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LEARNING CENTER

Every Child Ready for Math

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Ten Teaching Tips for Working with Preschoolers:

- Keep learning fun, playful and active!
- Make learning relevant and meaningful.
- Look for learning opportunities throughout the day.
- Keep math lessons short and sweet.
- Be responsive to a child's response to your instruction.
- Model again and again what you are trying to teach.
- Eliminate as many distractions as you can.
- Give positive feedback.
- Talk and encourage a lot of interaction during math experiences.
- Give children time to play with new materials first before trying a guided activity.

Number Concepts Activity #1: Collection Buckets

View Video Clip #1, *Collection Buckets*, to see a teacher model this activity.



Materials

- Small plastic containers or buckets of various sizes
- Labels on the containers that show a number and the quantity
- Objects that will fit in the buckets

Procedure

1. Define the word “collection” with the following ideas. Show the children a few different collections. Ask students to tell you about some collections that they may have at home. Demonstrate how you can count and keep track of the number of items in a collection.
2. Show the children a collection bucket. Point out the label on the front that shows the number and the quantity. Demonstrate how to fill with the correct number of objects.
3. Let children take turns making a collection (you can simply use materials that are readily available like plastic bears, blocks, or toy cars).

Extension Ideas

1. Children can have “clean up” collection buckets to make clean up time more exciting and meaningful. They simply collect the number of items that is indicated on the bucket and then put those items back where they belong.
2. Take your class on a nature walk with collection buckets. Each child can collect the number of items (such as leaves) that is indicated on the bucket. Another option would be to simply ask children to make a collection that is the same number as his/her age (four year olds bring back four things, five year olds bring back five things, etc.). When the children get back to the classroom, encourage them to combine their collections with a friend and count how many objects they have altogether.
3. Put number labels on plastic flower vases and have the children fill the vases with plastic flowers.
4. At snack time use number labels to let the children know how many snacks they can take. For example, put a number label “3” next to the crackers indicating that a child can take three crackers.

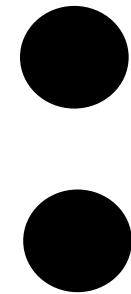


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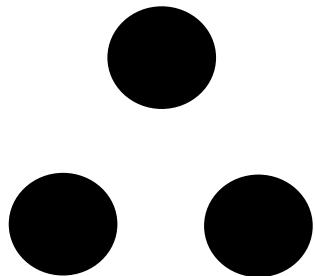
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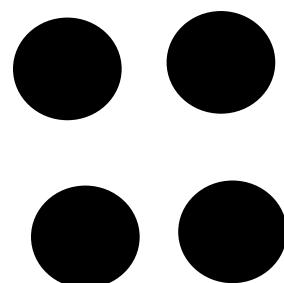
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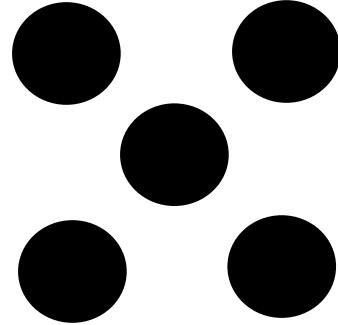
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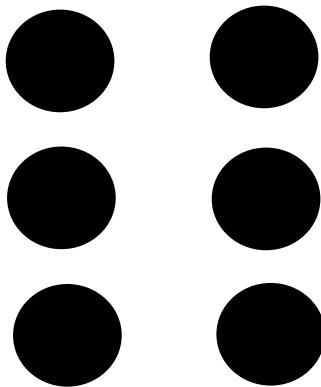
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Number Concepts Activity #2: Telling a Variety of Math Stories

View Video Clip #5, *Math Stories*, to see a teacher model this activity.



Materials

- Felt ice cream scoops and cones
- A puppet
- Felt board or carpet area

Procedure

1. Ask the children if they have ever visited an ice cream parlor. Ask what people do at the ice cream parlor (order ice cream). Share a personal experience that you may have had at an ice cream parlor.
2. Pretend that you and your puppet are going to the ice cream parlor. Tell a variety of math stories that involve joining, separating, and comparing.

