Critical Questions for Investigations Kindergarten

Mathematical Thinking

Investigation 1: Attendance

FT Attendance	How should we figure out the total number of children? (SP)
CT Exploring Color Tiles	Describe your tiles and creation. (CU) Can you make a pattern? (SP)
CT Exploring Pattern Blocks Assessment	Describe your pattern blocks. (CU) Can you make one pattern block by using other combinations? (SP)
	Describe your geo-blocks. Can you make one geo-block by using other combinations? (SP)

Investigation 2: Counting Jar

FT Counting Jar	How can we show that there are ___ ___ in the jar? (RL)
CT Counting Jar	How do you know that you have the same number as in the jar? (RL)

Investigation 3: Calendar

FT Calendar	What do you notice about the calendar? (PS,MC) Where is today on the calendar? (MC)
CT Exploring Interlocking Cubes	What did you create with your cubes? (CU) Can you build something with only 15 cubes? (SP)

Investigation 4: Today's Question

FT Today's Question	What does this chart tell us about our class? (RL) Are the two groups equal? What is the difference? (CU, MC)

Pattern Trains and Hopscotch Paths

Investigation 1: Exploring Patterns

FT: Watching and Looking	What comes next in the pattern? (SP)
FT: Cubes: What Do You Notice	What is different about these two patterns? (CU, MC)
CT: Making Patterns Assessment	What is your pattern? (CU)
CT: What's Missing?	How did you figure out what was missing? (RL)

Investigation 2: What Comes Next?

FT: Patterns on the Pocket Chart	What comes next? (SP) How do you know? (RL)
CT: What Comes Next?	What part of your pattern repeats? (RL)
CT: Pattern Block Snakes	Can you read your pattern to me? (CU)
CT: Add On	How many times does your pattern repeat? (RL)
CT: Break the Train	What kind of patterns do you see in the room/art/building, etc.? (MC)
CT: Make a Train	What color do you need to roll next? (RL)

Investigation 3: Hopscotch Paths

FT: Hopscotch and Tile Paths	Can you describe your path? (CU)
CT: Hopscotch Paths	How many times does your pattern repeat? (RL)
CT: Tiles Paths	Can you identify your repeating pattern? (CU)

Investigation 4: Pattern Borders

CT: FT: Pattern Borders Assessment	What happens when we reach the top of the chart? (RL)
CT: Color Tile Borders	Can you predict what color this square will be? (RL)
CT: Twelve Chips	Can you make a different pattern with your chips? (SP)

Collecting, Counting and Measuring

Investigation 1: Counting Books

FT: Counting Books	How did you know how many objects to draw on each page? (RL)
CT: My Counting Book Count Us In – game 2	How do you know how many cubes to color on your strip? (RL)
CT: Grab and Count	Is this more than ___ or less than ___? How do you know? (RL)
CT: Counting Jar	How did you count the things in the jar? (SP)

Investigation 2: Taking Inventory

FT: Taking Inventory Assessment	How did you organize the objects so you could count them? (SP)
CT: Inventory Bags Count Us In – game 3	What would you do if you got two different counts for the same group of objects? (SP)

Investigation 3: Comparing Towers

FT: Measurement Towers	How could you compare to show which is shorter? (SP)
CT: Measuring Table	How did you sort the objects into the two different categories? (MC, CU)
CT: Grab and Count – Which Has More?	Which has more? How do you know? (RL)
CT: Compare	How did you know which number was larger? (RL)

Investigation 4: Counting and Comparing

FT: Letters In Our Names Assessment	How did you figure out how many letters were in your name? (RL)
CT: Comparing Names	How do you know where to place a name? (RL, MC)
CT: Grab and Count – Compare	Which tower has the most? Which has the least? (SP)
CT: Collect 10 Together	How do you know you have 10 counters? (RL)

Investigation 5: Least to Most

FT: Least to Most	How did you compare your handfuls to put them in order? (SP)
CT: Grab and Count – Least to Most Assessment	Can you show me which tower has the most/least? (CU)
CT: Racing Bears	How many moves do I have left? How do you know? (RL)

Investigation 6: Arrangements of Six

FT: Six Tiles	How can we arrange these tiles to show six? (SP)
CT: Books of Six Assessment	Could you think of another way to make six? (SP)

Counting Ourselves and Others

Investigation 1: How Many Are We?

