 B. 8 C. 13 D. 17

Notes:

Item Review

Assessment Terminology

Item Type

Selected response	
Open response	
Verbal	
Extended writing	

Item Components

Stimulus	
Stem	
Key	
Distractor	
Rationale	

Examining Items: Formative vs. Summative

- What is the question actually asking?

- Is the question aligned to the depth of the standard?

- Are the answers precise?

- Is the wording grade appropriate?

- Is the question aligned to the standard?

- Do the distractors give insight into student thinking?

- Is the entire standard assessed?

- Is the question precise?

- Is there a better way to assess the standard?

Item Assessment Activity

For each of the provided formative assessment items, think about the things we just discussed. Would you include it on a formative assessment when paired with the provided standard?

You will be looking at five items. Decide if you would keep them, revise them in some way, or throw the item out all together. Look first at the items independently. Then you may work with a partner to complete the activity.

Item #1

K.OA.A.2

Add and subtract within 10 to solve contextual problems using objects or drawings to represent the problem.

Four books were on a table. Sam put two more books on the table. How many books are on the table?

Choose the correct answer.

Item #2

1.MD.B.4

Count the value of a set of like coins less than one dollar using the ¢ symbol only.

How much money is shown?

_____ ¢

Item Assessment Activity

Item #3

2.NBT.A.2

Count within 1000. Skip-count within 1000 by 5s, 10s, and 100s, starting from any number in its skip counting sequence.

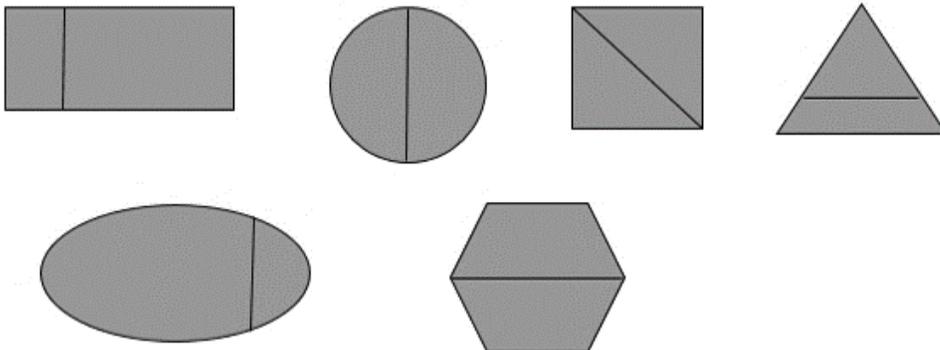Which set of numbers shows counting by fives?

A. 5, 10, 15, 20, 25

B. 1, 5, 10, 16, 23

C. 25, 26, 27, 28, 29

D. 12, 17, 22, 27, 32

Item #4

2.G.A.3

Partition circles and rectangles into two, three, and four equal shares, describe the shares using the words halves, thirds, fourths, half of, a third of, and a fourth of, and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.

Which shapes show two halves? Circle the **three** correct answers.

Item Assessment Activity

Item #5

1.NBT.B.2

Know that the digits of a two-digit number represents groups of ten and ones (e.g., 39 can be represented as 39 ones, 2 tens and 19 ones, or 3 tens and 9 ones).

Choose the three correct ways to show 27.

A. 2 tens and 17 ones

B. 1 ten and 17 ones

C. 2 tens and 7 ones

D. 0 tens and 27 ones

E. 7 tens and 2 ones

Share one or two "ah-ha" moments from this activity with your neighbor.

Creating Formative Items

Before you start writing items:

- Think about the *purpose* of the assessment as a whole. Is it formative or summative?

- Read the standards carefully with the assessment purpose in mind. Ask yourself: "What skills/knowledge are the standards asking the student to display?"

- Revisit the "I can" statements or "essential questions" you wrote for the standard(s). They may provide guidance as you write items.

- Brainstorm.

Revisiting Standard 2.OA.A.1

2.OA.A.1

Add and subtract within 100 to solve one- and two-step contextual problems, with unknowns in all positions, involving situations of add to, take from, put together/take apart, and compare. Use objects, drawings, and equations with a symbol for the unknown number to represent the problem.

FORMATIVE Assessment

John has some baseball cards.
His friend gave him 5 more baseball cards.
John now as 12 baseball cards.

How many baseball cards did John have before?

A. 7

B. 8

C. 13

D. 17

FORMATIVE Assessment

Represent put together problems within 100 with equations.

48 counters are in a jar. 23 are black and the rest are white. How many counters are white?

Choose the three equations that represent the problem.

A. 23 + ____ = 48

B. 23 + 48 = ____

C. 48 – 23 = ____

D. 23 - ____ = 48

E. ____ + 23 = 48

Solve contextual subtraction problems within 100.

Sarah has 42 stickers. She gave some to her friend. Sara now has 29 stickers. How many stickers did Sara give her friend?

_____ stickers

Creating Formative Items

Revisiting Standard 2.OA.A.1

2.OA.A.1 Add and subtract within 100 to solve one- and two-step contextual problems, with unknowns in all positions, involving situations of add to, take from, put together/take apart, and compare. Use objects, drawings, and equations with a symbol for the unknown number to represent the problem.

Did we cover all aspects of the standard with these items?

Review

- Formative Assessments *may* need items that scaffold in order for the teacher to diagnose what a student does/does not understand.

- Effectively writing "I can" or "essential questions" helps target assessment items specifically to standards.

