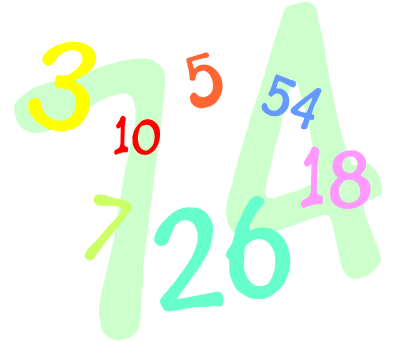


TIPS FOR SUPPORTING ALL LEARNERS

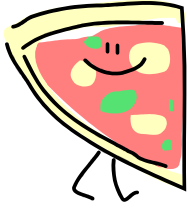
number & operations with preschoolers

- Assess what the child knows-**scaffold**
- **Slow down!** Emphasize accuracy with counting
- **Guide** the child's hand while counting, if they are working on 1-1 correspondence
- Repeated **practice**
- Provide “**wait**” time
- Make it **concrete!** Count “real” objects
- Have the child make a **verbal plan**. “Let’s count them by starting at the top.”
- **Move** items as they are counted.
- Involve the child’s **whole body** as much as possible.
- **Simplify** vocabulary and directions



TIPS FOR SUPPORTING ENGLISH LEARNERS

- Use **concise** language – speak clearly
- Use **oral descriptions** when talking about concepts
- **Modeling** and acting out (Total Physical Response)
- Consider **stages** of language development



The Pizza Game

Goals: To count with understanding, and recognize “how many” in sets of objects; understand the effects of adding whole numbers. Recognize numbers on a die.

Materials: Die, pizza pictures, paper pepperoni or counters. Paper pizza inside small pizza box. 2-4 paper plates.

Preparation suggestions: Acquire 2-4 small pizza boxes from a local pizza restaurant. Make a small paper pizza to fit inside the box. You can decorate it with paper cheese and sauce. Draw 20 small circles on the pizza. Make 20 small pieces of pepperoni or use 20 small counters.

Description:

Game 1

1. Player 1 rolls a die and puts that many counters or pepperoni on the “plate.”
2. Player 2 must agree that player 1 is correct.
3. If so, player 1 puts the counters on the empty pizza.
4. Players take turns until they have decorated all of their pizzas.

Game 2

1. Players decide on a target number (or you decide and write the number on each sheet): let’s say 4.
2. Player 1 rolls a die and puts that many counters on the “plate,” let’s say 6.
3. Player 2 must agree that player 1 is correct.
4. If so, player 1 puts the counters on the pizzas, trying to get 4 on each (ie. If she rolled 6, she could put 4 on one pizza and start another pizza with 2).
5. Players take turns.
6. The winner is the first player to get 4 counters on each pizza.

Suggestions for Supporting Learners:

1. Use a die with smaller numbers (ie. 1-3).
2. Select a smaller number for players playing game 2. Make a game card with only 4 small pizzas to fill.
3. Make the game cooperative with teams of children working together with one game card.

Source: *Doug Clements presentation on “Introduction to Number”, November 16, 2006.*

Make Four Elbows!

- Have a small group of children form a circle and begin slowly walking in one direction.
- At a signal from the teacher they stop and listen to instructions.
- When the teacher states, “Make 4 elbows,” the children touch one or both of their elbows to other children’s elbows to make a total of four connected elbows.
- After everyone shares their methods for accomplishing this task, new directions, such as “Make 12 fingers,” are given.
 - Some favorites:
 - Make 3 ankles
 - Make 9 shoulders
 - Make 7 feet

Source: Copley, Juanita. *The Young Child and Mathematics*. NAEYC, 2000

THE PEACE GAME

(FORMERLY "WAR")

Goal: to practice counting, one to one correspondence, subitizing (instantly recognizing the amount), and turn taking

Materials needed: 10 index cards; many sticky dots.

Card 1 – put on 1 sticky dot (use only one color for this set of 5 cards)

Card 2 – put on 2 sticky dots

Card 3 – put on 3 sticky dots (in a row)

Card 4 – put on 4 sticky dots (in a row)

Card 5 - put on 5 sticky dots (in a row)



Then make one more set of cards in the same manner but using dots of a different color.

How to Play:

Each player gets one set of 5 cards (same color dots). Player mixes up the cards and puts them face down in front of him. Then, at the same time, each player turns over the card on top. The player with the highest card gets to take both cards. Keep going until one player has all the cards.

What if the same card comes up? You could ask the children what they think should happen. (When I played this as a child, we just kept going, which meant the pile of cards got a little bigger.)

Variation:

- ♣ First player turns over his card and tells opponent how many dots. Second player turns over his card and does the same. Player with the higher hand keeps both cards.
- ♣ Make a set of cards with the dots in different patterns (like on dominoes).
- ♣ Make a set of cards using more dots.
- ♣ Add numerals to the dots.
- ♣ Use real playing cards.

