

Orange Public Schools

Office of Curriculum & Instruction
2019-2020 Mathematics Curriculum Guide



Kindergarten Mathematics

Eureka - Module 3: Comparison of Length, Weight, Capacity and
Numbers to 10

December 2, 2019 – February 7, 2020

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Yearlong Pacing Guide: Kindergarten

<i>Eureka Math</i>	<i>Eureka Module Standards</i>
Module 1: Sums and Differences to 10 Sept 9- Nov 6	KCC3, KCC4, KCC5 KOA3, KMD3
Module 2: 2-3D Shapes Nov 11- Nov 26	KMD3, KG1, G2, G3, G4
Module 3: Comparison of Length, Weight, Capacity, and Numbers to 10 Dec 2 - Feb 7	KCC6, KCC7, KMDA1, KMD2
Module 4: Number Pairs, Addition and Subtraction to 10 Feb 10- May 1	KOA1, KOA2, KOA3, KOA4, KOA5
Module 5: Numbers 10-20 Counting to 100 May 4- June 12	KCC1, KCC2, KCC3, KCC4, KCC5, K.NBT.1
Module 6: Analyzing, Comparing, and Composing Shapes June 15- EOSY	KCC4, KG5, G6

References

“Eureka Math” *Gt Minds*. 2018 < <https://greatminds.org/account/produces>

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Module 3

Essential Questions

- How do we tell if an object is longer?
- How do we tell if an object is heavier?
- How do we compare numbers?

Enduring Understandings

- When measuring you start at the beginning of the object and finish measuring the end of the object.
- When comparing two lengths, one end of each length must match. The size of an object does not always tell you its weight.
- Sets of objects can be grouped and counted so that we can compare them in terms of greater than, less than, or equal to. Number names help us identify the amount of objects in a set or group

Performance Overview

- In Topic A and B, students on comparisons of length using terminology such as “longer than”, “shorter than” and “as long as”
- Topic C focuses on comparison of weight, and Topic D on comparison of volume. Each of these topics opens with an identification of the attribute being compared within the natural context of the lesson
- Topic E begins with an analysis using the question, “Are there enough?” This leads naturally from exploring when and if there is enough space to seeing whether there are enough chairs for a small set of students?”
- Topic E bridges into Topics F and G, which present a sequence building toward the comparison of numerals. Topic F begins with counting and matching sets to compare.
- The module culminates in a three-day exploration, one day devoted to each attribute: length, weight, and volume The module closes with a culminating task devoted to distinguishing between the measurable attributes of a set of objects: a water bottle, cup, dropper, and juice box.

Module 3: Comparison of Length, Weight, Capacity and Numbers to 10**Pacing:**

December 2, 2019 February 7, 2020

Suggested Instructional Days: 41

Topic	Lesson	Lesson Objective/ Supportive Videos
Topic A: Comparison of Length and Weight	Lesson 1	Compare lengths using taller than and shorter than with aligned and non-aligned endpoints.
	Lesson 2	Compare length measurements with string.
	Lesson 3	Make a series of longer than and shorter than comparisons.
Topic B: Comparison of Length and Height of Linking Cube Sticks Within 10	Lesson 4	Compare the length of linking cube sticks to a 5-stick.
	Lesson 5	Determine which linking cube stick is longer than or shorter than the other.
	Lesson 6	Compare the length of linking cube sticks to various objects
Topic C: Comparison of Weight	Lesson 8	Compare using heavier than and lighter than with classroom objects.
	Lesson 9	Compare objects using heavier than, lighter than, and the same as with balance scales
	Lesson 10	Compare the weight of an object to a set of unit weights on a balance scale
	Lesson 11	Observe conservation of weight on the balance scale.
	Lesson 12	Compare the weight of an object with sets of different objects on a balance scale.

Topic D: Comparison of Volume	Lesson 13	Compare volume using more than, less than, and the same as by pouring.
	Lesson 14	Explore conservation of volume by pouring
	Lesson 15	Compare using the same as with units
Mid-Module Assessment Task		
Topic E: Are there Enough?	Lesson 17	Compare to find if there are enough
	Lesson 18	Compare using more than and the same as.
	Lesson 19	Compare using fewer than and the same as.
Topic F: Comparison of Sets Within 10	Lesson 20	Relate more and less to length.
	Lesson 21	Compare sets informally using more, less, and fewer.
	Lesson 22	Identify and create a set that has the same number of objects
	Lesson 23	Reason to identify and make a set that has 1 more
	Lesson 24	Reason to identify and make a set that has 1 less
Topic G: Comparison of Numerals & Topic H: Clarification of Measurable Attributes	Lesson 25	Match and count to compare a number of objects. State which quantity is more.
	Lesson 26	Match and count to compare two sets of objects. State which quantity is less
	Lesson 27	Strategize to compare two sets
	Lesson 28	Visualize quantities to compare two numerals.
	Lesson 32	Culminating task—describe measurable attributes of single objects.
End-of- Module Assessment Task (Interview Style)		

Modifications

Special Education/ 504:	English Language Learners:
<ul style="list-style-type: none"> -Adhere to all modifications and health concerns stated in each IEP. -Give students a Menu, allowing students to pick assignments from different levels based on difficulty. -Accommodate Instructional Strategies: reading aloud text, graphic organizers, one-on-one instruction, class website (Google Classroom), handouts, definition list with visuals, extended time -Allow students to demonstrate understanding of a problem by drawing the picture of the answer and then explaining the reasoning orally and/or in writing , such as Read-Draw-Write -Provide breaks between tasks, use positive reinforcement, use proximity -Assure students have experiences that are on the Concrete- Pictorial- Abstract spectrum by using manipulatives -Common Core Approach to Differentiate Instruction: Students with Disabilities (pg 17-18) -Strategies for Students with 504 Plans 	<ul style="list-style-type: none"> - Use manipulatives to promote conceptual understanding and enhance vocabulary usage - Provide graphic representations, gestures, drawings, equations, realia, and pictures during all segments of instruction - During i-Ready lessons, click on “Español” to hear specific words in Spanish - Utilize graphic organizers which are concrete, pictorial ways of constructing knowledge and organizing information - Use sentence frames and questioning strategies so that students will explain their thinking/ process of how to solve word problems - Utilize program translations (if available) for L1/ L2 students - Reword questions in simpler language - Make use of the ELL Mathematical Language Routines (click here for additional information) -Scaffolding instruction for ELL Learners -Common Core Approach to Differentiate Instruction: Students with Disabilities (pg 16-17)
Gifted and Talented:	Students at Risk for Failure:
<ul style="list-style-type: none"> - Elevated contextual complexity - Inquiry based or open ended assignments and projects - More time to study concepts with greater depth - Promote the synthesis of concepts and making real world connections - Provide students with enrichment practice that are imbedded in the curriculum such as: <ul style="list-style-type: none"> ● Application / Conceptual Development ● Are you ready for more? - Common Core Approach to Differentiate Instruction: Students with Disabilities (pg. 20) - Provide opportunities for math competitions - Alternative instruction pathways available 	<ul style="list-style-type: none"> - Assure students have experiences that are on the Concrete- Pictorial- Abstract spectrum - Modify Instructional Strategies, reading aloud text, graphic organizers, one-on-one instruction, class website (Google Classroom), inclusion of more visuals and manipulatives, Field Trips, Google Expeditions, Peer Support, one on one instruction - Assure constant parental/ guardian contact throughout the year with successes/ challenges - Provide academic contracts to students and guardians - Create an interactive notebook with samples, key vocabulary words, student goals/ objectives. - Always plan to address students at risk in your learning tasks, instructions, and directions. Try to anticipate where the needs will be and then address them prior to lessons. -Common Core Approach to Differentiate Instruction: Students with Disabilities (pg 19)

21st Century Life and Career Skills:

Career Ready Practices describe the career-ready skills that all educators in all content areas should seek to develop in their students. They are practices that have been linked to increase college, career, and life success. Career Ready Practices should be taught and reinforced in all career exploration and preparation programs with increasingly higher levels of complexity and expectation as a student advances through a program of study.