Example of a joining story: *Freddy (the puppet) went to the ice cream store and ordered two scoops of ice cream. Then Freddy asked, "May I please have another scoop?" How many scoops does Freddy have now? Let's count.*

Example of a separating story: *Freddy was walking around with his three scoops of ice cream when something terrible happened. One of the scoops fell off! Now how many scoops does Freddy have? Let's count.*

Example of a comparing story: *Freddy and I went to the ice cream store. Freddy ordered three scoops of ice cream and I ordered two scoops. Who has more ice cream? Who has less? Is there a way to make the scoops the same or equal? How many more scoops does Freddy have?*

Extension Ideas

1. Set up the felt ice cream parlor as a center and station yourself at the center to tell ice cream stories. Explicitly model the stories. As students become comfortable, give students the opportunity to tell a story. This can be an independent activity after you have modeled what to do.
2. Mark the cones with a number. The children can practice matching the number of scoops to the cone.



Number Concepts Activity #3: Story Mats

View Video Clip #8, *Story Mats*, to see a teacher model this activity.



Materials

- Story mat or a piece of construction paper
- A small collection of objects such as cars, bears, frogs, etc...

Procedure

1. Teacher leads the experience by telling a story about the story mat scene and directing children to put objects such as cars, bears, frogs, etc... on their mats. Teachers model and assist when needed.

Story Example:

We are going to tell math stories today with our story mats. Let's start by putting one car on the road. How many cars are on the road now? Can you put one more car on the road? How many do you have now? Can you make the road have 4 cars on it? (You may need to model this or assist children.)

Please put an airplane in the sky. Now, please put a helicopter next to the airplane. (Model with your story mat. This is especially important if you have second language learners.) How many objects are in the sky? (Model and assist as necessary.)

If I give you one more object, how many will you have in the sky? Are there more cars on the road, or more objects in the sky? How do you know?

How many objects are on your story mat altogether?

If I give you one more, how many will you have? (Give everyone another object.)

What if one car drives away? How many cars will you have now?

Extension Ideas

1. The teacher and the children both tell math stories. A great way to begin this experience is just by saying "Once upon a time", and then let the child tell the rest of the story while giving assistance when needed.



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Number Concepts Activity #3: Story Mats con't



Who can tell a math story?

You may need to assist children by providing some of the language. For example, you might say, "Mark, will you help me with this story. I will start and you can help me.

Once upon a time there were _____ (Mark fills in).

Then _____ (Mark fills in).

If he can't, tell a story to help him. *"Mark, do you want another helicopter to fly next to the other helicopter?"* Help Mark tell his story as needed. You might need to prompt him by saying,

"What question could you ask?" You might need to give him some assistance by starting the question, *"How many _____?"* Give Mark a chance to fill in. If he is not able to complete the question, assist him and say, *"I have a question... (model something such as, "How many cars and helicopters are on the mat?")".*

2. Once the children are comfortable telling math stories using the mats and objects, invite them to tell stories for each other.
3. Have children create their own story mats by gluing paper or drawing. For example, children could draw an outdoor scene with rivers and mountains. They could draw a scene with buildings. They could draw a playground.
4. Math stories don't always have to be told using mats, of course. Here are some other ideas. You could tell stories about bears living in a house and use small boxes instead of a mat. A paper bowl can become a swimming pool ("How many bears are in the swimming pool? How many are not swimming?"). Upside down berry baskets can become cages for small plastic animals, etc.



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Number Concepts Activity #4: Dot Plates

View Video Clip #4, *Dot Plates*, to see a teacher model this activity.



Materials

- Heavy weight paper plates (medium size)
- Dot stickers (or a dark permanent pen for drawing the dots)

Procedure

1. Begin by making plates that show dots in different combinations from 1-4 (see examples). Later you can add dot plates with five dots when the children have success instantly recognizing the dot patterns from one to four.
2. Shuffle the plates so they are in no particular order.
3. Show the plates quickly (not too quickly in the beginning) and ask the children how many dots they see. Then confirm by counting. Play again. This activity is perfect for transition times or when you have a few minutes between activities.

