Quantitative Concepts

Objective
To demonstrate understanding of quantitative concepts:

- big/little
- one/one more
- full/empty
- heavy/light
- tall/short
- fast/slow
- all/none
- long/short
- large/small
- deep/shallow
- thick/thin
- wide/narrow
- more/less
- many/few
- huge/tiny
- most/least

DOMAIN
Mathematics: Geometry and Spatial Sense

RATIONALE
Quantitative concepts give children the language they need to talk about size, amount, and weight. For children to develop an awareness of quantitative concepts, it’s important to take advantage of opportunities that arise in everyday activities.

RELATED SKILLS
Number Concepts ................................................................. 177
Numeral Comprehension ....................................................... 198
Directional and Positional Concepts ........................................ 243

Sequence

TEACHING SEQUENCE

1. Initially, Teach Concepts at the Receptive Level
   Initially, teach the child quantitative concepts at the receptive level. For example, hold up a long paper strip, and have the child match one of his long strips to yours. Later, have him sort materials according to the concepts that are being taught. For example: have the child sort paper strips into two groups, long strips and short strips.
   Once the child can discriminate and sort, teach him to respond to verbal requests. For example, say, “Give me the small blocks.” Reinforce learning and, say, “That’s right. That’s a small block.”

2. Next, Teach Concepts at the Expressive Level
   Teach concepts at the expressive level when the child is ready. Ask questions such as, “Is this the light toy or the heavy toy?” “Is the glass of milk full or empty?” Encourage the child to use complete sentences. Model how to ask and respond to questions when talking about quantitative concepts.
Recommendations for Effective Teaching

TEACH CONCEPTS IN ORDER
Teach the concepts in the order listed in the OBJECTIVE at the beginning of this section. Take advantage of opportunities that come up in everyday activities to help the child develop an awareness of quantitative concepts. If a child has a specific need to know a particular concept, teach it, regardless of its position in the sequence.

TEACH ONE PAIR OF CONTRASTING CONCEPTS AT A TIME
Teaching too many concepts at a time may confuse some children. Teach the children just one pair of contrasting concepts at a time.

USE CONCRETE OBJECTS
Use concrete objects to teach quantitative concepts. When a child sees the three dimensions of an object and handles the object, it helps him make comparisons. Using concrete objects also provides a child with visual and tactile memories of the objects.

USE INTERESTING MATERIALS
A child may be more motivated to learn when you use objects that interest him. Use materials that are fun to handle, such as little bears, shells, toy cars.

USE OBJECTS THAT DIFFER SUBSTANTIALLY IN SIZE, AMOUNT, OR WEIGHT
To make sure that the child understands the difference between contrasting concepts, present exaggerated examples. For example: When teaching light and heavy, choose something that is practically weightless and something that is heavy enough so children can feel the difference.

TEACH CONCEPTS IN DIFFERENT CONTEXTS
Quantitative concepts are relative, not constant. They vary in degree according to the items that represent the concept. Present different contexts for each concept. For example:
- Show the children a seed and a few grains of sand. Comment that the seed is bigger than the grains of sand. Now show the seed in relation to a lemon. Comment that a seed may be labeled big in comparison to a grain of sand and small when compared to a lemon.
- You might use the term wide to describe both a watchband and a river, although a watchband is actually much narrower than a river.

DEVELOP UNDERSTANDING THAT REPRESENTATIONS ARE NOT IN PROPORTION TO ACTUAL SIZE
Because pictures in books usually are not realistic, printed photos and other illustrations might cause confusion. For example, a child might not understand that an apple tree is big when a picture of an apple tree is smaller than a real apple. A child may be confused if a mouse in the foreground of a picture looks larger than a cat in the background. You might need to use concrete objects to reinforce size and weight for children.

PROMOTE BUILDING ACTIVITIES
Children enjoy building things. Building provides children with many opportunities for language development related to quantitative concepts. When children build, they use materials of different sizes (thick/thin, long/short, large/small) and weight (light/heavy, full/empty). Engage children in conversation about what they are doing. Prompt them to use quantitative concepts to describe their constructions. Support their learning by asking questions that invite them to think.