<https://www.state.nj.us/education/cccs/2014/career/9.pdf>

- | | |
|--|--|
| <ul style="list-style-type: none">● CRP1. Act as a responsible and contributing citizen and employee.● CRP2. Apply appropriate academic and technical skills.● CRP3. Attend to personal health and financial well-being.● CRP4. Communicate clearly and effectively and with reason.● CRP5. Consider the environmental, social and economic impacts of decisions.● CRP6. Demonstrate creativity and innovation. | <ul style="list-style-type: none">● CRP7. Employ valid and reliable research strategies.● CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.● CRP9. Model integrity, ethical leadership and effective management.● CRP10. Plan education and career paths aligned to personal goals.● CRP11. Use technology to enhance productivity.● CRP12. Work productively in teams while using cultural global competence. |
|--|--|

Students are given an opportunity to communicate with peers effectively, clearly, and with the use of technical language. They are encouraged to reason through experiences that promote critical thinking and emphasize the importance of perseverance. Students are exposed to various mediums of technology, such as digital learning, calculators, and educational websites.

Technology Standards:

All students will be prepared to meet the challenge of a dynamic global society in which they participate, contribute, achieve, and flourish through universal access to people, information, and ideas.

<https://www.state.nj.us/education/cccs/2014/tech/>

8.1 Educational Technology:

All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.

- A. **Technology Operations and Concepts:** Students demonstrate a sound understanding of technology concepts, systems and operations.
- B. **Creativity and Innovation:** Students demonstrate creative thinking, construct knowledge and develop innovative products and process using technology.
- C. **Communication and Collaboration:** Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.
- D. **Digital Citizenship:** Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.
- E. **Research and Information Fluency:** Students apply digital tools to gather, evaluate, and use of information.
- F. **Critical thinking, problem solving, and decision making:** Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.


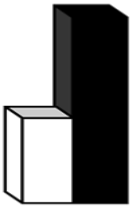
8.2 Technology Education, Engineering, Design, and Computational Thinking – Programming:

All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

- A. **The Nature of Technology: Creativity and Innovation-** Technology systems impact every aspect of the world in which we live.
- B. **Technology and Society:** Knowledge and understanding of human, cultural, and societal values are fundamental when designing technological systems and products in the global society.
- C. **Design:** The design process is a systematic approach to solving problems.
- D. **Abilities in a Technological World:** The designed world in a product of a design process that provides the means to convert resources into products and systems.
- E. **Computational Thinking: Programming-** Computational thinking builds and enhances problem solving, allowing students to move beyond using knowledge to creating knowledge.

Interdisciplinary Connections:	
English Language Arts:	
RF.K.4	Read emergent-reader texts with purpose and understanding.
W.K.2	Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.
SL.K.1	Participate in collaborative conversations with diverse partners about <i>kindergarten topics and texts</i> with peers and adults in small and larger groups.

NJSLS Unpacked Standards:	
K.CC.6	<p>Identify whether the number of objects in one group is greater than, less than, or equal to the numb of objects in another group e.g by using matching and counting strategies</p>
<ul style="list-style-type: none"> • Include groups with up to ten objects. • Know number names and the count sequence • Students use their counting ability to compare sets of objects). They may use matching strategies, counting strategies or equal shares to determine whether one group is greater than, less than, or equal to the number of objects in another group. <p>Example: I lined up one square and one triangle. Since there is one extra triangle, there are more triangles than squares. (Matching Strategy)</p> <p>Example : I counted the squares and I got 4. Then I counted the triangles and got 5. Since 5 is bigger than 4, there are more triangles than squares. (Counting Strategy)</p> <p>Example: I put them in a pile. I then took away objects. Every time I took a square, I also took a triangle. When I had taken almost all of the shapes away, there was still a triangle left. That means that there are more triangles than squares. (Equal Shares)</p> 	
K.CC.7	<p>Compare two numbers between 1 and 10 presented as written numerals</p>
<ul style="list-style-type: none"> • It is important for students to have multiple hands on opportunities to match, re-arrange, and count sets of objects to address misunderstanding • Utilize open-ended questions which will develop reason and mathematical arguments called for in Standards for Mathematical Practice • Know number names and the count sequence • Students need multiple experiences with actual sets of objects to develop a strong conceptual understanding of “how much/how many” certain numbers represent using concrete materials before they compare using only more abstract representations such as pictorial or numerals 	

<p>K.MD.A.1</p>	<p>Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object</p>	
<ul style="list-style-type: none"> • Provide learning opportunities for students to identify and describe different measurable attributes of objects, such as height and weight. Example: Teachers develop vocabulary by asking “How is it more?” or “How is it bigger?” • Allow children to measure a variety of things they find in the classroom with nonstandard measurement tools such as string. • Model measurement vocabulary Example: “We discovered the length of our desks is 6 strong <i>long</i>” 		
<p>K.MD.A.2</p>	<p>Directly compare two objects with a measurable attribute in common to see which object has “more” or less of” the attribute, and describe the difference. For example, directly compare the heights of two children and describe one child as taller/shorter</p>	
<ul style="list-style-type: none"> • Provide numerous experiences for students to directly compare two objects. • Ensure students are matching ends of objects to get accurate measurement comparison. Provide ample experiences with comparing objects in order to discover the importance of lining up the ends of objects in order to have an accurate measurement. • Direct comparisons are made when objects are put next to each other, such as two children, two books, two pencils. Example: a student may line up two blocks and say, “The blue block is a lot longer than the white one.” 		
<p>Students are not comparing objects that cannot be moved and lined up next to each other.</p>		
<div style="text-align: center;">  </div>		
<ul style="list-style-type: none"> • Once students develop the conservation of length, they realize that a block’s length remains constant when it is placed in different orientations. 		
<p>Example: The dark block is always longer than the lighter block</p>		
<div style="text-align: center;">  </div>		
<p>M : Major Content</p>	<p>S: Supporting Content</p>	<p>A : Additional Content</p>

