Introduction to Kindergarten Math Mini-Cluster: The First 10 Days (Cluster 1 will begin on Day 11)

Taking the first two weeks of school to develop classroom math routines will allow for greater instructional and learning time for students in the future. Modeling and providing guided practice of expectations and feedback will allow students to develop and practice their growing number sense in meaningful and purposeful ways. Time will need to be spent establishing expectations for:

- ***Choosing and using manipulatives strategically***
- ***Math Talk Moves***
- ***Cooperative Learning***
- ***Math Problem Solving Notebooks***
- ***Centers and Expectations***
- ***Building a classroom that encourages the Standards for Mathematical Practice***

	What?	Why?
	The main goals of day 1 are to set the stage for problem solving and drawing/writing in a daily Problem Solving Notebook.	
Day 1	**<u>Problem Solving Expectations</u>: Present this problem to students: *I have a problem. Last night I looked in a hole in my backyard and saw 4 eyes. What could be in the hole?* Allow the children to discuss what they think could be in the hole and why. (2 frogs, 4 dogs looking sideways, 3 owls but one is looking backwards, etc.) Let's think about what we had to do to solve this problem. Try to elicit the following ideas from the children and record on an anchor chart.** • **Have a positive attitude (I can do this!)** • **Keep trying, don't give up!** • **Use good problem-solving strategies** • **Work together, but do your own thinking** • **Explain your thinking**	**To establish expectations for behaviors in a problem solving math classroom.**
	<u>Getting to know the Problem Solving Notebook:</u> Introduce the following problem that is written on a half sheet of paper: *Draw a picture of yourself. How many eyes do you have?* Show children how to glue this sheet in to their notebook. Add the following ideas to the anchor chart: • **One page at a time (Use one page each day.)** • **Dot…dot…not a lot. (This refers to the amount of glue on the Problem of the day sheet.)** **After the children have correctly placed the Problem of the Day in their notebook, allow children time to draw and write.**	**To practice writing about math using precise vocabulary and set expectations for math notebook writing.**
	<u>Introduce the Mathematician's Chair</u>: **Identify a special chair that will provide a public forum to share and discuss work and provide feedback to one another. Focus on notebooks that have neat, organized work (i.e.the eyes are clearly present). Look for children who wrote the number 2, but look for other ways that children may have represented the number 2 (for example--did anyone make two dots?) If nobody did, ask the kids for ideas about how they *could* represent the number 2. Record ideas in a Big Class Problem Solving Notebook (you could use a large spiral flip chart). As children finish sharing their solutions, they ask, "Are there any questions or comments?" After the questions and comments are complete, the class applauds and the process continues.**	**To set expectations for sharing thinking and responding to classmates.**

The main goals of day 2 are to set expectations for math talks, continue drawing/writing in a daily Problem Solving Notebook, and practice the Mathematician's Chair.		
Day 2	**<u>Problem Solving Notebook</u>** • **Remind students the expectations from the anchor chart created yesterday regarding the Problem Solving Notebook.** • **Show today's problem:** ***How many kids are at your table? How can you show your answer?*** • **Allow children time to glue the problem of the day in to their notebook and then write/draw their ideas in their notebook** • **The focus should be on "How can you show your answer?"**	**To practice writing about math and set expectations for math notebook writing**
	<u>Mathematician's Chair:</u> • **Some children might draw a literal picture. Others might draw symbols. Many may write the actual number. During Mathematician's Chair, ask the children how they found their answer. Get them to use the word count... "I counted!" Ask for several volunteers to demonstrate how they counted. Also, point out the variety of ways that children showed their answers. Point out children that used more than one way to show their answer.** • **Add to Big Class Problem Solving Notebook (use labels and precise vocabulary)**	**To model writing about math and set expectations for math notebook writing and sharing in Mathematician's Chair.**
	<u>Math Talk</u>: Model Revoicing (Teacher repeats exactly what a student has said as students share during Mathematician's Chair) ○ **"What I heard you say was…."** ○ **"You're saying…"**	**To establish shared meaning and set expectations for class discussion and questioning.**