INCLUDE WITH OTHER ACTITIES
Include quantitative concepts in daily activities. For example,
- When the children are forming two lines, ask, “Which line is short?” or “Which line has many children?”
- When the children are lifting or carrying objects, comment, “That looks heavy. Do you need some help?”
- When foods are cut and shared at snack time and lunchtime, use quantitative words. For example, ask a child, “Who has many raisins? Who has only a few?”
HAVE EACH CHILD MAKE A SIZE-AND-QUANTITY BOOK
Have each child make a size-and-quantity book. For each pair of contrasting concepts, have the child draw pictures to illustrate the concepts. For example, give the child a piece of drawing paper folded in half. Tell the child to draw something short on one half of his paper and something long on the other half. When the child finishes, have him label the drawings short and long, punch holes in the left side of the paper, and place the page in the child’s book.

READ WITH YOUR CHILDREN
Here are some books that children will enjoy reading.
   Hoban, Tana. *Exactly the Opposite*.
See the Read-to-Me Books on page 262 for other engaging books.

COMMUNICATE WITH FAMILIES
• **Send Home a Letter** The Letter to Families suggests fun ways for families to reinforce classroom learning at home. It recommends activities to try and books to read with children. (See page 273 for a sample letter for this section.)
• **Send Home the Learning Plan** Give children a copy of the Learning Plan to share with their families. Encourage families to read and talk about the Learning Plan, “I am learning about size, weight, and quantity.” (See page 282.)
## Teaching Activities

### CONCEPT: BIG/LITTLE

### 1. Match the Buttons

**Materials:** A collection of like objects: buttons, blocks, or Cuisenaire® rods. Some objects should be big and some should be small.

**Group Size:** Individual, small group, or class.

**Procedure:** Use two sets of like objects that are of two different sizes. For example, display big buttons and little buttons. Then do the following:
- Hold up a big button and say: “This button is big.”
- Hold up a little button and say: “This button is little.”
- Have children take turns matching the buttons to the two buttons shown. After a child has correctly matched a button, have him state whether the button is big or little.

### 2. Big Box, Little Box

**Materials:**
- Two boxes: one big and one little.
- Pairs of objects: blocks, crayons, spools, balls, pieces of chalk. Each pair should consist of one little object and one big object.

**Group Size:** Individual, small group, or class.

**Procedure:** Do the following:
- Display the two boxes. Hold up the big box and say: “This box is big. We will put big things in this big box.” Do the same with the little box.
- Put the two boxes and the pairs of objects on a table.
- Pick up a pair of objects of different sizes, and state the size of each object.
- Put each object into the appropriate box. For example, hold up a big spool and a little spool and say: “This spool is big. I am putting it in the big box. This spool is little. I am putting it in the little box.”
- Ask children to put each object into the appropriate box. Prompt them to talk about the size of each object.

### 3. Stringing Necklaces

**Materials:**
- Big beads and little beads.
- Big macaroni and little macaroni.
- A piece of string or yarn for each child.

**Group Size:** Individual, small group, or class.

**Procedure:** Do the following:
- Give each child some big and little beads, some big and little macaroni, and a piece of string or yarn.
- Have children string the beads and macaroni in whatever pattern they like.
- When children have completed their necklaces, have them take turns touching each bead or piece of macaroni and stating whether it is big or little.

### 4. Our World Mural

**Materials:**
- A long sheet of heavy-duty white paper or several sheets of large construction paper taped together.
- Crayons or markers.
- Tape.

**Group Size:** Individual, small group, or class.

**Procedure:** Tape the paper to a wall at children’s eye level. At the top of the paper, write the words “Our World.” Then do the following:
- Talk to children about things in their world that are big and little and make a list on the board. Look around the room and outside the classroom window to identify other things that are big and little. Add them to the list.
- Place crayons and markers in containers on the floor beneath the paper. Encourage children to draw pictures of things that are big and little.
- Help children label their pictures. For example, if a child has drawn a picture of a fire station, label the drawing “a BIG fire station.”
- Keep the mural on the wall for as long as you are teaching quantitative concepts.