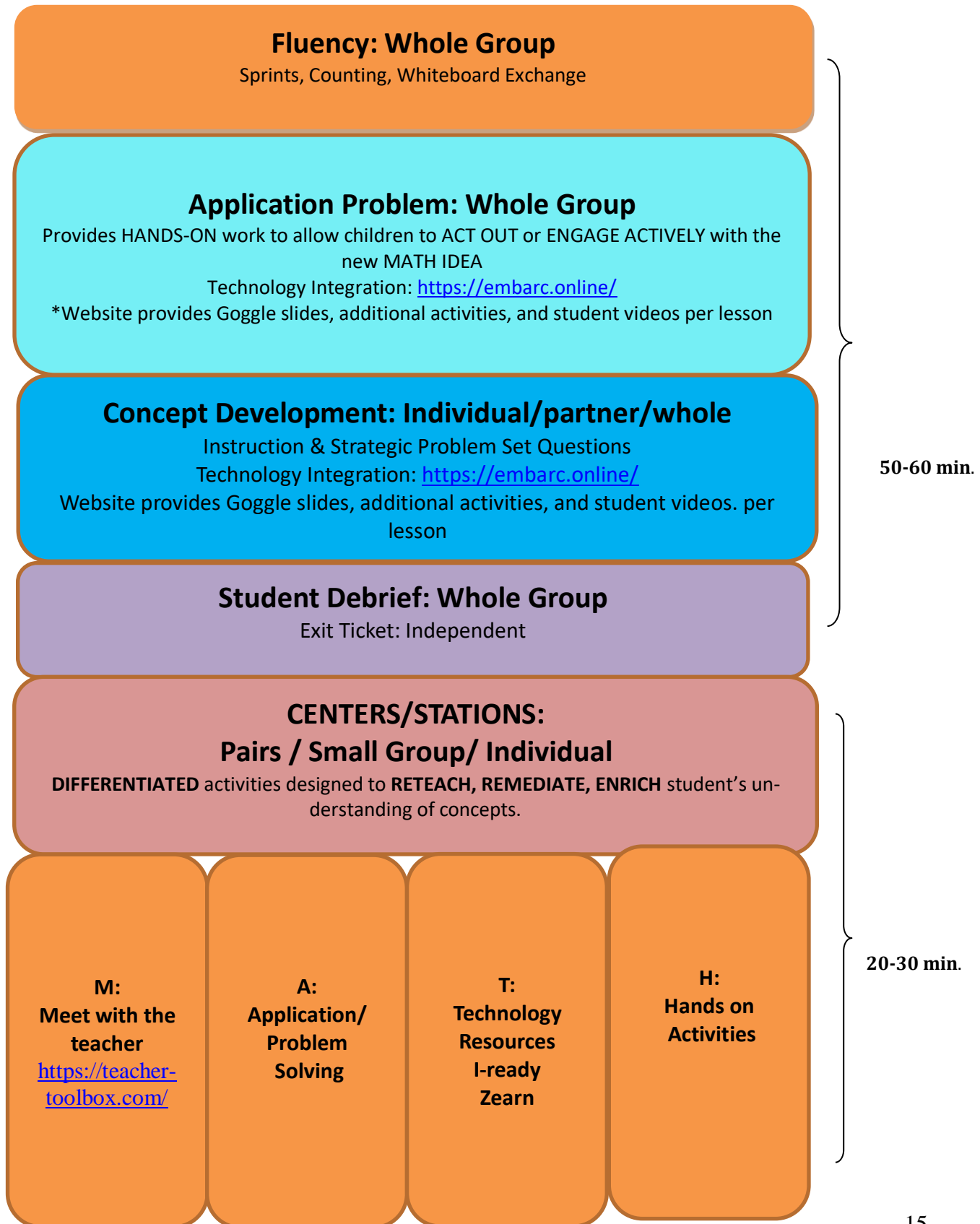
Module 3 Assessment Framework			
Assessment	NJSLS	Estimated Time	Format
Diagnostic Assessment #2 (IREADY)		1-2 blocks	Individual
Optional Mid -Module Assessment (Interview Style)	K.MD.1 K.MD.2	1 Block	Individual or Small Group with Teacher
Optional End-of- Module Assessment (Interview Style)	KMD.3 K.G.1-4	1 Block	Individual or Small Group with Teacher
K Interim Assessment 2 (<i>Early January</i>)	K.CC.1 – up to 50 K.G.1-3 K.MD.1-2	½ block	Individual or Small Group with Teacher

Module 3 Performance Assessment/ PBL Framework			
Assessment	NJSLS	Estimated Time	Format
Module 3 Performance Task 1 <i>Alike or Different Game</i>	K.MD.2	Up to 30 minutes	Individual or Small Group
Extended Constructed Response (ECR)* (click here for access)	Dependent on unit of study & month of administration	Up to 30 Minutes	Individual

*Use the following links to access ECR protocol and district assessment scoring documents:

- [Assessment and Data in Mathematics Bulletin](#)
- [ECR Protocol](#)

Kindergarten Ideal Math Block



Eureka Lesson Structure:

Fluency:

- Sprints
- Whiteboard Exchange

Technology Integration:

Splat Sequences

[Which one doesn't belong?](#)

[Would you rather?](#)

Esti- Mysteries

Application Problem/ Anchor Task:

- Engage students in using the RDW Process
- Sequence problems from simple to complex and adjust based on students' responses
- Facilitate share and critique of various explanations, representations, and/or examples.

Concept Development: (largest chunk of time)

Instruction:

- Maintain overall alignment with the objectives and suggested pacing and structure.
- Use of tools, precise mathematical language, and/or models
- Balance teacher talk with opportunities for peer share and/or collaboration
- Generate next steps by watching and listening for understanding

Problem Set: (Individual, partner, or group)

- Allow for independent practice and productive struggle
- Assign problems strategically to differentiate practice as needed
- Create and assign remedial sequences as needed

Technology Integration:

<https://embarc.online/>

- A collaborative community of Eureka Math users
- Common website to support all users of the Eureka Math curriculum that provides games, slides, fluency activities, student videos, and templates for students and teachers

[Virtual Manipulatives](#) for lessons

<http://nlvm.usu.edu/en/nav/vlibrary.html>

For videos that students can watch and interact with independently click [here](#)

Student Debrief:

- Elicit students thinking, prompt reflection, and promote metacognition through student centered discussion
- Culminate with students' verbal articulation of their learning for the day
- Close with completion of the daily Exit Ticket (opportunity for informal assessment that guides effective preparation of subsequent lessons) as needed.

Centers:

- I-Ready: <https://login.i-ready.com/> *i-Ready* makes the promise of differentiated instruction a practical reality for teachers and students. It was designed to get students excited about learning and to support teachers in the challenge of meeting the needs of all learners. Through the power of one intuitive system whose pieces were built from the ground up to work together, teachers have the tools they need to ensure students are on the road to proficiency.
- Zearn: <https://www.zearn.org/> Zearn Math is a K-5 math curriculum based on Eureka Math with top-rated materials for teacher-led and digital instruction.
- Teacher Toolbox; <https://teacher-toolbox.com/> A digital collection of K-8 resources to help you differentiate instruction to students performing on, below, and above grade level.

Number Talks

What does Number Talks look like?

- Students are near each other so they can communicate with each other (central meeting place)
- Students are mentally solving problems
- Students are given thinking time
- Thumbs up show when they are ready
- Teacher is recording students' thinking

Communication

- Having to talk out loud about a problem helps students clarify their own thinking
- Allow students to listen to other's strategies and value other's thinking
- Gives the teacher the opportunity to hear student's thinking

Mental Math

- When you are solving a problem mentally you must rely on what you know and understand about the numbers instead of memorized procedures
- You must be efficient when computing mentally because you can hold a lot of quantities in your head

Thumbs Up

- This is just a signal to let you know that you have given your students enough time to think about the problem
- It will give you a picture of who is able to compute mentally and who is struggling
- It isn't as distracting as a waving hand

Teacher as Recorder

- Allows you to record students' thinking in the correct notation
- Provides a visual to look at and refer back to
- Allows you to keep a record of the problems posed and which students offered specific strategies

Purposeful Problems

- Start with small numbers so the students can learn to focus on the strategies instead of getting lost in the numbers
- Use a number string (a string of problems that are related to and scaffold each other)

Starting Number Talks in your Classroom

- Start with specific problems in mind
- Be prepared to offer a strategy from a previous student
- It is ok to put a student's strategy on the backburner
- Limit your number talks to about 15 minutes
- Ask a question, don't tell!