- It is very difficult to formatively assess student understanding through a single item.

- Don't forget the principles of universal design.

- It's important to ask yourself the nine essential questions during item review or item writing.

Item Writing-Your Turn

- You will be provided a set of standards.

- You and a partner will be writing items to post for our gallery walk.

  – On selected response items you do not have to post the rationale for the distractors.

  – Please post the coding for the standard(s) to which your items are written.

Selected Response

Multiple Choice	Multiple Select

Item Writing: Your Turn

Use this space to write out your standard(s) and assessment item(s).

Option 1	Option 2
1. Choose three of the standards. 2. Write an item to assess each standard that you would use on a formative assessment. 3. Try to write at least one multiple choice or multiple select item. Focus on writing distractors that provide instructional information.	1. Choose one standard. 2. Write three formative assessment items to the single standard that you selected. Make sure that each item requires students to demonstrate a different level of understanding of the standard. 3. Try to write at least one multiple choice or multiple select item. Focus on writing distractors that provide instructional information.

Gallery Walk

As you review your colleagues' items, look for similarities and differences in the items created.

Reflection

Reflect on your experience evaluating and creating assessment items and discuss the following:

- What was challenging about this experience?

- What did you learn from this experience?

- What supports do you need to better understand the relationship between standards and assessments in this way?

Notes:

Analyzing Assessments

Areas of Focus

1. Intent of the Assessment

    • Summative

    • Formative

2. Content and Structure of Assessments

3. **Analysis of Assessments**

Analysis of Assessment

• Is the data _____ ?

• How is it analyzed?

• On which questions _____ ? Why?

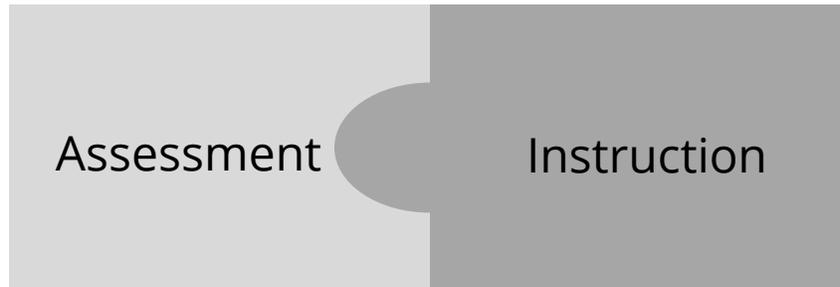• On which questions _____ ? Why?

• Were there issues with...

    _____

    _____

    _____ ?

Taking Action

- How is instruction changing/adapting as a result of student data?
- Are results shared with all stakeholders (including students)?
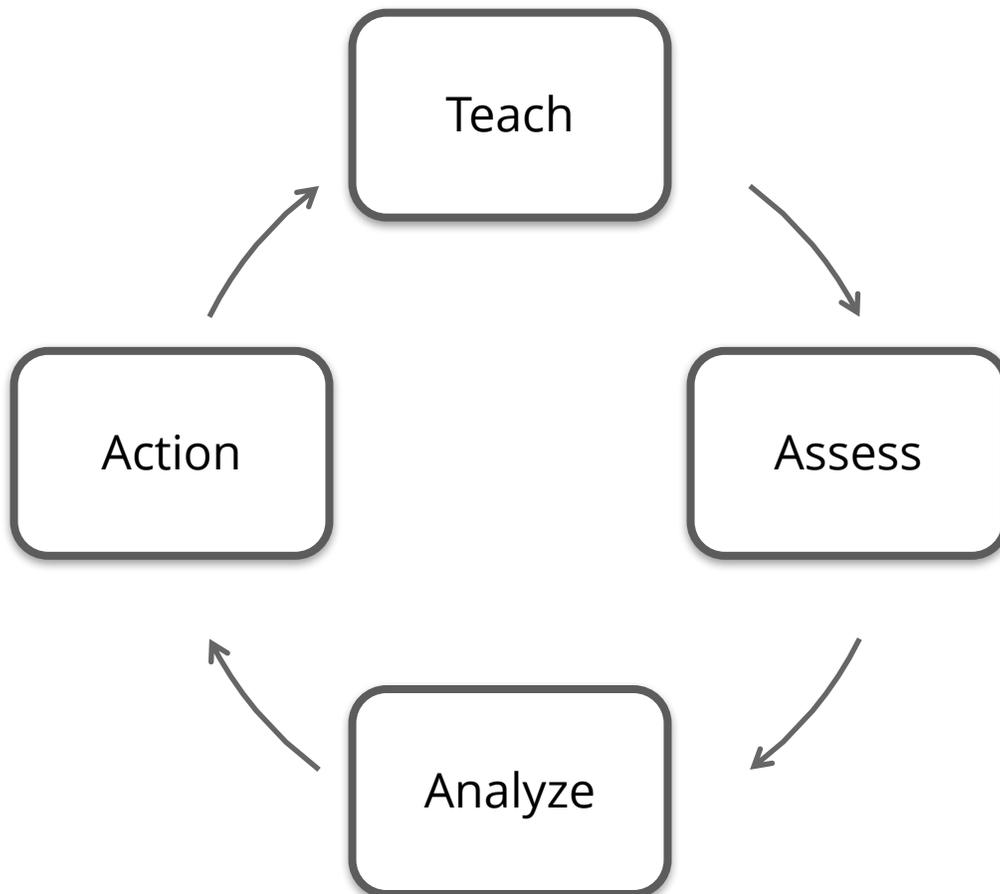- Are assessments adapted to address weaknesses found?