**EXTENSION:** Invite children to draw pictures that illustrate other quantitative concepts: tall/short, hot/cold, fast/slow, long/short, deep/shallow, huge/tiny.
CONCEPT: ONE/ONE MORE

5. One More, Please

Materials: Snack food: raisins, grapes, small crackers, cheese sticks.

NOTE: When gathering snacks for the activity, be aware of children with food allergies.

Group Size: Individual, small group, or class.

Procedure: Do the following:
• Give each child one raisin. Say, “How many raisins do you have?” The children should answer, “One.” If necessary, prompt them by pointing and saying: “Here is one raisin. Let’s count it together: One.”
• Ask, “Would you like one more?” The children should answer: “Yes, please!” Pass out another raisin. Then ask: “Do you have one more raisin now?” The children should answer: “Yes! We have one more.”
• Invite children to eat their raisins.
• Repeat the activity throughout snack time to help children understand the concept of one/one more.

EXTENSION: Encourage children to use quantitative words in their dramatic play. For example, when children are playing house and serving tea and cookies to guests, they can ask “Would you like a cookie? Would you like one more?”

6. One More in the Circle

Materials: None.

Group Size: Individual, small group, or class.

Procedure: Have children join hands to form a circle. Then do the following:
• Choose one child to stand in the center of the circle. Ask: “How many children are in the center?” The children should answer: “One.”
• Have the child in the center say: “I’d like one more child to join me.” Let him choose someone to join him.
• Have all the children (including the two in the center) hold hands and skip in a circle.
• After a few skipping circles, choose another child to stand in the center and have him choose one more child to join him.

CONCEPT: FULL/EMPTY

7. Fill the Heart

Materials: Masking tape.

Group Size: Small group or class.

Procedure: Use masking tape to form an outline of a large heart on the floor of your classroom or on outside pavement. Then do the following:
• Have children stand outside the heart.
• Tell children that when you say the word full, they should run into the heart. When you say the word empty, they should run out of the heart.
• Let each child take a turn directing his classmates to make a full and empty heart.
• Remind children that when everyone is inside the heart, it is full, and when they are outside the heart, it is empty.

8. Snack Time, Lunch Time

Materials: A snack or lunch for each child and one for you.

NOTE: Before choosing food items, be aware of children with food allergies.

Group Size: Individual, small group, or class.

Procedure: Do the following:
• At the start of snack time or lunch, tell children you are going to talk about the words full and empty.
• Show them some food from your own snack or lunch. For example, hold up a juice box and say, “Today I brought a box of juice. It’s a full box.” Shake the juice box to demonstrate.
• Go around the room and ask children to show something they brought that is full.
• Repeat the routine with the word empty at the end of snack or lunch. For example, say: “I drank all my juice, and now the box is empty.”
• Have each child show something that is empty at the end of snack or lunch.
CONCEPT: HEAVY/LIGHT

9. Heavy or Light?

Materials:
• Twelve plastic eggs.
• Sand.
• Filling or crumpled paper.
• An empty egg carton to store the eggs.

Group Size: Individual, small group, or class.

Procedure: Fill six eggs with sand and fill six eggs with filling or paper pieces. Then do the following:
• Demonstrate heavy and light eggs. Hand one of the heavy eggs to a child. As he holds the egg, tell him that it is heavy.
• Take the egg away, and hand him a light egg. Tell him that the egg is light.
• While the child is holding the light egg, put a heavy egg in his other hand so that he can feel the difference.
• Have children take turns sorting the twelve eggs into two groups—light and heavy.
• Have each child close his eyes, and give him one egg at a time. Let him tell you whether each egg is light or heavy.

10. Hanger Scale

Materials:
• A wire coat hanger.
• String.
• Objects of different weights, such as a pair of scissors and a feather.

Group Size: Individual, small group, or class.

Procedure: Suspend a wire coat hanger so that it can move freely. With string, attach a heavy object to one end of the hanger. Attach a light object to the other end. Then do the following:
• Tell children to look closely at the hanger and the objects hanging from it. Say, “What do you see? What can you tell me about the objects that are hanging?” Ask them to describe what they see.
• Explain to children that a heavy object weighs more than a light object. Mention that the heavier object makes its side of the hanger dip lower.
• Remove these objects from the hanger then have children choose other objects to attach to the hanger. Before you attach the objects, let the children guess which items will be heavy and which will be light.
• For each set of objects attached to the hanger, help children form an explanation. For example, “This side of the hanger dips down. The scissors is heavy. It weighs more than the crayon.”