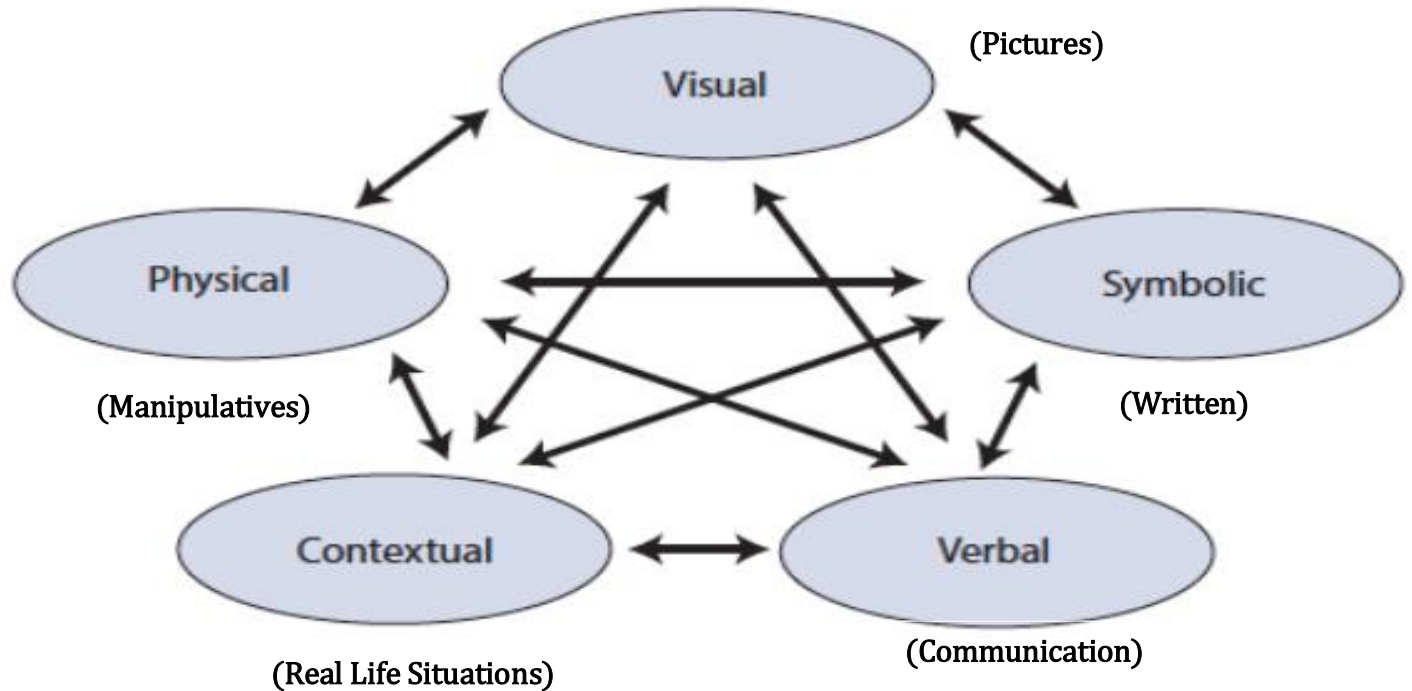
The teacher asks questions:

- Who would like to share their thinking?
- Who did it another way?
- How many people solved it the same way as Billy?
- Does anyone have any questions for Billy?
- Billy, can you tell us where you got that 5?

Student Name: _____ Task: _____ School: _____ Teacher: _____ Date: _____

"I CAN...."	STUDENT FRIENDLY RUBRIC				SCORE
	...a start 1	...getting there 2	...that's it 3	WOW! 4	
Understand	I need help.	I need some help.	I do not need help.	I can help a classmate.	
Solve	I am unable to use a strategy.	I can start to use a strategy.	I can solve it more than one way.	I can use more than one strategy and talk about how they get to the same answer.	
Say or Write	I am unable to say or write.	I can write or say some of what I did.	I can write and talk about what I did. I can write or talk about why I did it.	I can write and say what I did and why I did it.	
Draw or Show	I am not able to draw or show my thinking.	I can draw, but not show my thinking; or I can show but not draw my thinking;	I can draw and show my thinking	I can draw, show and talk about my thinking.	

Use and Connection of Mathematical Representations



The Lesh Translation Model

Each oval in the model corresponds to one way to represent a mathematical idea.

Visual: When children draw pictures, the teacher can learn more about what they understand about a particular mathematical idea and can use the different pictures that children create to provoke a discussion about mathematical ideas. Constructing their own pictures can be a powerful learning experience for children because they must consider several aspects of mathematical ideas that are often assumed when pictures are pre-drawn for students.

Physical: The manipulatives representation refers to the unifix cubes, base-ten blocks, fraction circles, and the like, that a child might use to solve a problem. Because children can physically manipulate these objects, when used appropriately, they provide opportunities to compare relative sizes of objects, to identify patterns, as well as to put together representations of numbers in multiple ways.

Verbal: Traditionally, teachers often used the spoken language of mathematics but rarely gave students opportunities to grapple with it. Yet, when students do have opportunities to express their mathematical reasoning aloud, they may be able to make explicit some knowledge that was previously implicit for them.

Symbolic: Written symbols refer to both the mathematical symbols and the written words that are associated with them. For students, written symbols tend to be more abstract than the other representations. I tend to introduce symbols after students have had opportunities to make connections among the other representations, so that the students have multiple ways to connect the symbols to mathematical ideas, thus increasing the likelihood that the symbols will be comprehensible to students.

Contextual: A relevant situation can be any context that involves appropriate mathematical ideas and holds interest for children; it is often, but not necessarily, connected to a real-life situation.

The Lesh Translation Model: Importance of Connections

As important as the ovals are in this model, another feature of the model is even more important than the representations themselves: The arrows! The arrows are important because they represent the connections students make between the representations. When students make these connections, they may be better able to access information about a mathematical idea, because they have multiple ways to represent it and, thus, many points of access.

Individuals enhance or modify their knowledge by building on what they already know, so the greater the number of representations with which students have opportunities to engage, the more likely the teacher is to tap into a student's prior knowledge. This "tapping in" can then be used to connect students' experiences to those representations that are more abstract in nature (such as written symbols). Not all students have the same set of prior experiences and knowledge. Teachers can introduce multiple representations in a meaningful way so that students' opportunities to grapple with mathematical ideas are greater than if their teachers used only one or two representations.

Concrete Pictorial Abstract (CPA) Instructional Approach

The CPA approach suggests that there are three steps necessary for pupils to develop understanding of a mathematical concept.

Concrete: “Doing Stage”: Physical manipulation of objects to solve math problems.

Pictorial: “Seeing Stage”: Use of imaged to represent objects when solving math problems.

Abstract: “Symbolic Stage”: Use of only numbers and symbols to solve math problems.

CPA is a gradual systematic approach. Each stage builds on to the previous stage. Reinforcement of concepts are achieved by going back and forth between these representations and making connections between stages. Students will benefit from seeing parallel samples of each stage and how they transition from one to another.

Read, Draw, Write Process

READ the problem. Read it over and over.... And then read it again.

DRAW a picture that represents the information given. During this step students ask themselves: Can I draw something from this information? What can I draw? What is the best model to show the information? What conclusions can I make from the drawing?

WRITE your conclusions based on the drawings. This can be in the form of a number sentence, an equation, or a statement.

Students are able to draw a model of what they are reading to help them understand the problem. Drawing a model helps students see which operation or operations are needed, what patterns might arise, and which models work and do not work. Students must dive deeper into the problem by drawing models and determining which models are appropriate for the situation.

While students are employing the RDW process they are using several Standards for Mathematical Practice and in some cases, all of them.

Mathematical Discourse and Strategic Questioning

Discourse involves asking strategic questions that elicit from students their understanding of the context and actions taking place in a problem, how a problem is solved and why a particular method was chosen. Students learn to critique their own and others' ideas and seek out efficient mathematical solutions.

While classroom discussions are nothing new, the theory behind classroom discourse stems from constructivist views of learning where knowledge is created internally through interaction with the environment. It also fits in with socio-cultural views on learning where students working together are able to reach new understandings that could not be achieved if they were working alone.

Underlying the use of discourse in the mathematics classroom is the idea that mathematics is primarily about reasoning not memorization. Mathematics is not about remembering and applying a set of procedures but about developing understanding and explaining the processes used to arrive at solutions.

Teacher Questioning:

Asking better questions can open new doors for students, promoting mathematical thinking and classroom discourse. Can the questions you're asking in the mathematics classroom be answered with a simple “yes” or “no,” or do they invite students to deepen their understanding?

The most
important thing
is to NEVER
stop
questioning

Albert Einstein

To help you encourage deeper discussions, here are 100 questions to incorporate into your instruction by Gladis Kersaint, mathematics expert and advisor for Ready Mathematics.

Dr.