"The assessments will produce no formative benefit if teachers administer them, report the results, and then continue with instruction as previously planned."

—Stephen and Jan Chappuis, 2012

Notes:

Summary

The Cycle of Assessment

Aligned Materials and Assessments

Educators play a key role in ensuring that our standards, classroom instructional materials, and assessments are aligned.
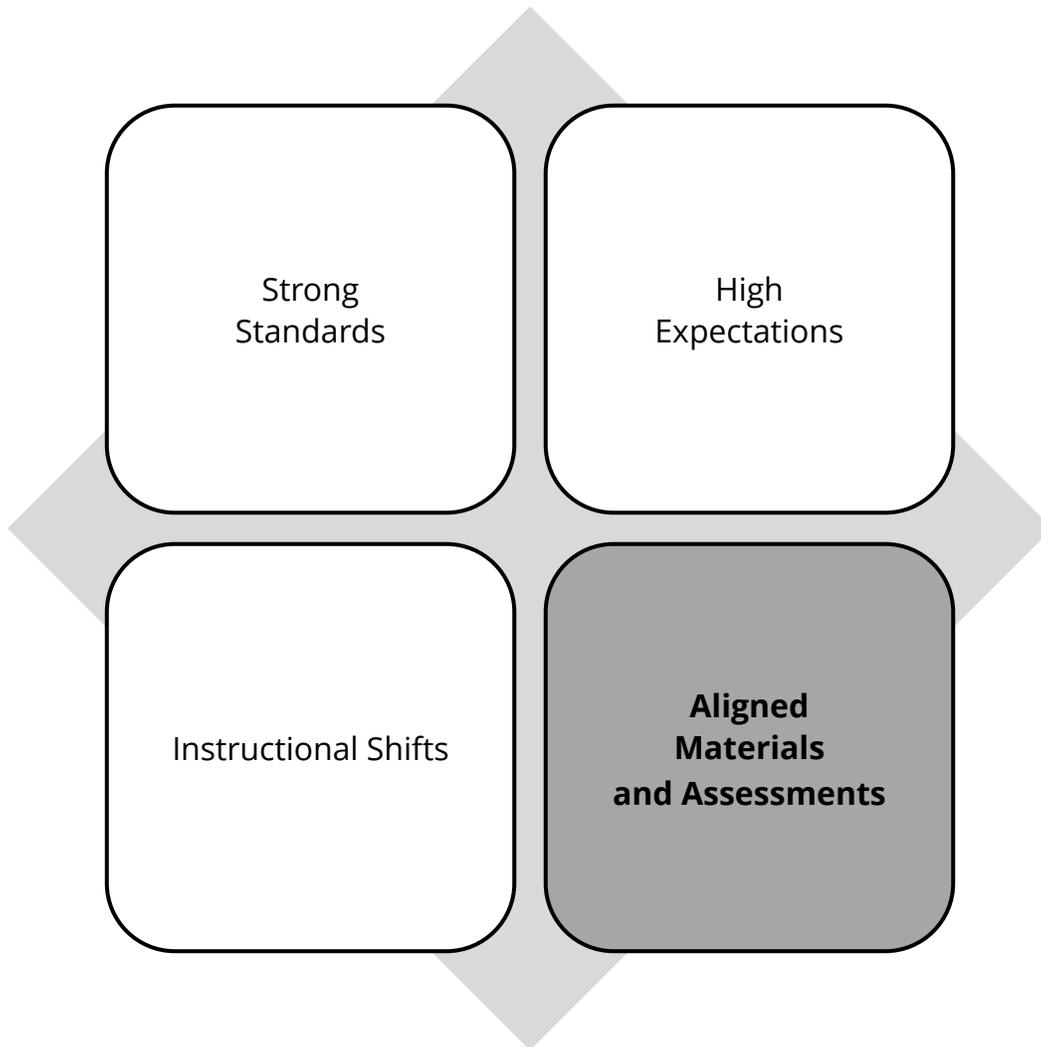
Appointment with Peers

Please meet with your third partner to discuss the following:

- What are your takeaways from module 7?

- How does this align to your observation rubric?

Notes:

Part 4: Assessment and Materials

Module 8: Evaluating Instructional Materials

Strong Standards

High Expectations

Instructional Shifts

Aligned Materials and Assessments

Key Question

How do we know that our instructional materials address the depth of the content and the instructional shifts of focus, coherence, and rigor of the TN State Standards?

Goals

- Examine the TEAM rubric to define what is meant by standards based materials.

- Know which key criteria to use for reviewing materials, lessons, and/or units for alignment and quality.

Strong Standards

Standards are the bricks that should be masterfully laid through quality instruction to ensure that all students reach the expectation of the standards.

High Expectations

We have a continued goal to prepare students to be college and career ready.

Instructional Shifts

The instructional shifts are an essential component of the standards and provide guidance for how the standards should be taught and implemented.

Aligned Materials and Assessments

Educators play a key role in ensuring that our standards, classroom instructional materials, and assessments are aligned.

Standards Based Materials and Practice

"…teachers have a responsibility to make day-to-day instructional choices that ensure that students work with problems that engage their interest and their intellect."

—Cathy L. Seeley, 2014

Reflect on Our Practice

When your students' work is on public display, in the hallway or shared with families, can anyone see the math?