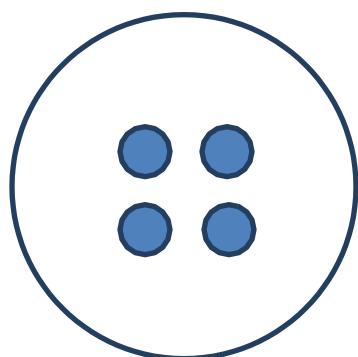
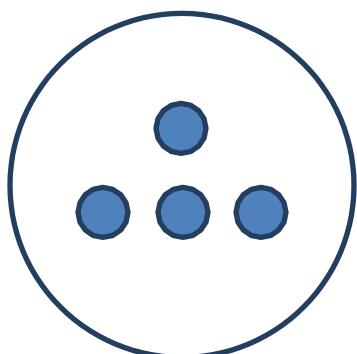
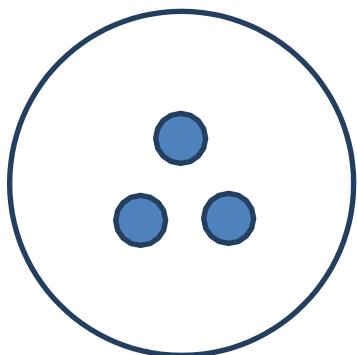
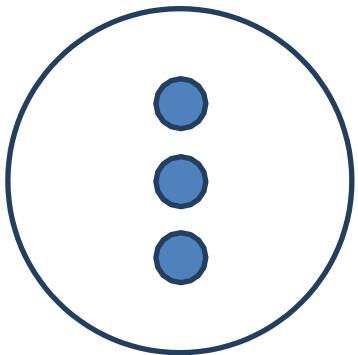
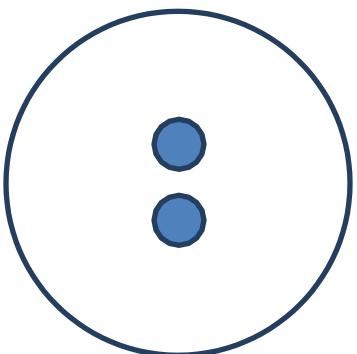
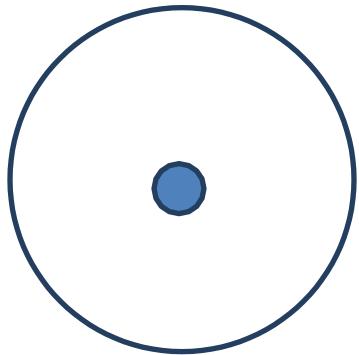
Extension Ideas

1. Write the number on the back of each dot plate. When the children say the number of dots, turn over the plate and show the number.
2. Make a set of plates with two different colors of dots (see examples). This helps children see how different quantities can be decomposed or composed (see photo).
3. Play “Cookie Monster.” Pass out a dot plate to each child. Tell the children that you are going to pretend the dot plates are cookies with chips on them (or make a set of pretend paper or felt cookies with chips). Use a puppet or stuffed animal for the cookie monster. Explain to the children that the cookie monster is going to hold up a number to let everyone know how many chips he/she wants to eat. Invite all the children who have that number of chips on their cookies to come up and feed the cookie monster the cookie. Repeat until all the cookies have been “eaten” by the cookie monster.



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Dot Plate Example



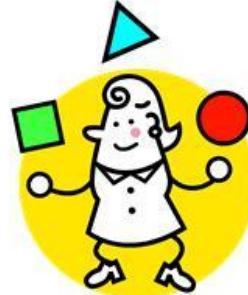


Geometry Activity # 6: Pattern Blocks

Part I: Caterpillar Puzzle

Materials

- Caterpillar puzzle sheet
- Pattern blocks



Procedure

1. Ask the children to fill in the body of the caterpillar with pattern block shapes.
2. Children tend to fill in the puzzle with only hexagons. Make the task more challenging by removing the hexagons from the collection. This allows children have an opportunity to explore the other shapes that compose the hexagon.