Snaking Numerals

Goals: Develop a sense of whole numbers, represent and use them in flexible ways.
Connect number words and numerals.

Materials: Three clean adult socks (or a three-foot piece of fleece), plastic shopping bags or other stuffing materials (beans, rice, styrofoam for beanbags). Needle and thread for sewing. Large numbers written on a piece of poster board. Thick yarn or modeling clay can be substituted for sock snake.

Preparation suggestions: Sew the three socks together, end to end with the middle piece cut across the toe to make one long tube. Stuff with plastic shopping bags. Sew the ends closed and add a felt eye and tongue, if desired. You can create a mouth by pushing into the head to make a pocket. A fleece snake can also be sewn by cutting a piece of 4X36 inch fleece and sewing along the back and one end. Stuff with chosen material and sew up the end. Add felt eyes and tongue, if desired.

Description:

1. Allow children to play with the snakes, slithering them around the tables and room to explore how the snakes bend and curl.
2. Provide as many examples of numerals as appropriate, such as foam, cardboard, magnetic numbers, books that have numerals in the illustrations, posters with numerals, toys or other objects such as plastic telephones, calculators or clocks.
3. Ask children to use two or more snakes to show a favorite numeral.
4. Record their favorite numerals by taking a picture, or an adult can also help a child slip a large sheet of paper under the snake numeral to help the child trace its outline. Encourage children to paint or color the numeral outline to resemble the sock snake numeral created.



Suggestions for Supporting Learners:

- Permit and encourage children to watch and assist you in making sock numerals. As you form the numeral, talk about the features of the numeral that help you decide how to curl the snake.
- For children who hesitate or are perplexed, suggest such numerals as 1 or 7 to begin. Supply a large template onto which the snake may slither and form the numeral, this may be helpful for some children.

Extensions:

- Pose open-ended questions for children to think about while they create their snakes, for example, "Which of the numerals is like the letter S? Which numeral cannot be made with only one snake? Which numeral looks exactly like another numeral when turned upside down?"
- Make a class book out of the pictures of their numeral snakes.

Source: Copley, Juanita. Showcasing Mathematics for Young Children. NAEYC, 2004

Number Sculptures

Goal: To connect number words and numerals to the quantities they represent.



Materials: A piece of styrofoam (about 2-3 inches long) for each child. A variety of scrap materials, such as straws, feathers, popsicle sticks, ribbon, yarn, golf tees, stickers, foam pieces, foil, pipe cleaners and glue. You could also use poster board or clay for the base of the sculpture.

Description:

1. Explain the activity by modeling a sculpture. First role the die. Make a “sculpture” using the same number of items as the number rolled. For example, if a number 3 is rolled, make a sculpture using 3 straws, 3 red ribbons, 3 yellow plastic flowers and 3 blue triangles.
2. Have the children role the die and make similar sculptures themselves. Writing the number down on a piece of paper next to the child with small dots to represent the number can be a helpful reminder.
3. Have other children try to guess what number was rolled on the die to make the sculpture. Another fun activity is to suggest that children describe their sculpture using position or descriptive words, and have their peers try to identify the sculptures being described.

Expectations:

1. Children enjoy making sculptures and may forget the number of items they are supposed to be using. They may simply add lots of objects because they are pretty and easy to place.
2. Children may not use numerals or descriptive words when they describe their sculptures. You may need to ask additional questions to help them make their descriptions more explicit.
3. Some children will create symmetrical sculptures whereas the work of others will be random. Observe children who are able to keep track of how many items they have counted for their sculptures and their specific procedures for doing so.

Suggestions for Supporting Learners:

- For children that are having trouble selecting the right amount of items, ask them to select their items before they put them on their sculptures.
- For children who are having difficulty describing their sculptures, ask them questions using position, color, and number words for example, “How many straws are on top of your sculpture? How many are under the foam piece? How many ribbons are blue? How many are curly?” You might also partially describe the sculpture and ask the child to finish the description.
- For children who are having difficulty identifying the number represented by a particular sculpture, ask them to eliminate specific values represented on the die. Ask, “Could it be ‘1’? Why not? What about 6? How did you know the number wasn’t 6 without even counting?”
- For children with visual impairments, make your own large die with numbers that stand out by gluing on objects that are flat on one side and rounded on the other, such as googly eyes, to represent the numbers.

Source: Copley, Juanita. Showcasing Mathematics for Young Children. NAEYC, 2004.

How Many Are Hiding?

Goals: Count with understanding, recognize “how many” in sets of objects and develop a sense of whole numbers.

Materials: A group of 5-10 counters for each child.