Are the materials and the instructional practices you are using focused on the mathematics?

If anyone looked at your students' work, would they be able to see the math or would they be left asking "**where's the math?**"

Notes:

Standards Based Materials and Practice

TEAM Connection
Activities & Materials

- Support the lesson objective

- Are challenging

- Sustain students' attention

- Elicit a variety of thinking

- Provide time for reflection

- Provide opportunities for student-to-student interaction

- Provide students with choices

- Incorporate technology

- Induce curiosity & suspense

- In addition sometimes activities are game-like, involve simulations, require creating products, and demand self-direction and self-monitoring.

- The preponderance of activities demand complex thinking and analysis

- Texts & task are appropriately complex

TEAM Connection
Problem Solving

- Abstraction
- Categorization
- Predicting Outcomes
- Improving Solutions
- Generating Ideas
- Creating & Designing
- Observing & Experimenting
- Drawing Conclusions/Justifying Solutions
- Identify Relevant/Irrelevant Information

Standards Based Materials and Practice

Effective Mathematics Teaching Practices

1. Establish mathematics goals to focus learning.

2. Implement tasks that promote reasoning and problem solving.

3. Use and connect mathematical representations.

4. Facilitate meaningful mathematical discourse.

5. Pose purposeful questions.

6. Build procedural fluency from conceptual understanding.

7. Support productive struggle in learning mathematics.

8. Elicit and use evidence of student thinking.

Notes:

My Shape Monster Activity

- What content standard do you think these activities address?

- Where is the evidence of student understanding of the mathematical content?

![TN Department of Education logo]

Standards Based Materials and Practice

My Shape Monster Activity

If a teacher was trying to addressing the depth of the **content standard 1.G.A.1,** would My Shape Monster accomplish this goal?

1.G.A.1 Distinguish between attributes that define a shape (e.g., number of sides and vertices) versus attributes that do not define the shape (e.g., color, orientation, overall size); build and draw two-dimensional shapes to possess defining attributes.

Notes:

Criteria for Alignment and Quality

Research

"A curriculum is more than a collection of activities."

—from the Curriculum Principle in *Principles and Standards for School Mathematics*

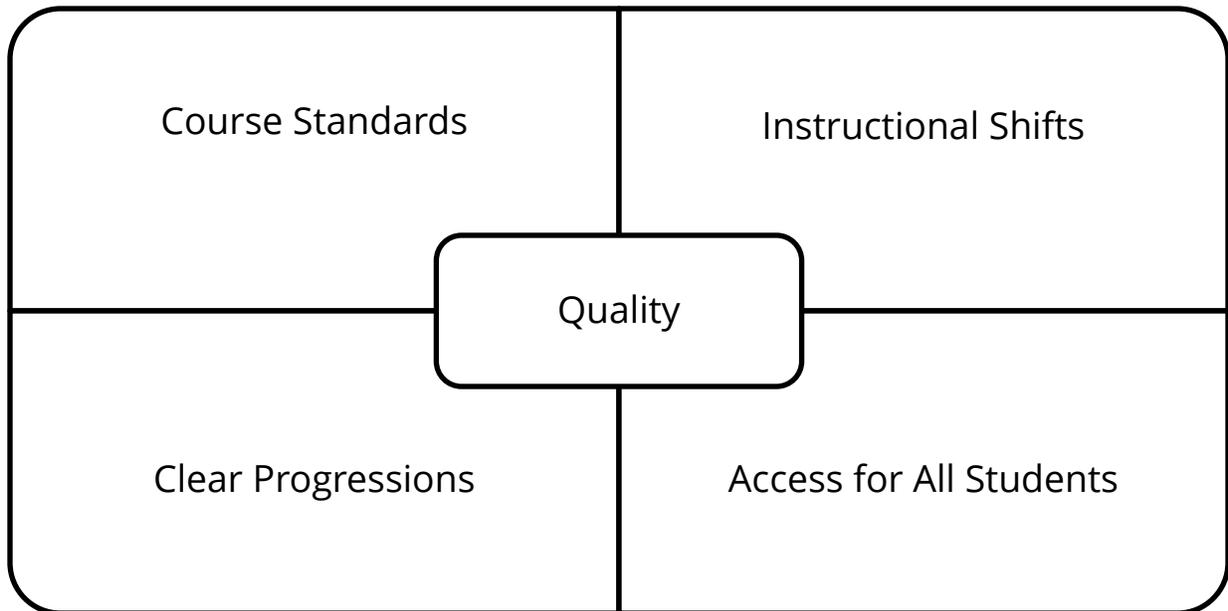A **well-articulated curriculum** will:

- Make clear the most important mathematics of the grade level.

- Specify when concepts and skills are introduced and when they should be mastered.

- Detail how student conceptual understanding of big ideas develops across units and across multiple grade levels.

When choosing instructional materials, what should a teacher consider?

Notes:

Criteria for Alignment and Quality

Course Standards	Instructional Shifts
	Quality
Clear Progressions	Access for All Students

Materials Review Instrument

When reviewing materials, it is important to have a deep understanding of the standards and a deep understanding of the review instrument before looking at the materials.