Part II: “Find the Shape” Game



Materials

- Sock
- One of each of the pattern blocks (one hexagon, one trapezoid, one rectangle, one of each type of rhombus, one triangle)

Procedure

1. One by one put all of the shapes in the sock. As you are putting each shape into the sock, name each shape and talk about the attributes of the shape (how many sides, etc.) with the child. Invite the child to count the sides or make an observation about the shape.
2. Invite the child to reach into the sock and pull out a shape. Have the child match the shape to the shape on the paper. Say the name of the shape as the child pulls out the shape or encourage the child to say the name of the shape.
3. Continue until all of the shapes have been found.

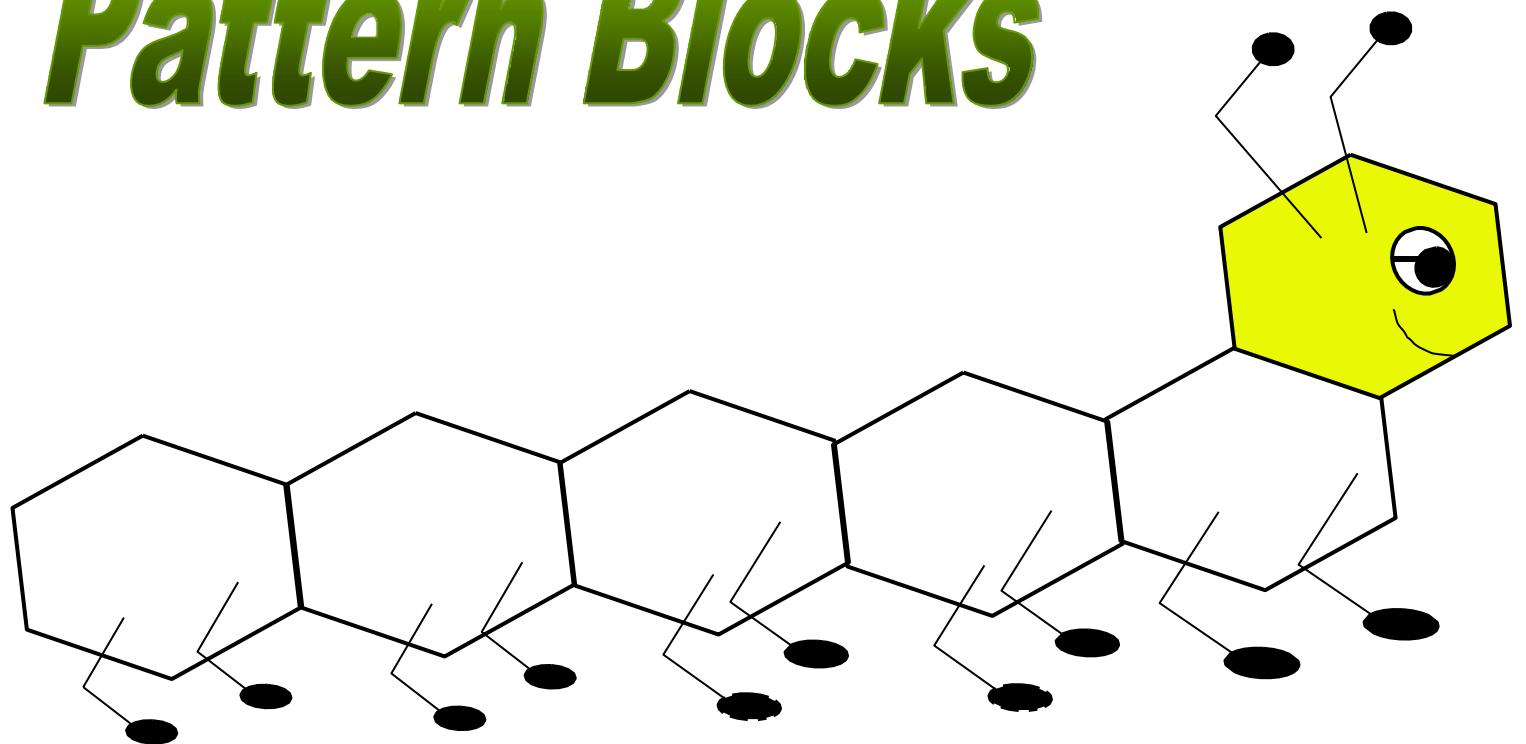
Extension Ideas

1. Put two sets of the pattern blocks into the sock and repeat the game above. This makes the matching game a bit more challenging.
2. Ask the child to reach into the sock and find a certain shape or have the child guess the shape he is going to pull out.