The main goals of day 3 are to introduce other math talk moves, model appropriate vs. inappropriate behaviors during math game play, continue drawing/writing in Problem Solving Notebook, and Mathematician's Chair.		
Day 3	**<u>Introduce a Partner Math Game</u>: Show how to play a math game and model appropriate vs. inappropriate use of the math tools involved. Begin class anchor chart to record expectations for partner math games.** **○ What will it look like?** **○ What will it sound like?** **○ Where will it happen?** **○ What are the expectations for clean up?** **After game is played for about 5 minutes, stop and facilitate a class self-assessment of game playing in relation to expectations. What went well? What do we need to work on?** **Game play should continue after self-assessment in order for pairs to work toward meeting classroom expectations.**	**To begin to establish expectations for independent games and activities.**
	<u>Problem Solving Notebook</u>: Review anchor chart for expectations. Read today's notebook entry: *Write your name. How many letters are in your name? How can you show your answers?* Allow time for students to glue into notebook and complete. Then discuss: **○ What does math notebook writing look like?** **○ What does math notebook writing sound like?** **○ What happens when you are "finished"?**	**To continue drawing and writing about math using precise vocabulary and establish shared expectations for math notebooks.**
	<u>Mathematician's Chair:</u> **Share some of the notebook entries aloud or use the document camera to celebrate efforts and establish pride in written work. Add to Big Class Notebook.** **<u>Math Talk:</u>** **Teacher continues to use revoicing. Introduce the Math Talk move of restating (student repeats or rephrases what another student has said)** **○ "Can you restate what ___ just said?"** **○ "Turn to the person next to you and restate what ____ just said."** **Use the ideas shared to create class anchor chart about math discussion expectations.**	**To set expectations for sharing their thinking using their Problem Solving Notebooks** **To set expectations for participation during math discussions.**

The main goals for day 4 are introducing appropriate use of manipulatives, continue practicing expectations of partner game play and Math Problem Solving Notebook writing.		
Day 4	**<u>Math Tool Scavenger Hunt</u>: Students work in pairs to find and record manipulatives that serve different purposes. Some manipulatives to have available may be unifix cubes, pattern blocks, color tiles, digi-blocks, animal counters, etc. (For classroom management purposes you may want manipulatives in bins in an assigned area of your classroom)** **○ Find one or more manipulatives/math tools that could be used to build the number 3.** **○ Find one or more math tools that connect together.** **○ Find one or more math tools that could be used to make a design.** **○ Find one or more math tools that could be used to find out how long your arm is.**	**To establish uses for different manipulatives so that kids can choose and use them strategically for later problem solving**
	<u>Practice Partner Math Game from Day 3</u>: Revisit class anchor chart of game expectations and refer to as game rules are reviewed. If most students are working well together, this would be an ideal time to work with a few students individually to begin the Initial K Inventory. **• *Debrief "what is going well" vs. "what needs to be better" in relation to math games expectations. Focus on the positive and choose one goal to improve for the next day.***	**To establish expectations for independent games and activities.**
	<u>Problem Solving Notebooks</u>: *Make a picture with pattern blocks. Draw it in your notebook. How many pattern blocks did you use?*	**To practice drawing and writing about math.**
	<u>Mathematician's Chair:</u> **Share some of the math journal entries aloud or use the document camera to celebrate efforts and establish pride in written work. Add to Big Class Notebook.** **<u>Math Talk:</u>** **Allow student to practice restating. Introduce the Math Talk move of applying reasoning to someone else's reasoning. Ask a child if they agree or disagree with someone and why. You can also allow students to add on to what someone else has just said.**	**To set expectations for sharing their thinking using their Problem Solving Notebooks** **To practice expectations for participation during math discussions.**

