Classification, Positions, and Patterns

The content of this unit is very important to children’s mathematical reasoning abilities. When children classify objects or describe positions and patterns, they are learning to make logical decisions that organize their world.

To group or classify objects, children must notice the objects' properties or attributes and make decisions based on them. Knowledge of positions is key to giving and following directions, and words such as above, below, top, bottom, first, and last are used constantly in the classroom and in life. Patterns are commonly found in nature and in things that people make. Developing children’s awareness of patterns is vital.

Help children see the importance of these topics by pointing out and by asking for examples of sorting and grouping of objects at home or school. For positional words, ask a child to move away from the group, and then let the others describe her location. Note the positional words they use and ask, How did these words help us know where Juanita was? Finally, you might illustrate a developing pattern such as a red block, a blue one, another red, another blue, and lead children in talking about the pattern and about other patterns they see in the classroom.

A Positive Start

Children’s active involvement in what they are learning makes a big difference. During this unit, you’ll continue to let children participate in many ways by guiding them as they talk, listen, draw, demonstrate, and work with materials. Continue to encourage children to talk about what they are doing and explain their reasoning. Communication and reasoning are crucial aspects of mathematics, and they can become very natural processes for children at this level.

Linking Present and Future Learning

Use the chart to see what objectives the next two levels cover for the key topics listed below. Planning is important to direct your instruction and help children develop the skills expected of them in the future.

<table>
<thead>
<tr>
<th>Concept/Skills</th>
<th>This Year</th>
<th>Level 1</th>
<th>Level 2</th>
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<tbody>
<tr>
<td>Same and Different</td>
<td>Compare objects to determine if they are the same or different in size and shape</td>
<td>Identify plane figures that are the same shape and size</td>
<td>Identify and describe congruent and symmetrical figures</td>
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<tr>
<td>Positions</td>
<td>Use positional terms to describe the location of objects</td>
<td>Identify the position of objects and figures; recognize ordinal positions first through seventh</td>
<td>Identify ordinal numbers first through twentieth</td>
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<tr>
<td>Patterns</td>
<td>Recognize patterns and identify the next object in sequence</td>
<td>Identify the next figure in sequence in color, shape, and size patterns; use skip-counting</td>
<td>Identify number patterns; use skip-counting</td>
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</table>
Methods and Management

In teaching this unit, have the children physically participate in illustrating the concepts. This simple, personalized technique is meaningful and captures children’s attention.

Teaching Strategy: Same and Different

Focus children’s attention on different properties—for example, color, shape, or size—to teach same and different. Materials are almost limitless. Let children play a part in selecting materials by asking two children to leave the group and each choose an object from the classroom.

▶ Ask: How are these two objects the same? How are they different?
Be sure children explain their reasoning: “They’re the same because . . .” or “They’re different because . . .” Continue the process until several have had turns selecting objects.

▶ Then Ask: What’s another way they are the same? How else are they different?

• Show pairs of paper figures: a large circle and a small circle of the same color, a triangle and a rectangle of different colors, or two squares of the same size but different colors. Reinforce that there are many properties that can be used for comparison—color, straight or curved lines, corners or no corners, size, shape.

▶ Common Misconceptions Children may think that only one answer applies to “same and different” situations. Model your own reasoning, showing several ways objects may be the same and different. Probe for a variety of responses: What about color—are they the same or different in color?

Teaching Strategy: Positions

As you teach positional words, you may find that children introduce other words as well. Here are some ways to make your lessons clear and meaningful:

• Let children demonstrate the terms you introduce. Give them props to hold above and below their heads or waists.

• For the terms first, middle, and last, draw three figures vertically on the board. Show that the top one is first, and the bottom one is last. Then line up three children, being sure to establish that the position first starts at the left. Also, you can roll pairs of balls across a finish line. Ask children which ball finished first and which was last. Roll three balls to demonstrate middle.

▶ Show This:

▶ Ask: Where is the square? What shape is below it? What’s above the circle? Beside the circle?