- Section I: Non-Negotiable Alignment Criteria
  - Part A: Standards
  - Part B: Shifts
    - Focus
    - Rigor
    - Coherence
- Section II: Additional Alignment Criteria and Indicators of Quality
  - Part A: Key areas of focus
  - Part B: Student engagement and instructional focus
  - Part C: Monitoring student progress

Math Materials Review Instrument

SECTION I: NON-NEGOTIABLE ALIGNMENT CRITERIA		SECTION II: ADDITIONAL ALIGNMENT CRITERIA AND INDICATORS OF QUALITY		
Part A. Course Standards	**Part B.** Shifts in Instruction	**Part A.** Key Areas of Focus	**Part B.** Student Engagement and Instructional Supports	**Part C.** Monitoring Student Progress
Yes: Move to Part B No: Do not use or modify	Yes: Move to Section II No: Do not use or modify	Yes: Move to Section II:B No: Do not use or modify	Yes: Move to Section II:C No: Do not use or modify	Yes: Use materials No: Do not use or modify
The instructional materials represent 100 percent alignment with the Tennessee Math Standards and explicitly focus teaching and learning on the course standards at the rigor necessary for students to reach mastery.	1. Focus 2. Coherence 3. Rigor	Learning experiences provide opportunities for thought, discourse, and practice in an interconnected and social context.	Material provides learning experiences that incorporate the course standards, Standards for Mathematical Practice, and Literacy Skills for Mathematical Proficiency.	Assessments provide data on the content standards.
		Units and instructional sequences are coherent and organized in a logical manner that builds upon knowledge and skills learned in prior grade levels or earlier in the grade.	Material engages students through real-world, relevant, thought-provoking questions, problems, and tasks that stimulate interest and elicit critical thinking and problem solving.	Material assesses student mastery using methods that are unbiased and accessible to all students.
		Materials support student communication within an ELA focus by providing consistent opportunities for students to utilize literacy skills for proficiency in reading, writing, vocabulary, speaking, and listening.	Material integrates appropriate supports for students who are ELL, have disabilities, or perform below grade level.	Material includes aligned rubrics or scoring guidelines that provide sufficient guidance for interpreting student performance.
			Material includes differentiated materials that provide support for students approaching mastery as well as extensions for students already meeting mastery or with high interest.	Material uses varied modes of curriculum embedded assessments that may include pre-, formative, summative, and self-assessment measures.
				Assessments are embedded throughout instructional materials as tools for students' learning and teachers' monitoring of instruction.
				Assessments provide teachers with a range of data to inform instruction.

Evaluating Instructional Materials: Best Practices

- It's important to review instructional materials you use to determine where you have strong alignment to standards and where you may have gaps to fill.

- School leaders and teachers should engage in reviewing instructional materials on an ongoing basis to develop pedagogy and capacity.

Teachers need to review materials when:

- There is a new adoption.

- Current materials have gaps that may require supplemental materials.

- They are looking for supplemental instructional materials.

Notes:

Supplemental Materials

Let's Discuss:

- What resources do you have on hand?

- Where do you find supplemental materials?

- How can you use this process to evaluate supplemental materials?

Reviewing Materials: A Recap

As you look for materials...

- Is it aligned to the standards?

- Does it reflect high leverage best practices?

- Is it accessible for ALL students?

- Does it lead to students being able to demonstrate mastery of the standard?

Notes:

Potential Gaps in Materials

Grades K–2:

- Increased fluency standards

    - Expanded range of numbers in K–2

- Money standards included in K–1

Grades 3–5:

- Measurement and data conversion standard revised and shifted

    - Conversion limited to same system and from larger to smaller units exclusively in grade 5

Notes:

Module 8 Review

The review process of instructional materials will:

- Deepen understanding of the standards,

- Make use of review instruments to analyze materials to determine alignment or gaps, and

- Result in wise decisions about how best to use the materials already on-site to teach the new standards to mastery OR effectively fill any gaps uncovered in the review process.

Aligned Materials and Assessments

Educators play a key role in ensuring that our standards, classroom instructional materials, and assessments are aligned.

Appointment with Peers

Please meet with your fourth partner to discuss the following:

- How can the materials review instrument lead to improved student outcomes in your classroom?

Notes:

Part 5: Putting It All Together
Module 9: Instructional Planning

Strong
Standards

High
Expectations

Instructional Shifts

Aligned
Materials and
Assessments

Goals

- Understand intentional instruction as a bridge between strong standards and assessment.

- Develop lesson planning techniques to strengthen the understanding of the relationship between standards and practice.

- Create lessons based on the revised standards to be used for instruction.

Strong Standards

Standards are the bricks that should be masterfully laid through quality instruction to ensure that all students reach the expectation of the standards.

High Expectations

We have a continued goal to prepare students to be college and career ready.