EXTENSION: Make a poster of heavy and light objects for display.
11. Stretch and Bend
   Materials: None.
   Group Size: Individual, small group, or class.
   Procedure: Have children stand in a circle. Then do the following:
   • Teach children the words to the poem using the accompanying hand motions. Emphasize the words tall and short.
     \begin{verbatim}
     When I stretch, I'm really tall
     As tall as tall can be.
     (stand, put arms overhead and stand on tip toes)
     \end{verbatim}
   • Repeat the poem and have children join in saying the second line in each verse.

12. I’m Tall, I’m Small!
   Materials: None.
   Group Size: Individual, small group, or class.
   Procedure: Have children stand in a circle. Then do the following:
   • Demonstrate fast and slow beats on the drum with your hands. Talk about how your hand goes at a much different pace to make slower beats. As you explain this, say the words more slowly as you slow down the tapping on the drum.
   • Have children stand. Tell them that when you beat the drum fast they should move quickly, such as jogging in place. Explain that when the beat slows down, children should slow down, too, and move like their feet are stuck in mud.
   • Do this several times, alternating between fast and slow beats.

13. Build It Tall
   Materials: A set of building blocks of various shapes and sizes.
   Group Size: Individual, small group, or class.
   Procedure: In an open area of the classroom, set out the building blocks. Then do the following:
   • Ask children to watch you use blocks to construct a tall building and a short building. Talk about the size of the buildings then have children construct their own tall and short buildings.
   • Talk to children while they are engaged in building. For example, say: “Keisha, you put these little blocks on top of this big block. Your building is becoming a tall tower.”
   • After they have constructed their buildings, ask children about the size of their buildings. For example, ask: “Rafa, is your building tall or short?” or “Ana, what size is your building?”

14. Drum Roll Boogie
   Materials: A drum.
   Group Size: Individual, small group, or class.
   Procedure: Have the children sit in a circle. Then do the following:
   • Demonstrate fast and slow beats on the drum with your hands. Talk about how your hand goes at a much different pace to make slower beats. As you explain this, say the words more slowly as you slow down the tapping on the drum.
   • Have children stand. Tell them that when you beat the drum fast they should move quickly, such as jogging in place. Explain that when the beat slows down, children should slow down, too, and move like their feet are stuck in mud.
   • Do this several times, alternating between fast and slow beats.
15. **Guess the Animal**

**Materials:** Picture cards of animals.

**Group Size:** Individual, small group, or class.

**Procedure:** Have children sit in a group. Then do the following:
- Tell children that animals move in different ways. Mention that some move slowly and some move fast.
- Display a picture of a turtle. Ask children whether they think the turtle moves fast or slow. Then encourage them to move slowly like a turtle.
- Display a picture of a galloping horse. Ask children whether this animal moves fast or slow. Then, have them gallop like a horse.
- Repeat the routine with other animals, such as a caterpillar and a lion.
- Display the picture cards. Say the following riddles to children and have them guess the animal. Have them look at the pictures to help answer the riddle. For example:
  - *It looks like a cat*
  - *But it's bigger, you see.*
  - *It roars and it runs.*
  - *It's bigger than me!* (a lion)
  - *It inches along.*
  - *It's slow as can be.*
  - *It's really quite tiny.*
  - *It's smaller than me!* (a worm)
- After they guess the animal, invite children to imitate their movements.

16. **Pop, Pop, Pop!**

**Materials:**
- Microwaveable popcorn.
- A microwave oven.

**NOTE:** Be aware of children with food allergies and provide an alternate snack after completing the demonstration.

**Group Size:** Small group or class.

**Procedure:** Have children sit at a table or on the floor within hearing range of the microwave oven. Then do the following:
- Explain to children that, at first, popcorn pops slowly. The pops speed up then become fast, and then very fast. Finally, the popcorn pops slow down right before it is ready to eat.
- Place the bag of popcorn in the microwave. As it pops, say, “These pops are slow.” “These pops are fast.” “These pops are very fast.” and “The pops are now slowing down.” “These pops are slow.”
- When the popcorn is done and cool enough, say: “The bag is full of popcorn. Ready to eat. The bag will be empty as soon as we eat all the popcorn!”