100 questions that promote **Mathematical Discourse**

Help students **work together** to make sense of mathematics

- 1 What **strategy** did you use?
- 2 Do you **agree**?
- 3 Do you **disagree**?
- 4 Would you **ask the rest of the class** that question?
- 5 Could you **share your method** with the class?
- 6 What part of what he said **do you understand**?
- 7 Would someone like to **share** ___?
- 8 Can you **convince the rest of us** that your answer makes sense?
- 9 **What do others think** about what [student] said?
- 10 Can someone **retell or restate** [student]'s explanation?
- 11 Did you **work together**? In what way?
- 12 Would anyone like to **add to what was said**?
- 13 Have you **discussed** this with your group? With others?
- 14 Did anyone get a **different answer**?
- 15 **Where** would you go for **help**?
- 16 **Did everybody get a fair chance** to talk, use the manipulatives, or be the recorder?
- 17 How could you help another student **without telling them the answer**?
- 18 **How would you explain** ___ to someone who missed class today?

Help students **rely more on themselves** to determine whether something is **mathematically correct**

- 19 Is this a **reasonable answer**?
- 20 Does that make **sense**?
- 21 **Why** do you think that? Why is that true?
- 22 Can you **draw a picture or make a model** to show that?
- 23 **How** did you reach that conclusion?
- 24 Does anyone want to **revise** his or her answer?
- 25 **How were you sure** your answer was right?

Ready

Help students learn to reason mathematically

- 26 How did you **begin** to think about this problem?
- 27 What is **another way** you could solve this problem?
- 28 How could you **prove** _____?
- 29 Can you **explain how your answer is different from or the same as** [student]'s answer?
- 30 Let's **break the problem into parts**. What would the parts be?
- 31 Can you **explain this part more specifically**?
- 32 Does that **always work**?
- 33 Can you think of a case where that **wouldn't work**?
- 34 How did you **organize** your information? Your thinking?

Help students evaluate their own processes and engage in productive peer interaction

- 35 What do you need to do **next**?
- 36 What have you **accomplished**?
- 37 What are your **strengths and weaknesses**?
- 38 Was your **group participation appropriate and helpful**?

Help students with problem comprehension

- 39 What is this problem about? What can you **tell me about it**?
- 40 Do you need to **define or set limits** for the problem?
- 41 How would you **interpret** that?
- 42 Could you **reword that in simpler terms**?
- 43 Is there something that can be **eliminated** or that is **missing**?
- 44 Could you **explain** what the problem is asking?
- 45 What **assumptions** do you have to make?
- 46 What do you **know** about this part?
- 47 Which words were **most important**? Why?



Help students learn to **conjecture, invent, and solve problems**

- 48 **What would happen if ___?**
- 49 Do you see a **pattern**?
- 50 What are some **possibilities** here?
- 51 Where could you find the **information** you need?
- 52 How would you **check your steps** or your answer?
- 53 What **did not work**?
- 54 How is your solution method the **same as or different from** [student]'s method?
- 55 Other than retracing your steps, **how can you determine** if your answers are appropriate?
- 56 How did you **organize** the information? Do you have a **record**?
- 57 How could you solve this using **tables, lists, pictures, diagrams**, etc.?
- 58 What have you tried? What **steps** did you take?
- 59 How would it look if you used this **model** or these **materials**?
- 60 How would you draw a **diagram** or **make a sketch** to solve the problem?
- 61 Is there **another possible answer**? If so, explain.
- 62 Is there **another way to solve** the problem?
- 63 Is there **another model** you could use to solve the problem?
- 64 Is there anything you've **overlooked**?
- 65 **How did you think** about the problem?
- 66 What was your **estimate or prediction**?
- 67 How **confident** are you in your answer?
- 68 **What else** would you like to know?
- 69 What do you think comes **next**?
- 70 Is the solution **reasonable**, considering the context?
- 71 Did you have a **system**? Explain it.
- 72 Did you have a **strategy**? Explain it.
- 73 Did you have a **design**? Explain it.



Help students learn to **connect mathematics, its ideas, and its application**

- 74 What is the **relationship** between ___ and ___?
- 75 Have we ever solved a problem **like this before**?
- 76 What uses of mathematics did you find in the **newspaper** last night?
- 77 What is the **same**?
- 78 What is **different**?
- 79 Did you use skills or build on concepts that were **not necessarily mathematical**?
- 80 Which **skills or concepts** did you use?
- 81 What **ideas** have we explored before that were useful in solving this problem?
- 82 Is there a **pattern**?
- 83 **Where else** would this strategy be useful?
- 84 How does this **relate** to ___?
- 85 Is there a **general rule**?
- 86 Is there a **real-life situation** where this could be used?
- 87 How would your method work with **other problems**?
- 88 What other problem does this seem to **lead to**?

Help students **persevere**

- 89 What was **one thing you learned** (or two, or more)?
- 90 Did you **notice any patterns**? If so, describe them.
- 91 What **mathematics topics** were used in this investigation?
- 92 What were the **mathematical ideas** in this problem?
- 93 What is mathematically **different about these two situations**?
- 94 What are the **variables** in this problem? What stays **constant**?

- 89 Have you tried making a **guess**?
- 90 **What else** have you tried?
- 91 Would **another method** work as well or better?
- 92 Is there **another way** to draw, explain, or say that?
- 93 Give me another **related problem**. Is there an easier problem?
- 94 How would you **explain** what you know right now?

Help students **focus on the mathematics from activities**

Conceptual Understanding

Students demonstrate conceptual understanding in mathematics when they provide evidence that they can:

- recognize, label, and generate examples of concepts;
- use and interrelate models, diagrams, manipulatives, and varied representations of concepts;
- identify and apply principles; know and apply facts and definitions;
- compare, contrast, and integrate related concepts and principles; and
- recognize, interpret, and apply the signs, symbols, and terms used to represent concepts.

Conceptual understanding reflects a student's ability to reason in settings involving the careful application of concept definitions, relations, or representations of either.

Procedural Fluency

Procedural fluency is the ability to:

- apply procedures accurately, efficiently, and flexibly;
- to transfer procedures to different problems and contexts;
- to build or modify procedures from other procedures; and
- to recognize when one strategy or procedure is more appropriate to apply than another.

Procedural fluency is more than memorizing facts or procedures, and it is more than understanding and being able to use one procedure for a given situation. Procedural fluency builds on a foundation of conceptual understanding, strategic reasoning, and problem solving (NGA Center & CCSSO, 2010; NCTM, 2000, 2014). Research suggests that once students have memorized and practiced procedures that they do not understand, they have less motivation to understand their meaning or the reasoning behind them (Hiebert, 1999). Therefore, the development of students' conceptual understanding of procedures should precede and coincide with instruction on procedures.

Math Fact Fluency: Automaticity

Students who possess math fact fluency can recall math facts with automaticity. Automaticity is the ability to do things without occupying the mind with the low-level details required, allowing it to become an automatic response pattern or habit. It is usually the result of learning, repetition, and practice.

K-2 Math Fact Fluency Expectation

K.OA.5 Add and Subtract within 5.

1.OA.6 Add and Subtract within 10.

2.OA.2 Add and Subtract within 20.

Math Fact Fluency: Fluent Use of Mathematical Strategies

First and second grade students are expected to solve addition and subtraction facts using a variety of strategies fluently.

1.OA.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; and
- creating equivalent but easier or known sums.

2.NBT.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;

Evidence of Student Thinking

Effective classroom instruction and more importantly, improving student performance, can be accomplished when educators know how to elicit evidence of students' understanding on a daily basis. Informal and formal methods of collecting evidence of student understanding enable educators to make positive instructional changes. An educators' ability to understand the processes that students use helps them to adapt instruction allowing for student exposure to a multitude of instructional approaches, resulting in higher achievement. By highlighting student thinking and misconceptions, and eliciting information from more students, all teachers can collect more representative evidence and can therefore better plan instruction based on the current understanding of the entire class.