Instructional Shifts

The instructional shifts are an essential component of the standards and provide guidance for how the standards should be taught and implemented.
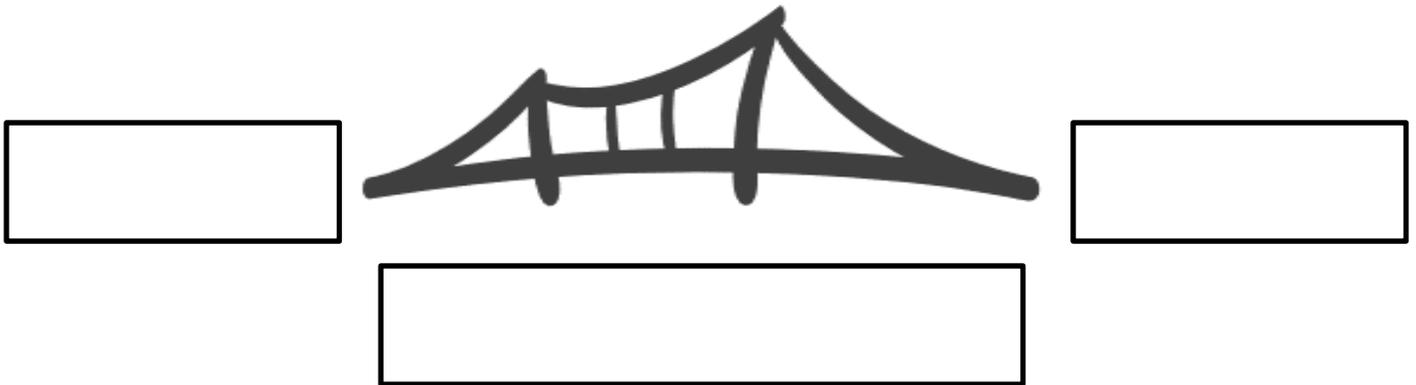

Aligned Materials and Assessments

Educators play a key role in ensuring that our standards, classroom instructional materials, and assessments are aligned.

Designing Effective Learning Experiences

"...teachers have a responsibility to make day-to-day instructional choices that ensure that students work with problems that engage their interest and their intellect."

—Cathy L. Seeley, 2014

Notes:

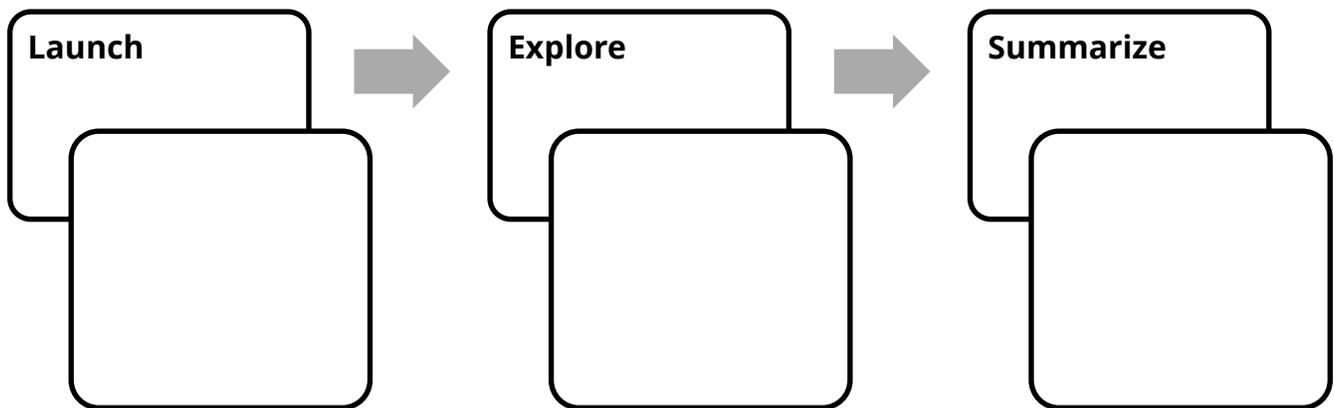## What is Intentional Instruction?

What does "intentional" mean?

Keep standards in mind – what standards are driving your instruction?

Keep assessment in mind – what are your end goals? What do students need to...
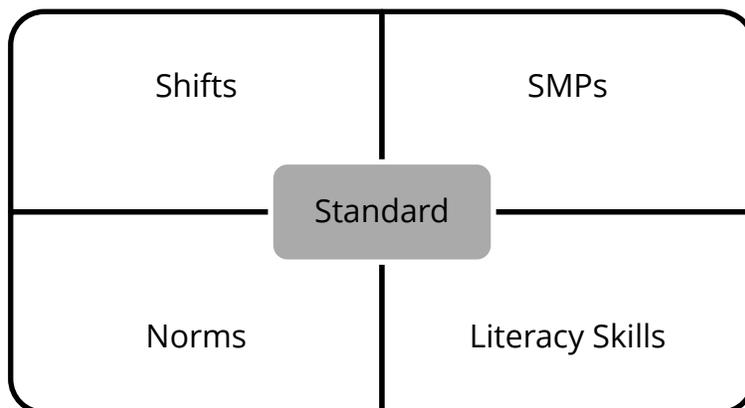
Know,

Understand, and

Do to meet these standards?

Launch		Explore		Summarize	

Notes:

Putting it all Together

- Review standard, determine KUD
- Evaluate instructional materials
- Utilize Launch, Explore, and Summarize model
- Assess learning

Step 1: Review the Standards

Review the revision of standard

- Is the standard the same or has it been revised?
- Has the learning changed?
- How do the SMPs, literacy skills, and instructional shifts apply?
- What do students need to know, understand, and do?

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┌──────────────┬──────────────┐
│    Shifts    │     SMPs     │
│         ┌─Standard─┐        │
│    Norms     │ Literacy Skills │
└──────────────┴──────────────┘
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Notes:

Step 2: Evaluate Instructional Materials

- Use the materials review instrument.
- Evaluate textbook and supplemental materials for alignment.