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Pattern Blocks





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Geometry Activity # 7: “I Spy”

Materials

- A scene of some sort (a photograph, a picture from a book, a room, the playground, the backyard, the interior of a car, etc.)
- Paper towel tubes (optional)



Procedure

1. Take turns saying, “I spy with my little eye _____. ” The other person guesses what it is.
2. Try incorporating position words, attributes, shapes, etc.

Examples:

“I spy with my little eye a tall tree.”
“I spy with my little eye something smaller than my hand.”
“I spy with my little eye something next to the big dog.”
“I spy with my little eye a small, red triangle.”

Extension Ideas

1. Use paper towel tubes as “binoculars” for added fun.



Geometry Activity # 8: Block Play

Materials

- A variety of blocks (shapes, sizes, colors, textures, etc.)
- An assortment of objects to encourage imaginative play, such as toy cars, plastic people figures, dolls, cans, cardboard tubes, pine cones or other objects from nature, etc. (optional)
- Books to provide background knowledge or inspiration (optional)
- Paper, writing utensils and tape (optional)

Procedure

3. Demonstrate and explain how blocks can be used and put away. Provide sufficient time and space for children to experiment with blocks and slowly extend time to encourage more elaborate structures.
4. Engage the children in conversation about their creations, emphasizing important mathematical concepts and terminology such as position words, comparisons, predictions, attributes, shapes, measurement, balance, problem solving, etc.

Examples:

- “Are you taller or shorter than your tower?”
- “How does that work?”
- “Could you make your bridge longer?”
- “Will your car fit inside the garage? How can you make that happen?”
- “What do you think will happen if you put the red triangle on the top?”
- “How many long blocks will it take to cross the room? How many short ones?”
- “If you put a block on that side, how can you make it balance?”

Extension Ideas

2. Help children make signs for their creations, such as “Do Not Feed the Animals” or “Tony’s Car Repair.”
3. Read books, such as How a House is Built by Gail Gibbons or When I Build with Blocks by Niki Alling, to give students ideas for building. Encourage children to build and act out a familiar story in the block area, such as *The Three Little Pigs*.
4. Ask “how” and “why” questions to get students to elaborate on their structures, and encourage them to add objects, such as pinecones to represent trees, in their design.





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Measurement Activity #9: The “How Many Steps?” Game

Materials

- None...just willing and able children!

Procedure

1. Begin with a destination that is only 4-5 steps away. Ask the children to guess how many steps it will take you (or a classmate) to get to the table (or any destination you choose) using “regular” walking steps (in this case, a regular step is the standard unit).
Have the children make predictions and then verify how many steps it takes. Make sure the children count aloud as they take each step.
2. Repeat with destinations of various distances.

Extension Ideas

1. Play this same game but vary the standard unit (the size of the steps).
How many baby steps will it take?
How many giant steps will it take?



Measurement Concepts Activity # 11: Ordering and Measuring Objects

Materials

- Collection of classroom dolls (or stuffed animals, trucks, etc.)
- Small, uniform blocks



Procedure

1. Pick three dolls. Help the children lay them in order of length/height. Use language such as “This doll is tall. This doll is taller. This doll is tallest.” or “This doll is short. This doll is shorter. This doll is the shortest.”
2. Try this again with more than 3 dolls or stuffed animals.
3. Help children measure each doll using small, uniform blocks. Count how many blocks tall each doll is and label that doll with the number.

Extension Ideas

1. Have children order themselves from shortest to tallest.
2. Have children try to find something in the class that is four blocks long, etc.

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