The main goals for day 5 are to develop expectations for working in small groups, Problem Solving Notebooks, and Mathematician's Chair.		
Day 5	**<u>Introduce Small Groups</u>: Break the class into two groups and practice rotating and doing two consecutive activities (two independent activities). The independent activities could include one of the games introduced this week, time to play with some of the manipulatives introduced in a directed way (such as build the number 5 using 2 different math tools and record your ways on drawing paper), or another activity that builds number sense. Refer back to anchor charts created throughout the week for expectations and stop the group rotations at any point if expectations aren't being met. Debrief what happened and let students try again until meeting expectations.** **If most students are working well together in their groups, this would be an ideal time to work with a few students individually to continue working on the Initial K Inventory.** **Establish expectations for small group activity rotations:** **○ When will we rotate and what is the signal?** **○ How do I know what to do first, then next?** **○ Where will activities be located?** **○ What is the expectation for clean up between activities?**	**To establish expectations for independent games and activities.**
	<u>Problem Solving Notebooks</u>: *How many cubes can you grab with one hand? How can you show your answer?*	**To practice drawing and writing about math.**
	<u>Mathematician's Chair:</u> **Share some of the math notebook entries aloud or use the document camera to celebrate efforts and establish pride in written work. Record in Big Class Notebook** **and/or** **Discuss the first five days of kindergarten math including the variety of routines, games, and math notebooks. This discussion could be recorded in a web or list for students to reference. Students will choose a favorite activity and least favorite activity from the week to draw and write about in math notebooks. They should include the reason they chose each and show that reason with labels or a sentence. This math notebook may take more time than previous math notebook entries this week so be sure to celebrate perseverance and stamina.**	**To practice expressing opinions, and giving feedback about classroom math routines.**

The main goals for day 6 are to practice expectations for working in small groups and partner game play while practicing writing in math and discussing.		
Day 6	**Read a math book and have children work on a task related to the book with partners or in small groups. If students are working well together, this would be an ideal time for the teacher to administer the Initial K Inventory. Refer back to anchor charts created throughout the week for expectations and stop the group rotations at any point if expectations aren't being met.**	**To closely monitor and enforce expectations of students as they work independently.**
	<u>Problem Solving Notebook</u>: Revisit expectations for math notebook writing and celebrate effort and persistence last week. ***Draw a cat a fish and a dog. Which one does not belong?*** **Have children glue the problem of the day into their math notebooks and complete,** **<u>Mathematician's Chair:</u>** **Share some of the math notebook entries aloud or use the document camera to celebrate efforts and establish pride in written work. Record in Big Class Notebook** **Allow student to practice restating. Practice applying reasoning to someone else's reasoning. Ask a child if they agree or disagree with someone and why. You can also allow students to add on to what someone else has just said.**	**To practice drawing and writing about math, express opinions, restating, agreeing/disagreeing, etc.**

The main goals for day 7 are to practice expectations for working in small groups and partner game play.		
Day 7	**<u>Ways to Make a Number</u>: Choose a target number (such as 6) and ask students to show as many ways as they can think of to make the target number. They might use visual representations, equations, models, and so on. As students share their ways to make the number, revisit the math talk expectations:** **○ How many ways might there be to make this number?** **○ What is it about the number ___ that gave you the idea to show it that way?** **○ How are __'s way and ___'s way alike? How are they different?**	**To give student opportunities to think flexibly about numbers and decompose numbers in different ways.**
	<u>Introduce New Partner Math Game</u>: Break the class into small groups and practice rotating and doing consecutive activities, like they will when you are working with a small group and students are in an independent rotation. **Revisit class anchor chart of game expectations and refer to as new game is modeled. Model appropriate vs. inappropriate play of game and use of manipulatives. This game will be added to the beginning collection of math games that students can play during group rotations. If students are working well together, this would be an ideal time to work with a few students individually to continue working on the Initial K Inventory.** **Review expectations for small group activity rotations:** **○ When will we rotate and what is the signal?** **○ How do I know what to do first, then next?** **○ Where will activities be located?** **○ What is the expectation for clean up between activities?** **** Debrief "what is going well" vs. "what needs to be better" in relation to math games expectations. You may see the need to model appropriate vs. inappropriate play of some earlier games.***	**To review expectations for independent games and activities and continue individual assessments.**
	<u>Problem Solving Notebook</u>: Revisit expectations for math notebook writing and celebrate effort and persistence last week. ***Draw a box. Draw 3 tails coming out of the box. How many cats are in the box?*** **Glue problem in notebook and complete.** **<u>Mathematician's Chair:</u>** **Share some of the math notebook entries aloud or use the document camera to celebrate efforts and establish pride in written work. Record in Big Class Notebook** **Allow students to practice Math Talk Moves**	**To practice drawing and writing about math, express opinions, restating, agreeing/disagreeing, etc.**