Step 3: Create Learning Experiences

- Plan with the *end in mind.*
- What will the teacher be doing?
- What will the students be doing?
- What will the classroom look and sound like?
- What literacy skills and mathematical practices will be incorporated?
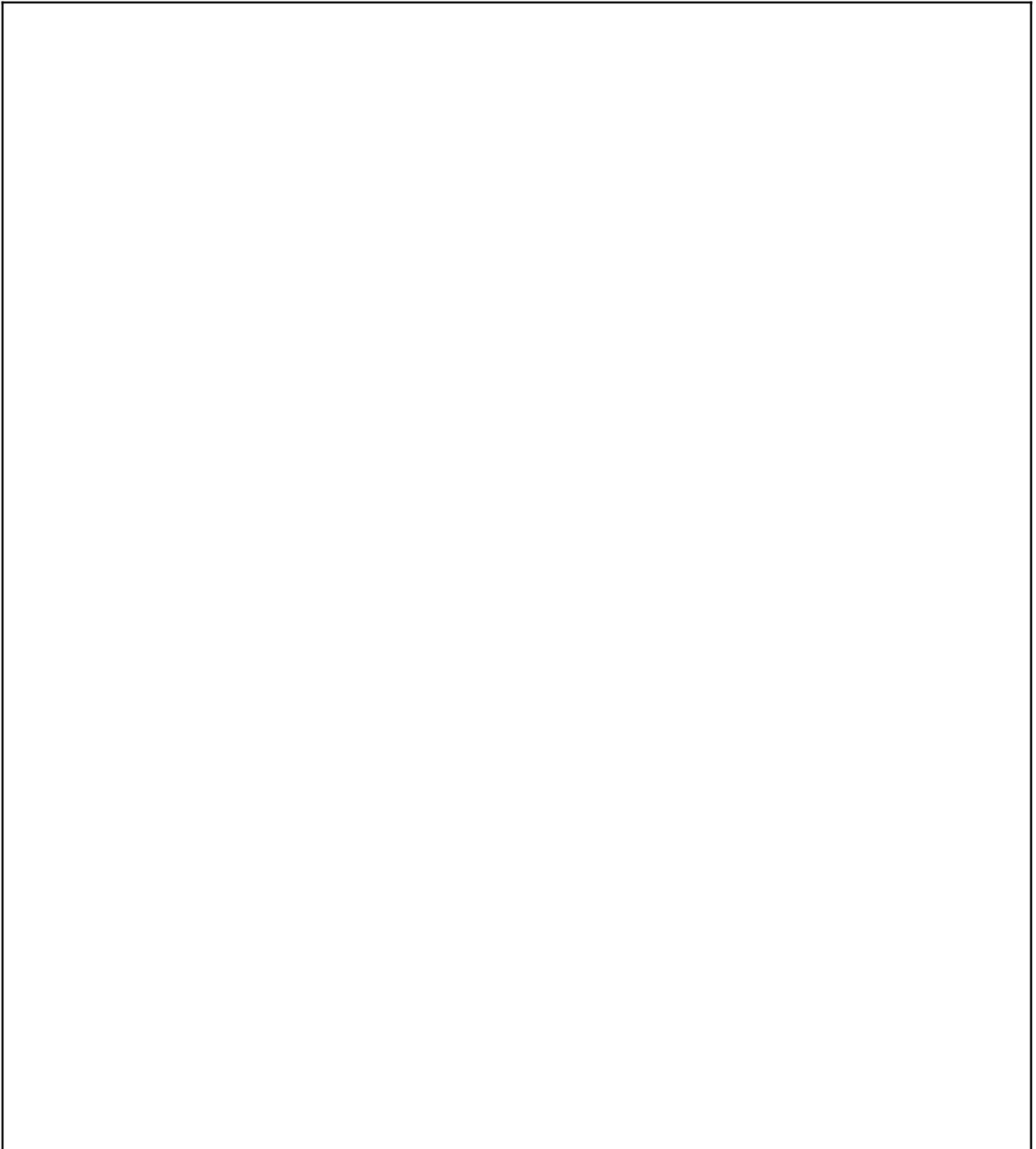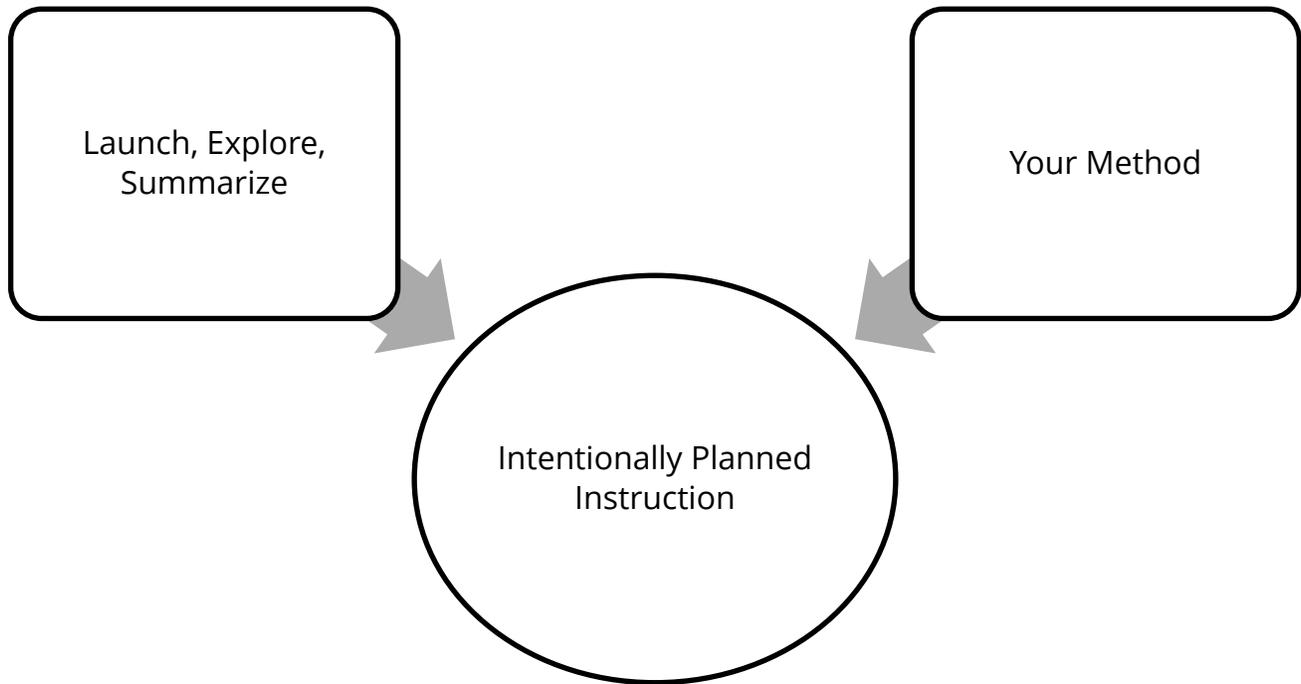
Step 4: Assessment

