CLASS PREK

TIPS and TRICKS

Concept Development Using Math Manipulatives

- Always have children learning math through the use of manipulatives. This will provide a solid foundation for many skills and concepts they'll learn in math.
- Provide children with opportunities to use analysis and reasoning in their approach to problem solving.
- We want children to be creative, to brainstorm and generate their own ideas and products.
- We as teachers want to be intentional and tie together concepts across various activities.
- We want to have children apply these concepts to their everyday world.

Math Activities and Questions to help with Concept Development

SHAPES

*Pattern cards… start easy and build up to harder designs

Questions: *Can you create your own design using the shapes. **(C)**

*Why did you choose those shapes to be part of your design. For ex: why did you use the square for your roof on the house? Why did you choose a triangle for the roof? **(C)**

*Scavenger hunt….have students find items in the room that are the same shapes you are teaching.

Questions: *Discuss what they find. How are they the same? **(A/R)**

*How are these shapes different from those shapes? (round, sides, number of sides) **(A/R)**

* Sorting…. By color, by actual shapes, by size

Questions: *What other objects can we sort? (toys, pencils, crayons, chairs, etc) **(A/R)**

*When do we need to sort? (Cashier.. coins and bills/toys) **(A/R)**

*What things do you sort or could you sort at home? (utensils, dishes, towels, pillows, cups) **(A/R, CRW)**

*Why is it important to sort? (sometimes we need groups, restrooms, height at Busch Gardens,) **(A/R)**

* Graphing… hand out various shapes to each student, have a GRID ready, and have them put the actual shape on the graph. Introduce the terms MOST and LEAST.

Questions: *What other ways can you graph the shapes. Explain. **(A/R)**

*Compare your graph to your friend's graph. How are they the same and how are they different? **(A/R)**

BUTTONS

- **Matching:** share the definition of matching… make sure they know what it means… have them find matching pairs. Have them explain how they are matching – by shape, size, or both) **(A/R)**
- **Patterns**: Start with AB, AB, then move to ABB
  Questions: What patterns can you make? Explain what the patte
- **Sorting**: use a sorting tray and have students sort how they choo
  Questions: What other ways can you sort? Ask them to explain how they sorted. **(A/R, C)**
- **Odd One Out**: 2 skills here… they need to be able to identify which object doesn't share the same characteristics, and then we want them to verbalize how it's sorted and WHY the oddball doesn't fit.
  Application: Have them come up with their own ODD ONE OUT and have them ask their peers about it. Why is it the odd one out? What characteristic does it not have? **(A/R)**
- **Counting**: children need to touch something when they count. One-one-correspondence.
- **Graphing**: they can graph by the number of holes, by the shapes, by the color…
  Questions: *What other graphs can you make using the buttons? Have them explain all the different ways they can come up with. **(A/R, C)**
  *WHAT DO YOU NOTICE ABOUT THE GRAPH? Why do you think it ended up with more of this kind rather than another kind? **(A/R)**
  *Compare your graph with another peer. How is it the same, how is it different? **(A/R)**

DOMINOES

Using dominoes is an easy way to teach children to add and they don't even know they're doing it. It also teaches subitizing…. meaning, how to look at the pattern and instantly know it's two, or four… without counting. For example, on a pair of dice, you learn to recognize what a 3 looks like by the pattern, or what the 6 looks like without having to count.

Use Number Cards Have index cards with the numbers 1-10, one digit on a card. Have students add the two sides of the dominoe together, then place it under the correct sum. When you make this, it really creates a pattern… there will be only one way to make the 1, only 2 ways to make the sum of 2, two ways to make the sum of 3, three ways to make the sums of 4 and 5, four ways to make the sum of 6. Then it goes to 3 ways to make 7 and 8, and 2 ways to make 9 and 10.

Questions: *What do you notice about the number of dominoes under each digit on the card? **(A/R)**
*What are some other ways you could group dominoes? **(A/R, C)**
*How can we make a game using dominoes? They could come up with a WAR game… instead of using cards, they would collect dominoes. **(C)**
*Can you create a shape or picture using all of your dominoes and matching them by number sides? **(C)**

These questions are not just yes or no questions… You have the children thinking, explaining, and generating their own ideas.

MEASURING AND SENSORY BIN

You can use a plastic tub, plastic shoe box, or an actual sensory bin that is purchased through school Supplies. You want to put measuring cups, measuring spoons, regular cups, plastic containers, … holiday items (Easter eggs, Christmas ornaments, birthday candles, shells, small pumpkins, etc.)

WHILE they are playing in the sensory bin think about some **QUESTIONS** like:

- How many cups do you think it will take to fill that plastic container? Let's see (**(A/R)**
- How many of these half cups will it take to fill the same container? **(A/R)**
  WHY did it take more half cups to fill the same size container? **(A/R)**
- Ask them what they notice after each filling… **(A/R)**
- Ask them to use non standard units to fill containers. Example, use half of a plastic Easter egg to scoop. Use a coffee scoop or ice cream scoop.
- ASK them to sort objects and count. They can use the tweezers to sort, then have them make a graph using the items. **(A/R)**
- ASK THEM IF they ever get to help their mom at home while cooking and if they ever get to use a measuring cup. **(CRW)**
- What other things do we measure? (weight, height, miles, gallons of gas, gallons of milk, etc) **(A/R)**

LET'S SUMMARIZE

Always plan ahead. Think about your activities and how you can ask questions that will get the children thinking. Write down some of your questions ahead of time. Remember to think about questions that begin with HOW and WHY. This will help you generate your questions. Ask children to explain HOW they came up with that answer, or WHY did you choose to do it that way?

Analysis and Reasoning. **(A/R)** Ask questions like, "How did you like that activity? What did you like about it?"
"What did you think about the story? What was your favorite part? Why was it your favorite?"
"I wonder what would happen if…" "Why do you think that character changed their feelings throughout the story?"

Creating. **(C)** Remember to have them brainstorm ideas and/or generate their own ideas when designing a product, or building something. Give them a scenario and ask them to build something that goes along with it. For example, tell them a made-up story about a dog needing a doghouse because it's getting cold outside. Have them brainstorm how to build something to keep the dog warm.

Relate to their own experiences. **(CRW)** Ask questions about what they do at home or family.

Link concepts to previously learned skills. **(CPLS)** If you've been talking about patterns on Monday, you should bring patterns to their attention whenever you have the opportunity. Patterns on children's clothing, patterns on floor tiles, patterns in the weather, patterns on the wall, patterns in a book, etc.