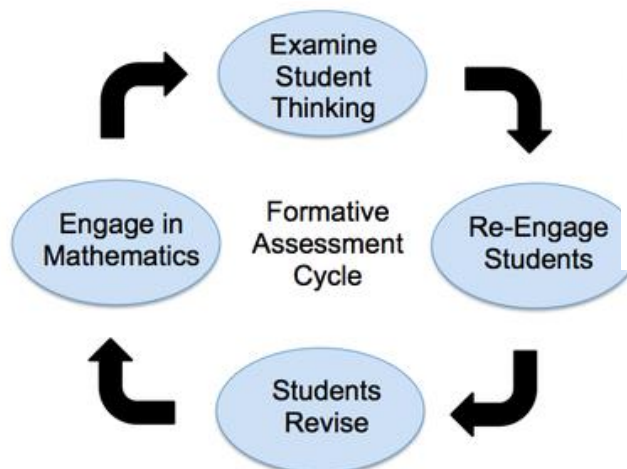
Mathematical Proficiency

To be mathematically proficient, a student must have:

- Conceptual understanding: comprehension of mathematical concepts, operations, and relations;
- Procedural fluency: skill in carrying out procedures flexibly, accurately, efficiently, and appropriately;
- Strategic competence: ability to formulate, represent, and solve mathematical problems;
- Adaptive reasoning: capacity for logical thought, reflection, explanation, and justification;
- Productive disposition: habitual inclination to see mathematics as sensible, useful, and worthwhile, coupled with a belief in diligence and one's own efficacy.

Evidence should:

- Provide a window in student thinking;
- Help teachers to determine the extent to which students are reaching the math learning goals; and
- Be used to make instructional decisions during the lesson and to prepare for subsequent lessons.



Formative assessment is an essentially interactive process, in which the teacher can find out whether what has been taught has been learned, and if not, to do something about it. Day-to-day formative assessment is one of the most powerful ways of improving learning in the mathematics classroom.

(William 2007, pp. 1054; 1091)

Connections to the Mathematical Practices

Student Friendly Connections to the Mathematical Practices

1. I can solve problems without giving up.
2. I can think about numbers in many ways.
3. I can explain my thinking and try to understand others.
4. I can show my work in many ways.
5. I can use math tools and tell why I choose them.
6. I can work carefully and check my work.
7. I can use what I know to solve new problems.
8. I can discover and use short cuts.

Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

When solving problems, students will begin to explain the meaning of a problem, and look for ways to solve it. Kindergarteners will learn how to use their knowledge of numbers and operations when working in small groups or with a partner they will listen to the strategies of the group and will try different approaches.

While solving tasks. This involves two processes- decontextualizing and contextualizing.

For example, in the task, “There are 7 children on the playground and some children go line up. If there are 4 children still playing, how many children are in line?”

When solving the task above, students refer to the context of the task to determine that they need to subtract 4 since the number of children on the playground is 7.

Students will use their knowledge of numbers and operations to make arguments and engage in discussions about problem solving strategies. For example, while solving the task, “There are 8 books on the shelf and 3 books were taken away. How many books are left?” they subtracted 3 from 8 rather than adding 8 and 3. Further, Kindergarten students are expected to examine a variety of problem solving strategies.

Students will use their knowledge of numbers and operations to write a number sentence or an equation, and check to make sure that their equation accurately matches the problem context. Kindergarten students will use their knowledge of numbers and operations to solve problems.

task “there are 7 bananas on the counter. If you eat 3 bananas, how many are left?” Kindergarten students are expected to write the equation $7 - 3 = 4$.

These tools may include counters, place value (base ten) blocks, hundreds number boards, number lines, and concrete geometric shapes (e.g., blocks).

paper, and determine which tools are the most appropriate to use. For example, while solving the task “There are 4 dogs in the park. If 3 more dogs come, how many dogs are there now?”

and measurements. In all mathematical tasks, students in Kindergarten describe their actions and strategies clearly, using grade-level appropriate language.

There are no gaps or overlaps. During tasks involving number sense, students check their work to ensure the accuracy and reasonableness of their answers.

number system and other areas of mathematics. While solving addition problems, students begin to recognize the commutative property of addition.

decomposed into 10 and some leftovers, such as $12 = 10 + 2$, $13 = 10 + 3$, etc.

work with subtraction as missing addend problems, such as $5 - 1 = \underline{\quad}$ can be written as $1 + \underline{\quad} = 5$ and can be thought of as how much more is needed to reach 5.

is when solving mathematical tasks.

any of each could there be?”

$5 + 3 = 8$), 5 of one color and 3 of another ($5 + 3 = 8$), etc.

needed to equal 8.

Effective Mathematics Teaching Practices

Establish mathematics goals to focus learning. Effective teaching of mathematics establishes clear goals for the mathematics that students are learning, situates goals within learning progressions, and uses the goals to guide instructional decisions.

Implement tasks that promote reasoning and problem solving. Effective teaching of mathematics engages students in solving and discussing tasks that promote mathematical reasoning and problem solving and allow multiple entry points and varied solution strategies.

Use and connect mathematical representations. Effective teaching of mathematics engages students in making connections among mathematical representations to deepen understanding of mathematics concepts and procedures and as tools for problem solving.

Facilitate meaningful mathematical discourse. Effective teaching of mathematics facilitates discourse among students to build shared understanding of mathematical ideas by analyzing and comparing student approaches and arguments.

Pose purposeful questions. Effective teaching of mathematics uses purposeful questions to assess and advance students' reasoning and sense making about important mathematical ideas and relationships.

Build procedural fluency from conceptual understanding. Effective teaching of mathematics builds fluency with procedures on a foundation of conceptual understanding so that students, over time, become skillful in using procedures flexibly as they solve contextual and mathematical problems.

Support productive struggle in learning mathematics. Effective teaching of mathematics consistently provides students, individually and collectively, with opportunities and supports to engage in productive struggle as they grapple with mathematical ideas and relationships.

Elicit and use evidence of student thinking. Effective teaching of mathematics uses evidence of student thinking to assess progress toward mathematical understanding and to adjust instruction continually in ways that support and extend learning.

5 Practices for Orchestrating Productive Mathematics Discussions

Practice	Description/ Questions
1. Anticipating	<p>What strategies are students likely to use to approach or solve a challenging high-level mathematical task?</p> <p>How do you respond to the work that students are likely to produce?</p> <p>Which strategies from student work will be most useful in addressing the mathematical goals?</p>
2. Monitoring	<p>Paying attention to what and how students are thinking during the lesson.</p> <p>Students working in pairs or groups</p> <p>Listening to and making note of what students are discussing and the strategies they are using</p> <p>Asking students questions that will help them stay on track or help them think more deeply about the task. (Promote productive struggle)</p>
3. Selecting	<p>This is the process of deciding the <i>what</i> and the <i>who</i> to focus on during the discussion.</p> <p>Selection of children is guided by the mathematical goal for the lesson</p>
4. Sequencing	<p>What order will the solutions be shared with the class?</p> <p>Sequence depends largely on the teacher's goals for a lesson</p> <p>Maximizing the chances that math goals will be achieved</p>
5. Connecting	<p>Asking the questions that will make the mathematics explicit and understandable.</p> <p>Focus must be on mathematical meaning and relationships; making links between mathematical ideas and representations.</p>

MATH CENTERS/ WORKSTATIONS

Math workstations allow students to engage in authentic and meaningful hands-on learning. They often last for several weeks, giving students time to reinforce or extend their prior instruction. Before students have an opportunity to use the materials in a station, introduce them to the whole class, several times. Once they have an understanding of the concept, the materials are then added to the work stations.

Station Organization and Management Sample

Teacher A has 12 containers labeled 1 to 12. The numbers correspond to the numbers on the rotation chart. She pairs students who can work well together, who have similar skills, and who need more practice on the same concepts or skills. Each day during math work stations, students use the center chart to see which box they will be using and who their partner will be. Everything they need for their station will be in their box. **Each station is differentiated.** If students need more practice and experience working on numbers 0 to 10, those will be the only numbers in their box. If they are ready to move on into the teens, then she will place higher number activities into the box for them to work with.



In the beginning there is a lot of prepping involved in gathering, creating, and organizing the work stations. However, once all of the initial work is complete, the stations are easy to manage. Many of her stations stay in rotation for three or four weeks to give students ample opportunity to master the skills and concepts.

Read *Math Work Stations* by Debbie Diller.

In her book, she leads you step-by-step through the process of implementing work stations.