- How will you know they have learned the concepts?
- Can you challenge students' thinking during an assessment?
- How do you provide intervention for a specific student after instruction?

Notes:

Designing Effective Learning Experiences
Putting It All Together

Now it's your turn! Use this space for your small group planning.

Launch, Explore, Summarize

Your Method

Intentionally Planned Instruction

Launch, Explore, Summarize is only one method you can use to intentionally plan instruction.

Module 9 Recap

- Younger children have little or no means of computing. Thus, counters or other models are used to reenact the problem.

- No matter the grade level, have children think through the problem before they get started.

- Solving contextual problems of all sorts on a regular basis should be a significant part of your number and computation curriculum.

- Your goals for children should go beyond being able to solve story problems.

Interrelated Objectives

- Understanding of the various meanings of the four operations...
- Development of number skills and concepts.
- Computational fluency.

The Value of Teaching with Contextual Problems

- Develops the belief in students that they are capable of doing mathematics.
- Engages students so that there are fewer discipline problems.
- Aids in differentiating instruction.

Notes:

Module 9 Review

- There are many ways to "do" intentional instruction.
- Intentional instruction is the bridge between standards and assessment.
- Start with the standard: determine what students need to know, understand, and do.
- Create learning experiences that connect to students' experiences and give them a chance to explore the concept.
- Assessment plays a critical role in instruction, should be standards based, and should be used to determine student mastery of the standard(s).

Strong Standards

Standards are the bricks that should be masterfully laid through quality instruction to ensure that all students reach the expectation of the standards.

High Expectations

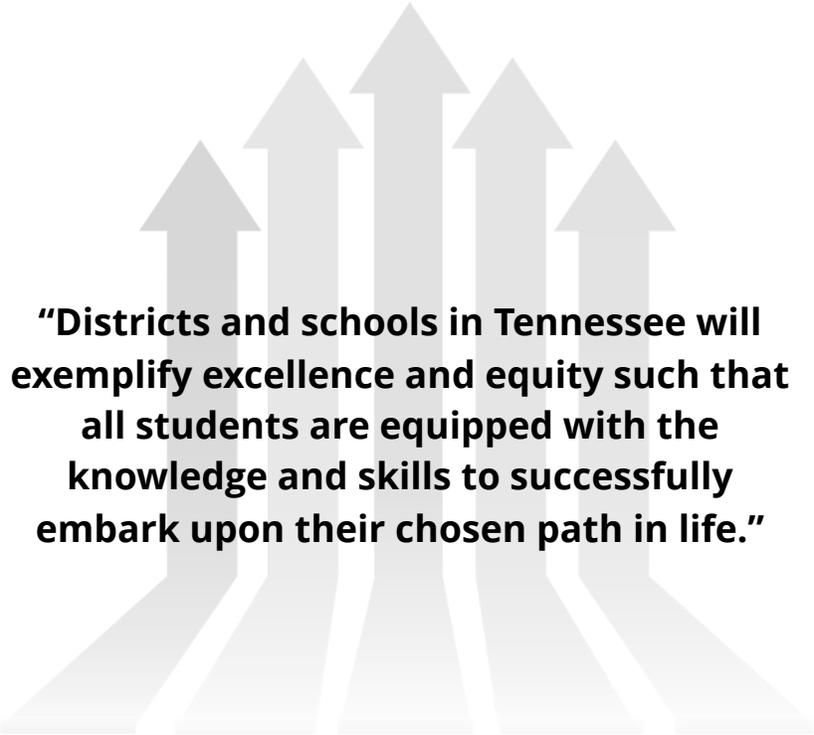We have a continued goal to prepare students to be college and career ready.

Shifts in Instructional Practice

The instructional shifts are an essential component of the standards and provide guidance for how the standards should be taught and implemented.

Aligned Materials and Assessment

Educators play a key role in ensuring that our standards, classroom instructional materials, and assessments are aligned.

"Districts and schools in Tennessee will exemplify excellence and equity such that all students are equipped with the knowledge and skills to successfully embark upon their chosen path in life."

Notes:

TN Department of **Education**

Notes:

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