**CONCEPT:** ALL/NONE

17. **Fun with None**

**Materials:**
- Clear containers.
- Objects: buttons, beads, paper clips, rice, pennies.

**Group Size:** Individual, small group, or class.

**Procedure:** Place the empty containers on a table. Have children watch as you put one set of objects into one container. Leave the other containers empty.
- To introduce the concept of all, point to the container that has the objects in it and say: “This container has all of the beads in it.”
- To introduce the concept of none, point to an empty container and say: “This container has none.”
- Fill several of the containers with objects, one kind of object in each container. Be sure to leave some containers empty.
- Say to one of the children: “Point to a container that has all the rice in it.” Then say to another child: “Point to a container that has none of the rice in it.”
- Repeat the routine with a variety of objects.

**EXTENSION:** When appropriate use the words all and none when you’re getting ready for snack or cleaning up after snack.
18. The Long and Short of It

Materials:
- Two empty boxes: one short and one long.
- Pairs of objects: pieces of yarn, spaghetti, shoelaces, string, pencils. Each pair should consist of one short object and one long object.

Group Size: Individual or small group.

Procedure: Do the following:
- Show children the two boxes. Hold up the short box and say: “This box is short. We will put short things in this short box.” Repeat the routine with the long box.
- Display the two boxes and the pairs of objects on a table.
- Pick up a pair of objects with two different lengths. For example, say: “This piece of string is short. I am putting it in the short box. This piece of string is long. I am putting it in the long box.”
- Tell children to watch carefully as you sort the objects into the boxes. Tell them that if they see you put an object in the wrong box, they are to clap once.
- Sort the objects into the appropriate boxes, and occasionally put an object in the wrong box. When the children clap, have someone tell you what you did wrong. Remove the object and ask the children to tell you in which box it should go.

19. Long and Short Snacks

Materials:
- A variety of snacks cut into long and short servings: carrot sticks, celery sticks, cucumber sticks, breadsticks, bread.
- Cream cheese, jelly, cheese spread.

NOTE: Before beginning the activity, take note of children with food allergies.

Group Size: Individual, small group, or class.

Procedure: Do the following:
- During snack time, give children a variety of long and short snacks. Display all the ingredients that are available for snack.
- Talk about which snacks are long and which are short and hold up the different length snacks for the children to see. For example, say: “Here is a long carrot stick, and here is a short carrot stick.”
- Ask each child what they would like for snack. Prompt them to use the words short or long when making their requests. For example: “May I have a long carrot stick with cream cheese.” “May I have a short breadstick with jelly.”
CONCEPT: LARGE/SMALL

20. Play Ball!

Materials:
- Balls of various sizes: basketball, soccer ball, kickball, tennis ball, baseball, ping pong ball, tiny bouncy ball.
- A box.

Group Size: Individual, small group, or class.

Procedure: Sit with the children in a circle. Do the following:
- Tell children you are going to show them a variety of large and small balls.
- Bring the balls out of the box one at a time and state whether they are large or small. Pass the balls around the circle. Encourage children to say “large” or “small” when they hold the ball.
- Roll the balls back and forth to each other in the circle.
- Ask children to help you place the balls according to size, from the smallest to the largest in the center of the circle.

EXTENSION: Take the balls outside and toss them back and forth, throw them against a wall, throw them up into the air, and bounce them on the ground. Discuss different concepts they’ve learned and ask children questions. For example: “Is the kickball or the ping pong ball heavier?” “Which ball bounces higher, the basketball or the tiny plastic ball?” “Which ball rolls faster, the soccer ball or the tennis ball?”

21. What’s in the Box?

Materials:
- A box with a lid.
- An assortment of large items, such as a large block, a beanbag, a stuffed animal, a tennis ball.
- An assortment of small items, such as a small block, a pair of number cubes, a small teddy bear, a ping pong ball.
- Scissors.