The main goals for day 8 are to practice expectations for working in small groups and partner game play.		
Day 8	**<u>Practice Partner Math Game from Day 7</u>: Revisit class anchor chart of game expectations and refer to as game rules are reviewed. If most students are working well together, this would be an ideal time to work with a few students individually to continue administering the Initial K Inventory.**	**To establish expectations for growing collection of independent games and activities and do Initial K Inventory**
	<u>Problem Solving Notebook</u>: Revisit expectations for math notebook writing and celebrate effort and persistence last week. ***My favorite animal has 2 eyes, 4 legs, and 1 tail. Guess what it is.*** **Glue problem in notebook and complete.** **<u>Mathematician's Chair:</u>** **Share some of the math notebook entries aloud or use the document camera to celebrate efforts and establish pride in written work. Record in Big Class Notebook** **Allow students to practice Math Talk Moves** ****Problem Solving Math Notebooks can soon become a part of independent activities that students do during rotations.***	**To practice expectations for problem solving in math notebook and discussing.**

The main goals for day 9 are to practice expectations for working in small groups and partner game play.		
Day 9	**<u>Sort Activity:</u> Hand children a handful of bears. Allow the children to sort the bears. Discuss and share how the children sorted. Use other manipulatives to help sort.**	**To develop and practice sorting by defining attributes.**
	<u>Introduce New Partner Math Game or Review Previous Math Games</u>: Break the class into small groups and practice rotating and doing consecutive activities, like they will when you are working with a small group and students are in an independent rotation. **Revisit class anchor chart of game expectations and refer to as new game is modeled. Model appropriate vs. inappropriate play of game and use of manipulatives. This game will be added to the beginning collection of math games that students can play during group rotations. If students are working well together, this would be an ideal time to work with a few students individually to <u>finish</u> working on the Initial K Inventory.**	**To enforce expectations for growing collection of independent games and activities and <u>finish</u> the Initial K Inventory.**
	<u>Problem Solving Notebook</u>: Revisit expectations for math notebook writing and celebrate effort and persistence last week. ***Guess what is in my box. It is red. It is round. It has holes.* (For example, student might say a button, an apple with worm holes, red wheel, rotten tomato, etc)** **Glue problem in notebook and complete.** **<u>Mathematician's Chair:</u>** **Share some of the math notebook entries aloud or use the document camera to celebrate efforts and establish pride in written work. Record in Big Class Notebook** **Allow students to practice Math Talk Moves** ***Problem Solving Math Notebook can soon become a part of independent activities that students do during rotations.***	**To practice expectations for problem solving in math notebook and discussing.**

The main goals for day 10 are to review PreK addition and subtraction strategies, and to meet briefly with small instructional groups while the rest of the children meet expectations for independent work and partner game play.		
Day 10	**<u>Exploring problem solving strategies:</u>** **Present a few simple addition and subtraction problems. Allow children to discuss how they would solve the problems (objects, fingers, drawing, acting out, etc).**	**To begin to understand that math problems can be solved in many ways.**
	<u>Meeting with Small Groups:</u> Based on observations, data, and the Initial K Inventory, you should be able to break into three instructional groups. Choose one teaching point for each group. While you meet with a group, the rest of the class should be engaged in meaningful activities such as partner math games and problem solving math notebooks.	**To begin to use small group math instruction to match varying mathematical needs.**
	<u>Problem Solving Notebook</u>: Revisit expectations for math notebook writing and celebrate effort and persistence last week. ***What was your favorite activity we did in math this week? Tell why.*** **Glue in notebook and complete.** **<u>Mathematician's Chair:</u>** **Share some of the math notebook entries aloud or use the document camera to celebrate efforts and establish pride in written work. Record in Big Class Notebook** **Allow students to practice Math Talk Moves** ****Problem Solving Math Notebooks can soon become a part of independent activities that students do during rotations.***	**To practice expectations for problem solving in math notebooks and foster more independence.**

CONGRATULATIONS!

You have worked hard to establish the following important routines and expectations with your students during the first ten days of school:
***Math Talk moves**
***A beginning collection of Math Games that can be added to and used regularly**
***Expectations for partner game playing and rotations for small groups**
***Problem Solving Math Notebooks for problem solving and reflection**

By establishing and continuing to build these routines, your classroom is now a place where the Standards for Mathematical Practice can grow and thrive in your students!

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