MATH WORKSTATION INFORMATION CARD

Math Workstation: _____

Time: _____

NJSLS:

Objective(s): By the end of this task, I will be able to:

- _____
- _____
- _____

Task(s):

- _____
- _____
- _____
- _____

Exit Ticket:

- _____
- _____
- _____

MATH WORKSTATION SCHEDULE

Week of: _____

DAY	Technology Lab	Problem Solving Lab	Fluency Lab	Math Journal	Small Group Instruction
Mon.	Group ____	Group ____	Group ____	Group ____	BASED ON CURRENT OB- SERVATIONAL DA- TA
Tues.	Group ____	Group ____	Group ____	Group ____	
Wed.	Group ____	Group ____	Group ____	Group ____	
Thurs.	Group ____	Group ____	Group ____	Group ____	
Fri.	Group ____	Group ____	Group ____	Group ____	

INSTRUCTIONAL GROUPING

	GROUP A		GROUP B
1		1	
2		2	
3		3	
4		4	
5		5	
6		6	
	GROUP C		GROUP D
1		1	
2		2	
3		3	
4		4	
5		5	

Kindergarten PLD Rubric

Got It		Not There Yet		
Evidence shows that the student essentially has the target concept or big math idea.		Student shows evidence of a major misunderstanding, incorrect concepts or procedure, or a failure to engage in the task.		
PLD Level 5: 100% Distinguished command	PLD Level 4: 89% Strong Command	PLD Level 3: 79% Moderate Command	PLD Level 2: 69% Partial Command	PLD Level 1: 59% Little Command
<p>Student work shows distinct levels of understanding of the mathematics.</p> <p>Student constructs and communicates a complete response based on explanations/reasoning using the:</p> <ul style="list-style-type: none"> • Tools: <ul style="list-style-type: none"> ○ Manipulatives ○ Five Frame ○ Ten Frame ○ Number Line ○ Part-Part-Whole Model • Strategies: <ul style="list-style-type: none"> ○ Drawings ○ Counting All ○ Count On/Back ○ Skip Counting ○ Making Ten ○ Decomposing Number • Precise use of math vocabulary <p>Response includes an efficient and logical progression of mathematical reasoning and understanding.</p>	<p>Student work shows strong levels of understanding of the mathematics.</p> <p>Student constructs and communicates a complete response based on explanations/reasoning using the:</p> <ul style="list-style-type: none"> • Tools: <ul style="list-style-type: none"> ○ Manipulatives ○ Five Frame ○ Ten Frame ○ Number Line ○ Part-Part-Whole Model • Strategies: <ul style="list-style-type: none"> ○ Drawings ○ Counting All ○ Count On/Back ○ Skip Counting ○ Making Ten ○ Decomposing Number • Precise use of math vocabulary <p>Response includes a logical progression of mathematical reasoning and understanding.</p>	<p>Student work shows moderate levels of understanding of the mathematics.</p> <p>Student constructs and communicates a complete response based on explanations/reasoning using the:</p> <ul style="list-style-type: none"> • Tools: <ul style="list-style-type: none"> ○ Manipulatives ○ Five Frame ○ Ten Frame ○ Number Line ○ Part-Part-Whole Model • Strategies: <ul style="list-style-type: none"> ○ Drawings ○ Counting All ○ Count On/Back ○ Skip Counting ○ Making Ten ○ Decomposing Number • Precise use of math vocabulary <p>Response includes a logical but incomplete progression of mathematical reasoning and understanding. Contains minor errors.</p>	<p>Student work shows partial understanding of the mathematics.</p> <p>Student constructs and communicates an incomplete response based on student’s attempts of explanations/ reasoning using the:</p> <ul style="list-style-type: none"> • Tools: <ul style="list-style-type: none"> ○ Manipulatives ○ Five Frame ○ Ten Frame ○ Number Line ○ Part-Part-Whole Model • Strategies: <ul style="list-style-type: none"> ○ Drawings ○ Counting All ○ Count On/Back ○ Skip Counting ○ Making Ten ○ Decomposing Number • Precise use of math vocabulary <p>Response includes an incomplete or illogical progression of mathematical reasoning and understanding.</p>	<p>Student work shows little understanding of the mathematics.</p> <p>Student attempts to constructs and communicates a response using the:</p> <ul style="list-style-type: none"> • Tools: <ul style="list-style-type: none"> ○ Manipulatives ○ Five Frame ○ Ten Frame ○ Number Line ○ Part-Part-Whole Model • Strategies: <ul style="list-style-type: none"> ○ Drawings ○ Counting All ○ Count On/Back ○ Skip Counting ○ Making Ten ○ Decomposing Number • Precise use of math vocabulary <p>Response includes limited evidence of the progression of mathematical reasoning and understanding.</p>
5 points	4 points	3 points	2 points	1 point

DATA DRIVEN INSTRUCTION

Formative assessments inform instructional decisions. Taking inventories and assessments, observing reading and writing behaviors, studying work samples and listening to student talk are essential components of gathering data. When we take notes, ask questions in a student conference, lean in while a student is working or utilize a more formal assessment we are gathering data. Learning how to take the data and record it in a meaningful way is the beginning of the cycle.

Analysis of the data is an important step in the process. What is this data telling us? We must look for patterns, as well as compare the notes we have taken with work samples and other assessments. We need to decide what are the strengths and needs of individuals, small groups of students and the entire class. Sometimes it helps to work with others at your grade level to analyze the data.

Once we have analyzed our data and created our findings, it is time to make informed instructional decisions. These decisions are guided by the following questions:

- What mathematical practice(s) and strategies will I utilize to teach to these needs?
- What sort of grouping will allow for the best opportunity for the students to learn what it is I see as a need?
- Will I teach these strategies to the whole class, in a small guided group or in an individual conference?
- Which method and grouping will be the most effective and efficient? What specific objective(s) will I be teaching?

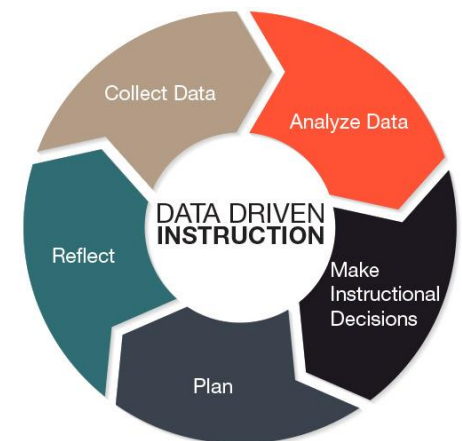
Answering these questions will help inform instructional decisions and will influence lesson planning.

Then we create our instructional plan for the unit/month/week/day and specific lessons.

It's important now to reflect on what you have taught.

Did you observe evidence of student learning through your checks for understanding, and through direct application in student work?

What did you hear and see students doing in their reading and writing?



Data Analysis Form

School: _____ Teacher: _____ Date: _____

Assessment: _____ NJSLS: _____

GROUPS (STUDENT INITIALS)	SUPPORT PLAN	PROGRESS
MASTERED (86% - 100%) (PLD 4/5):		
DEVELOPING (67% - 85%) (PLD 3):		
INSECURE (51%-65%) (PLD 2):		
BEGINNING (0%-50%) (PLD 1):		

MATH PORTFOLIO EXPECTATIONS

The Student Assessment Portfolios for Mathematics are used as a means of documenting and evaluating students' academic growth and development over time and in relation to the NJSL. The September task entry(-ies) should reflect the prior year content and *can serve* as an additional baseline measure.

All tasks contained within the **Student Assessment Portfolios** should be aligned to NJSL and be “practice forward” (closely aligned to the Standards for Mathematical Practice).

Four (4) or more additional tasks will be included in the **Student Assessment Portfolios** for Student Reflection and will be labeled as such.