Group Size: Individual, small group, or class.

Procedure: Cut a hole in one end of the box. Place the box on a table. Then do the following:
- Fill the box with large and small objects. Have children describe the objects as large and small as you put them in the box.
- Once the box is full of objects, you’re ready to play “What’s in the Box?” Put your hand through the hole in the box. Say, “I’m reaching into the box, and I’m touching something small. It’s smooth and round. I think it’s a kind of ball. Hmmmm, I think it’s a ping pong ball!” Take it out. “Yes it’s a ping pong ball!”
- Give each child a turn to play “What’s in the Box? Tell the child to reach into the hole, feel for an object, pick it up, and then hold it while keeping his hand inside the box. Then tell the child to say whether it is large or small and guess the object.

EXTENSION: You also can fill the box with items that focus on other quantitative concepts, such as:
- Heavy/Light: (Heavy) a rock, a toy car, a golf ball, an apple; (Light) a feather, a candy wrapper, a baggie, a piece of popcorn, a sock.
- Long/Short: Use like items of different lengths, such as noodles, blocks, pencils, rulers, or strips of poster board.
22. Fill the Water Buckets  
**Materials:**  
- 2 plastic buckets or dishpans.  
- Towels.  
- Water.  

**Group Size:** Individual or small group.  
**Procedure:** Put water in the two buckets so that the water level is shallow in one bucket and deep in the other. Then do the following:  
- First, let a child put one arm in one bucket. Then, have her put the other arm in the other bucket.  
- Next, have her put her right arm in the shallow water and her left arm in the deep water.  
- Point to the left bucket and say: “The water in that bucket is shallow. The water doesn’t come up very far on your arm.”  
- Point to the other bucket and say: “The water in that bucket is deep. The water comes up high on your arm.”  
- Continue the routine until each child has had a turn.

23. Can You Dig It?  
**Materials:**  
- A sandbox or sand in a box.  
- A sand shovel for each child.  
- Measuring sticks of the same length: six-inch rulers, twelve inch rulers.  

**Group Size:** Individual or small group.  
**Procedure:** Do the following:  
- Discuss shallow and deep things, such as the shallow and deep ends of a swimming pool. Ask children in which end they are allowed to swim.  
- Tell children that they are going to experiment with sand to make shallow and deep holes. If the school has a sandbox, take them outside. If not, use a large box filled with sand.  
- Have one child dig in the sand with his shovel. When he has dug a deep hole, tell him to stop digging. Have another child measure the depth of the hole. Mark the stick at the correct depth.  
- Ask another child to dig a hole. Tell her to stop after she has removed only one or two shovelfuls. Have another child measure that hole and mark a stick to show the depth.  
- After children look at the holes, ask: “Which is the deep hole? Which stick shows how deep this hole is? Which is the shallow hole? Which stick shows how shallow this hole is?”  
- Give each child a stick and a shovel. Divide children into pairs and have one partner dig a deep hole while the other partner digs a shallow hole. Have each child measure his hole and mark his stick. Have each pair of children compare their sticks, and then switch the deep and shallow digging roles.

**Materials:**  
- Bean or pea seeds.  
- Clear containers, such as baby-food jars, small jelly jars, or clear plastic cups.  
- Potting soil.  

**Group Size:** Individual, small group, or class.  
**Procedure:** Do the following:  
- Tell children that seeds are usually planted in shallow holes. Explain that as seeds sprout and begin to grow, roots form and grow deep into the soil.  
- Give each child two or three seeds and a container filled with soil.  
- Have children make shallow holes near the edge of the container. The holes must be next to the edge of the container so they can see the roots as they grow.  
- Have each child place seeds into the holes and cover them with soil.  
- Have children water the seeds and place the containers on a shelf near light. Soon roots will appear, and the children can see them grow deeper each day.  
- Record the growth of the roots over time. Have children take photos or draw pictures of each stage of growth. Prompt children to use the language, “The roots are growing deeper.”
CONCEPT: THICK/THIN

25. A Tasty Lesson

Materials:
- One loaf of unsliced fresh bread.
- A serrated knife.
- Softened cream cheese, cheese spread, or jelly.