Description:

1. Complete the activity with one child while the others watch what you do, then have the children complete the activity in pairs. To begin, sit opposite the child. Show the child the group of 5 counters that you have in your hand. Ask, “How many counters do I have?” Use fewer or more counters depending on the abilities of your students.
2. Put your hands behind your back or underneath the table. Secretly put some of the 5 counters in one hand and the rest in the other hand. Close both hands.
3. Place your closed hands side by side in front of the child. Open one of your hands, revealing the number of counters that you have in that hand, for example 3. Ask the child, “How many counters do you see?”
4. After the child answers, ask, “How many counters are hiding in my other hand?” Wait patiently for the child to respond. You could wave a magic wand when the child “guesses” correctly. This action motivates some children to determine a strategy for finding the correct answer.
5. After the child responds, open your closed hand to reveal the hiding counters. Ask, “Were you correct?”
6. Have the child name the 2 parts and the whole, “Three and two make five.”
7. Repeat this activity again with the same child. As you go through the steps, ask the children what the next step would be. You could also ask 2 new children to demonstrate while others watch.
8. Separate the children into pairs and have them try the activity together. Have one child hide the counters twice and then give the other child a turn to hide the counters twice. On the basis of your observations, suggest the number of counters for each pair to use.

Suggestions for Supporting Learners:

- Use as few as 3-4 counters for this activity.
- Provide extra counters for the child who is unable to predict accurately. This child may use the extra counters to match the original number of counters revealed; then he or she can put out additional counters to make up the total and count the added counters to determine the hidden number. A number strip with the same number of dots could also be used to give children a visual representation of the hidden counters.

Source: Copley, Juanita. *Showcasing Mathematics for Young Children*. NAEYC, 2004.



Developing Pictures

Goals: To promote visual memory; to count with understanding, and recognize “how many” in sets of objects



Materials: A work mat (see preparation suggestions) for the teacher and each child; a collection of about 10 flat counters for each child.

Preparation: The work mat is made by taping a half sheet of colored paper on top of a full sheet of white paper. The colored paper is taped along the left-hand side only to create a flap that can be raised. This allows the teacher or children to slide counters between the colored paper and the white paper. Laminate the papers if possible.

Activity 1

1. Sit opposite the children and make sure that all paper mats are facing the same way
2. Model the game: “Watch what I do.” Place 2 counters on the white part of your mat. Then gently lift the colored flap and slide the 2 counters underneath it. Encourage children to make a mental image of the amount rather than count each one.
3. “Put the same number of counters on your mat to match what I have hiding in my mat. Now slide your counters under the blue flap, just like I did.” Then say, “Let’s lift up the flaps. Does your mat match mine? Are they the same? How do you know?”
4. Repeat with up to 5 counters or more, as appropriate. When you use 4 or more counters, display them in a patterned arrangement.

Activity 2

1. Model by placing 2 counters on the white part of the mat. Resist the temptation to count the number. Lift the colored flap and slide the 2 counters underneath it
2. Say, “Keep watching; don’t let me trick you.” Place 1 or 2 additional counters on the white side of your mat in plain view. Carefully lift the colored flap and slide the new counters underneath. Be sure the children cannot see what’s under the flap.
3. “Put counters on your mat so it matches mine.” Observe carefully to see how the children determine how many counters to place.
4. “Let’s raise the flaps. Does your mat match mine? Are they the same? How do you know?” Ask children to explain how they knew how many counters to put on their mats.
5. Repeat steps 1-4 adding counters as appropriate.

Activity 3

1. Repeat Activity 2, but this time, remove 1, 2, or 3 counters from the original group of 2-5 counters that you slid under the flap. Be sure the children cannot see any of the counters under the flap except those that you removed.

Suggestions for Supporting Learners: (To encourage subitizing)

For an exercise similar to Activity 1, have children roll a homemade die with 1-3 dots on each side and quickly say the number of dots on the top side. Or flash them up to 5 fingers, then hide your hand quickly and have them show you how many fingers were raised.

Source: Copley, Juanita. Showcasing Mathematics for Young Children. NAEYC, 2004.



Bears in a Cave!

Materials:

- ♣ One “cave” made from an overturned paper bowl. Cut a small curved opening for the entrance to the cave.
- ♣ 5 small plastic bears (or any number appropriate)
- ♣ Number line up to 5 (for support)

Activity:

Model and play with one child first. “5 bears are on a picnic and they decided to play a game of hide and seek. Some of them hide in a cave. Close your eyes while I hide them.”

Leave the remaining bears in plain site. The child opens her eyes and tries to guess how many bears are hiding in the cave. Refer to the number line if necessary.

Now let the child be the narrator and hide the bears from you. Then have children play the game with each other. Use other small animals.

Adaptations:

1. Start with a smaller number of bears and progressively add more as the child becomes adept at larger quantities. Have number lines that reflect that amount (to avoid confusion).