K-2 GENERAL PORTFOLIO EXPECTATIONS:

- Tasks contained within the Student Assessment Portfolios are “practice forward” and denoted as “Individual”, “Partner/Group”, and “Individual w/Opportunity for Student Interviews¹”.
- Each Student Assessment Portfolio should contain a “Task Log” that documents all tasks, standards, and rubric scores aligned to the performance level descriptors (PLDs).
- Student work should be attached to a completed rubric; with appropriate teacher feedback on student work.
- Students will have multiple opportunities to revisit certain standards. Teachers will capture each additional opportunity “as a new and separate score” in the task log.
- A 2-pocket folder for each Student Assessment Portfolio is *recommended*.
- All Student Assessment Portfolio entries should be scored and recorded as an Authentic Assessment grade (25%)².
- All Student Assessment Portfolios must be clearly labeled, maintained for all students, inclusive of constructive teacher and student feedback and accessible for review.

GRADES K-2

Student Portfolio Review

Provide students the opportunity to review and evaluate their portfolio at various points throughout the year; celebrating their progress and possibly setting goals for future growth. During this process, students should retain ALL of their current artifacts in their Mathematics Portfolio.

Kindergarten Authentic Assessment #1 – Which weighs more? Which weighs less?

Task

Materials:

- Sheets of paper for each student that are folded in half with the words "Heavier" and "Lighter" written at the top of each side.

Heavier	Lighter
---------	---------

- A box of large blocks.
- A box of different objects with different weights to compare with a block from the first box. Some should be lighter than a single block and some should be heavier. The weight differences should be fairly pronounced.

Action:

- The students begin by choosing a block that they will use to compare with other objects.
- Students will then choose an item from the second box and compare its weight to their block. They then draw a picture of it under "Heavier" or "Lighter" depending which applies. They continue to choose objects from the box to measure against their block until they have two or three drawings on each side of their sheet.

IM Commentary

- The students should be told just to make a quick drawing instead of trying to trace the item on their sheet.
- This activity can be done during a whole group lesson, but might be easier in a small group or at a center.
- The students should also be encouraged to explain their findings to a partner so as to be given an opportunity to use the math vocabulary of heavier/lighter.
- Some students may need to work in pairs to help support those that are struggling or slow in completing the task.

K.MD.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.

Solution; The students explain their findings to the teacher using terms heavier and lighter.				
Level 5: Distinguished Command	Level 4: Strong Command	Level 3: Moderate Command	Level 2: Partial Command	Level 1: No Command
Student is able to identify 4 shapes as being heavier or lighter than the block.	Student is able to identify 3 shapes as being heavier or lighter than the block.	Student is able to identify 2 shapes as being heavier or lighter than the block.	Student is able to identify 1 shape as being heavier or lighter than the block.	Students are not able to identify if shapes are heavier or lighter.

Core Instructional and Supplemental Materials (K-5)

EUREKA MATH V. 2019
(GREAT MINDS)

GRADE	TEACHER RESOURCES	STUDENT RESOURCES
K (v. 2019.)	<ul style="list-style-type: none">• Teacher Edition: Module 1-6• Eureka Math Teacher Resource Pack• Eureka K-5 PD Toolkit	<ul style="list-style-type: none">• Learn Workbook Set: Module 1-6• Succeed Workbook Set: Module 1-6• Practice Workbook, Fluency: Module 1-6
1	<ul style="list-style-type: none">• Teacher Edition: Module 1-6• Eureka Math Teacher Resource Pack• Eureka K-5 PD Toolkit	<ul style="list-style-type: none">• Learn Workbook Set: Module 1-6• Succeed Workbook Set: Module 1-6• Practice Workbook, Fluency: Module 1-6
2	<ul style="list-style-type: none">• Teacher Edition: Module 1-8• Eureka Math Teacher Resource Pack• Eureka K-5 PD Toolkit	<ul style="list-style-type: none">• Learn Workbook Set: Module 1-8• Succeed Workbook Set: Module 1-8• Practice Workbook, Fluency: Module 1-8
3		
4	<ul style="list-style-type: none">• Teacher Edition: Module 1-7• Eureka Math Teacher Resource Pack• Eureka K-5 PD Toolkit	<ul style="list-style-type: none">• Learn Workbook Set: Module 1-7• Succeed Workbook Set: Module 1-7• Practice Workbook, Fluency: Module 1-7
5	<ul style="list-style-type: none">• Teacher Edition: Module 1-7• Eureka Math Teacher Resource Pack• Eureka K-5 PD Toolkit	<ul style="list-style-type: none">• Learn Workbook Set: Module 1-7• Succeed Workbook Set: Module 1-7• Practice Workbook, Fluency: Module 1-7
	<ul style="list-style-type: none">• Teacher Edition: Module 1-6• Eureka Math Teacher Resource Pack• Eureka K-5 PD Toolkit	<ul style="list-style-type: none">• Learn Workbook Set: Module 1-6• Succeed Workbook Set: Module 1-6• Practice Workbook, Fluency: Module 1-6

MATH IN FOCUS v. 2015
(HOUGHTON MIFFLIN HARCOURT)

GRADE	TEACHER RESOURCES	STUDENT RESOURCES
K	<ul style="list-style-type: none">• Teacher Edition (A & B)• Implementation Guide• Assessment Package• Enrichment Bundle• Extra Practice Set• Teacher and Student Activity Cards• Home -to- School Connection Book• Online Teacher Technology Kit• Big Book Set• Online Interactive Whiteboard Lessons	<ul style="list-style-type: none">• Student Edition A – Pt. 1• Student Edition A – Pt. 2• Student Edition B – Pt. 1• Student Edition B – Pt. 2• Online Student Technology Kit
1	<ul style="list-style-type: none">• Teacher Edition (A & B)• Implementation Guide• Assessment Package• Enrichment Bundle• Extra Practice Guide• Reteaching Guide• Home -to- School Connection Book• Online Teacher Technology Kit• Fact Fluency• Online Interactive Whiteboard Lessons	<ul style="list-style-type: none">• Student Texts (A & B)• Student Workbooks• Online Student Technology Kit• Student Interactivities
2-5	<ul style="list-style-type: none">• Teacher Edition (A & B)• Implementation Guide• Assessment Package• Enrichment Bundle• Extra Practice Guide• Transition Guides• Reteaching Guide• Home -to- School Connection Book• Online Teacher Technology Kit• Fact Fluency• Online Interactive Whiteboard Lessons	<ul style="list-style-type: none">• Student Texts (A & B)• Student Workbooks• Online Student Technology Kit• Student Interactivities

Supplemental Resources

Number Book Assessment Link: <http://investigations.terc.edu/>

Model Curriculum- <http://www.nj.gov/education/modelcurriculum/>

Georgia Department of Education: Games to be played at centers with a partner or small group.
<http://ccgpsmathematicsk-5.wikispaces.com/Kindergarten>

Engage NY: *For additional resources to be used during centers or homework.
<https://www.engageny.org/sites/default/files/resource/attachments/math-gk-m1-full-module.pdf>

Add/ Subtract Situation Types: Darker Shading indicates Kindergarten expectations
<https://achievethecore.org/content/upload/Add%20Subtract%20Situation%20Types.pdf>

Math in Focus PD Videos: https://www-k6.thinkcentral.com/content/hsp/math/hspmath/common/mif_pd_vid/9780547760346_te/index.html

Number Talks activities: psassets.weebly.com/uploads/9/9/3/2/.../number_talks_kindergarten_resource.pdf

Suggested Literature

Fish Eyes by, Lois Ehlert

Ten Little Puppies by, Elena Vazquez

Zin! Zin! Zin! A Violin! by, Lloyd Moss

My Granny Went to the Market by, Stella Blackstone and Christopher Corr

Anno's Counting Book by, Mitsumasa Anno

Chicka, Chicka, 1,2,3 by, Bill Martin Jr.; Michael Sampson; Lois Ehlert

How Dinosaurs Count to 10 by Jane Yolen and Mark Teague

10 Little Rubber Ducks by Eric Carle

Ten Black Dots by Donald Crews

Mouse Count by Ellen Stoll Walsh

Count! by Denise Fleming