NOTE: Before beginning the activity, be aware of children with food allergies; have other foods available, if needed.

Group Size: Individual, small group, or class.

Procedure: Gather children around you. Then do the following:
- Tell children that for snack time you will have bread topped with something tasty.
- Cut a thick slice of bread and a thin slice of bread from the loaf. Show the children the thin slice. Say: “This slice is thin.” Then, have the children look at the thick slice. Say: “This slice is thick.”
- Ask each child whether he wants a thin slice or a thick slice of bread. Next, let each child decide whether he wants a thin or thick layer of jelly or cream cheese on top.

26. Create a Collage

Materials:
- Glue sticks.
- A piece of poster board (12” × 18”) for each child.

Group Size: Individual, small group, or class.

Procedure: Do the following:
- Distribute the thick items for children to touch. Tell children the items are thick. Then pass out the thin items and give children an opportunity to touch them.
- Have each child choose some thick and thin items and arrange them on poster board in any way they like. Once they are satisfied with their design, they can glue the items to the poster board.
- Have children present their posters to the group and talk about the thick and thin items they chose for their poster. Display the finished collages.

27. Through Thick and Thin

Materials:
- Pieces of crayon with outer paper removed, or peeled.
- Crayons with fine points.
- Scrap paper for each child.
- Two sheets of drawing paper for each child.
- Thin ribbon.
- Four-inch-thick crepe paper.

Group Size: Individual, small group, or class.

Preparation: Tape a large piece of drawing paper to the chalkboard. Draw large examples of thick lines and thin lines on your drawing paper. Use the side of a piece of peeled crayon to make thick lines and a pointed crayon to make thin lines.

Procedure: Do the following:
- Give each child a piece of scrap paper and at least two crayons: a pointed one and a peeled crayon.
- Invite children to experiment with crayons to make thick and thin lines.
- Give each child a piece of drawing paper. Let children draw whatever they like, using only the peeled crayons to draw thick lines. Then, have each child draw a picture with thin lines, using only the pointed crayons.
- Display children’s pictures on a bulletin board. Decorate the display of thick-line pictures with twirled, four-inch-thick crepe paper. Decorate the display of thin-line pictures with thin ribbon.
CONCEPT: WIDE/NARROW

28. Nibble the Noodles

Materials:
- Cooked spaghetti or another narrow pasta.
- Cooked lasagne or other wide noodles.
- Butter.
- Tomato sauce.
- Grated cheese: optional.

NOTE: If children have food allergies, adjust the menu accordingly.

Group Size: Individual, small group, or class.

Preparation: Cook the spaghetti and lasagne noodles.

Procedure: Do the following:
- Show children the two types of noodles. Tell them that the lasagna noodles are wide, and the spaghetti is narrow.
- Ask children if they would like to eat wide noodles or narrow noodles. Serve children whatever they prefer, topped with butter, tomato sauce, and grated cheese.

29. Make a Paper Chain

Materials:
- Strips of construction paper in two sizes: 1" × 6" and 2" × 6".
- Glue sticks.

Group Size: Individual, small group, or class.

Procedure: Do the following:
- Give each child several paper strips in both sizes and a glue stick.
- Show children how to make one chain loop by gluing the ends of one strip together. Describe what you are doing as you work.
- Thread a second strip through the first loop, and glue the ends of that strip together.
- After children understand the process, hold up a narrow strip and say, “This strip is narrow.” Have the children glue a narrow strip to form a loop.
- Show children a wide strip. Continue the procedure, having the children alternate narrow and wide chain loops.

CONCEPT: MORE/LESS

30. Can You Guess: More or Less?

Materials:
- Several paper drinking cups: two for each child.
- A pitcher of juice or water.

Group Size: Individual, small group, or class.