FT: How Many Are We?	How do you know your model/picture shows exactly the number of students in the class? (RL, CU)
FT: Counting Noses, Counting Eyes	What can you tell me about the eye chart? (SP)
CT: Self Portraits	How would you sort the pictures? (CU,SP,MC)
CT: Counting Chairs	How did you count the number of chairs? (SP, CU)
CT: Pattern Block Grab	What did you record to represent the blocks? (CU)

Investigation 2: What Did You Eat For Lunch?

FT: What Did You Eat For Lunch?	Which group does ___ (food) belong in? Why? (RL, MC)
CT: Same and Different	What things in this room are the same? Different? (SP, MC)
CT: Boxes, Bottles, and Cans	Why did you organize the objects in these groups? (RL, MC)
CT: The Grocery Store	Why does the way you organized the store work? (RL,MC)
CT: The Clothing Sort	Can you sort the clothes another way? (SP)

Investigation 3: Collecting Data About Our Class

FT: Yes/No Surveys	What do you notice about this survey? (CU,MC)
CT: Yes/No Surveys Assessment	How do you know if you have surveyed everyone in the class? (RL)

Investigation 4: Collecting Data About Our Class

FT: Who's Here? Who's Not? Assessment	How did you figure out how many are here today? (SP, CU)

Making Shapes and Building Blocks

Investigation 1: Shapes Around Us

FT: Looking at 2-D Shapes	What could you make with a square? (MC, SP)
CT: Book of Shapes	What did you notice about the shapes? (CU,MC)
CT: Pattern Block Pictures	How did you copy your design? (RL)
CT: Shape Mural	What shapes did you use the most? Why? (RL)

Investigation 2: Exploring Shapes with the Computer

FT: Introducing the *Shapes* Software	What did you like about using the computer today? (CU)
CT: Free Explore with *Shapes*	How did you move shapes on the screen? (CU)
CT: Pattern Block Puzzles	Is there another way to make a yellow hexagon? (SP)

Investigation 3: Looking at 3-D Shapes

FT: 3-D Shapes in the Classroom	What did you find that looked like a sphere? (CU, MC)
CT: Shape Hunt Assessment	What did you find that looked like a rectangular hexagon? (CU, MC)
CT: Exploring Geo-Blocks	How are the geo-blocks different from the pattern blocks? (RL)
CT: The Shape of Things on the Computer	Which puzzle did you like the best? Why? (CU)

Investigation 4: Making Shapes and Building Blocks

FT: Clay Shapes	What kinds of shapes did you make with the clay? (CU, MC)
CT: Clay Shapes	Tell me about your shape.(CU)
CT: Fill the Hexagons	Can you fill a yellow hexagon in two different ways? (SP)
CT: Build a Block	How did you build the larger block? (RL, CU)
CT: Quick Images on the Computer	How did you remember what the picture looked like? (RL)

Investigation 5: 2-D Faces on 3-D Blocks

FT: A Close Look at Geo-Blocks	How are the faces the same? Different? (RL)
CT: Matching Faces	Show me how many blocks you found that had matching faces? (CU)
CT: Geo-Block Match-Up	Were there different blocks that matched the same outline? Why or why not? (RL)
CT: Planning Pictures on the Computer	Was it easy or hard to copy your design on the computer? Why? (CU)

How Many In All?

Investigation 1: Counting and Measuring

FT: Counting and Measuring	How many sticks do you think we will need to measure ___? (SP)
CT: Measuring with Sticks	Why did we get different measurements for the same length? (RL)
CT: Measuring with Cubes Assessment	Does it make a difference to snap the cubes together or leave them loose? (RL)
CT: Collect 15 Together	Is that more or less than 15? How do you know? (RL)
CT: Inventory Bags	How are you going to show your counting on paper? (CU, MC)

Investigation 2: Six Tiles

FT: Six Tiles in All	Does your shape fit the rule? Why or why not? (RL)
CT: Books of Six in All	Did you use 6 tiles in every picture? Why or why not? (RL)
CT: Grab Two Handfuls	How many do you think you can grab? Who has more?(RL)
CT: Tower of Six	How many more do we need to get to 6? (SP)

Investigation 3: Story Problems

FT: Story Problems	Was the story about putting groups together or about taking away part of a group? (RL, MC)
CT: Double Compare	Who has more? How do you know? (RL)
CT: Counter in a Cup	How many counters did I hide? How do you know? (RL)
CT: Racing Bears	How many moves do I have left? (SP)

Investigation 4: Blue and Red Crayons

FT: Five Crayons in All Assessment	How many do I need of each to make 5? (SP)
CT: Six Crayons in All	How many do I need of each to make 6? (SP)
CT: Total of Six Assessment	What card could I put together with this ___ to make six? (SP)