Procedure: Do the following:
- Give each child two cups.
- Pour only a small amount of juice or water in one cup, and almost fill the other cup.
- Tell children that the cup with a lot of juice has more juice, and the cup with only a small amount of juice has less juice.
- Ask children to identify the cup with more juice. Then have them identify the cup with less juice. Observe children who don’t grasp the concept and need more experiences with more and less.
- Invite children to drink the juice from the cup with more juice, but ask them to leave a little in the cup. Have them look at both cups and tell which cup has more juice in it.
- After the activity is concluded, invite them to finish both cups.
CONCEPT: MANY/FEW

31. Snacking with Raisins

Materials:
- A large box of raisins.
- Two paper plates.

NOTE: Substitute raisins for another snack if children have food allergies.

Group Size: Small group or class.

Procedure: Do the following:
- Introduce the term few by showing children a plate with two or three raisins on it. Say, “This plate has a few raisins on it.”
- To illustrate the term many, show children a plate with perhaps ten to fifteen raisins on it and say, “There are many raisins on this plate.”
- Ask children whether they would like a few raisins or many raisins for their snack. Give children the amount they request.

EXTENSION: Prompt children to use the words few and many throughout the day as they engage in a variety of activities.

CONCEPT: HUGE/TINY

32. The Elephant and the Ant

Materials: None.

Group Size: Individual, small group, or class.

Procedure: Divide children into pairs, then do the following:
- Tell children that they are going to pretend to be huge elephants. First, discuss what it would feel like to be a huge elephant. For example, say, “An elephant is huge. If you were an elephant, what things would seem big to you?” Point out that these things would have to be bigger than an elephant.
- Invite children to walk like elephants, bending over and using their hands clasped together to form a trunk. As they move, ask them to tell about huge things they might see if they were an elephant, such as tall trees and mountains.
- Repeat the routine for tiny ants. Ask the children: “If you were an ant, what things would seem tiny to you?” Then have them crawl like ants as they say what they might see, such as a blade of grass or grains of sand.

33. Paint Huge and Paint Tiny

Materials:
- Paintbrushes.
- Paint.
- Large sheets of paper: one for each child.
- Small sheets of paper: one for each child.
- Smocks.

Group Size: Individual, small group, or class.

Procedure: Do the following:
- Have children put on smocks. Tell them that they are going to paint pictures of huge shapes.
- On a large sheet of paper, demonstrate a huge shape.
- Give children a large sheet of paper and encourage them to paint a huge shape, such as a circle, a letter, or the moon.
- When the children finish painting huge shapes, give each child a small sheet of paper and repeat the routine for tiny shapes.
- Help children label their drawings of huge and tiny shapes.
34. Show Me the Most Sand

Materials:
- Three clear plastic containers of the same size for each pair of children.
- Sand.
- Scoops.
- Small cups.
- Sets of measuring cups.

Group Size: Individual, small group, or class.

Procedure: Do the following:
- Gather children around a sand table. If you do not have a sand table in your classroom, use a box filled with sand.
- Add a different amount of sand to three containers.
- Show children the container with the least amount of sand and say: “This container has a small amount in it. It has the least amount of sand.”
- Show children the container with the greatest amount of sand and say: “This container has a lot of sand in it. It has the most amount of sand.”
- Mix the order of the containers. Ask a child to identify the container that has the least amount of sand. Then, have another child identify the container that has the most amount of sand.
- Let children work in pairs to fill three containers with progressively greater amounts of sand. Listen to children as they work to see if they use the words most and least.
- Encourage children to pour the sand back and forth among containers. When they finish, let them say which container holds the least amount of sand and which container holds the most.

35. Redder Than Red

Materials: Children's paintings that feature the use of a single color of paint.

Group Size: Individual or small group.

Preparation: Select three paintings that have one color paint in common. For example, one painting should make use of a lot of red paint, another a lesser amount of red paint, and a third a small amount of red paint.

Procedure: Do the following:
- Place the three paintings where children can see them.
- Encourage children to talk about each painting. Point to a red area in one of the paintings and say, “This area is red.” Have a child point to all the other red areas in the painting. Follow the same procedure with the other paintings.
- Say: “One painting has a lot of red in it. Show me the painting that has the most red.” Have a child point to that painting.
- Say: “One painting has very little red in it. Show me the painting that has the least amount of red.” Have a child point to that painting.
- Rearrange the three paintings. Ask a child to order the paintings from the one with the most red to the one with the least amount of red paint.