

## 1. KNOBBED CYLINDERS (CYLINDER BLOCKS)

### Visual Sense: Discrimination of Size, Matching

#### Material:

Four blocks, each containing ten cylinders with knobs, with each cylinder fitting into its respective hole in a given block. The four blocks, varying in one, two, or three dimensions, form the following graduation of exercises from easy to difficult, simple to complex.

#1 The cylinders are equal in height, but decrease in diameter.

Two dimensions vary: length and width.

#2 The cylinders decrease in height and diameter.

Three dimensions vary: length, width, and height.

#3 The cylinders increase in height while decreasing in width.

Three dimensions vary: length, width, and height.

#4 The cylinders are equal in width, but decrease in height.

One dimension varies: height.

#### Presentation:

When the directress/or initiates the selection of the material:

1. Invite the toddler to work with the cylinder block. Say, "I will show you the cylinder block."
2. Show the toddler where the cylinder block is located on the shelf.

When the toddler makes the selection of the material, begin with the third step after naming the material for the toddler.

3. Indicate the procedure for carrying the material: place one hand at each end of the cylinder block.
4. Place the material, largest cylinder to the left, at a table or rug with the toddler seated and the adult to the right of the toddler.
5. Say, "After I remove the cylinders, I will match the cylinder to the hole."
6. Remove each cylinder indicating to the toddler how each knob is to be held between thumb, index, and middle fingers of the dominant hand. Emphasize the movement - lift the cylinder vertically, move it horizontally, lower it vertically.
7. As each cylinder is removed, beginning at the left and proceeding to the right, place the cylinders in order in front of the cylinder block.
8. Replace the cylinders by choosing the first cylinder to the left and holding and moving the cylinder as indicated in step #6. Feel the whole cylinder, and then feel the hole. Delicately insert the knobbed cylinders into the holes.
9. Return the material to the shelf by placing one hand at each end of the cylinder block.

### **Presentation 2: Cylinder to hole in mixed order.**

1. Invite the toddler to work with the cylinder block. Say, "I will show you the cylinder block."
2. Show the toddler where the cylinder block is located on the shelf.
3. Indicate the procedure for carrying the material: place one hand at each end of the cylinder block.
4. Place the material, largest cylinder to the left, at a table or rug with the toddler seated and the adult to the right of the toddler.
5. Say, "After I remove the cylinders, I will match the cylinder to the hole."

6. Remove each cylinder, indicating to the toddler how each knob is to be held between the thumb, index, and middle fingers of the dominant hand. Emphasize the movement - lift the cylinder vertically, move it horizontally, lower it vertically.
7. As each cylinder is removed, beginning at the left and proceeding to the right, place the knobbed cylinders in mixed order in a line in front of the cylinder block.
8. Beginning with the knobbed cylinder to the left, replace the cylinder in the appropriate hole. Feel the whole cylinder.
9. With each selection of a knobbed cylinder on the left, move the cylinder from left to right above the holes in the cylinder block.
10. When the correct match has been made, feel the hole, and then lower the cylinder into the hole.

**Presentation 3: Hole to cylinder in order.**

1. Proceed as in Presentation 1.
2. Before removing the cylinders, say, "Place the cylinders in front of the cylinder block."
3. Select the hole to the left, feel the hole, and select the cylinder to match the hole.

**Presentation 4: Hole to cylinder in mixed order.**

1. Proceed as in Presentation 1.
2. Before removing the cylinder, say, "Place the cylinders in mixed order in front of the cylinder block."
3. Select the hole to the left, feel the hole, and select the cylinder to match the hole.

### **Variation 1: Memory**

1. Proceed as in Presentation 1.
2. The cylinders are removed in order, and the cylinder block is taken to a table or rug a distance away.
3. Return to the cylinders, select the cylinder to the left, carry it to the cylinder block and insert the cylinder into the hole.

### **Variation 2: Circle cards**

1. Make ten 3” square cards with solid circles corresponding in circumference to the ten bases of the knobbed cylinders.
2. Place the ten cards with the solid circles on a rug, and lay them in a line from left to right.
3. Select cylinder block #1, #2, or #3. Match the knobbed cylinders to the circles.

### **Language:**

Cylinder, knob, cylinder block.

Blocks #1 and #2: thick, thicker, thickest; thin, thinner, thinnest; wide, narrow.

Blocks #2 and #3: big, bigger, biggest; large, larger, largest; small, smaller, smallest.

Holes: deep, shallow; wide, narrow.

**Points of Interest:**

1. Thick cylinders will not fit into thin holes.
2. Short cylinders will disappear from eye level if they are placed in a deep hole.  
(Have a toothpick or other appropriate tool handy for the removal of a cylinder that cannot be retrieved by the knob. The tool may be inserted in the bottom to raise the level of the cylinder so that it may be grasped by the knob and properly removed. This will avoid dumping.)
3. Tall cylinders will not fit entirely into a shallow hole.

**Direct Aim:**

1. Development of visual discrimination of size which leads to observing one's environment with an intelligent eye.
2. Development of order, concentration, coordination, and independence.
3. Supports the sensitive period for order in the toddler.
4. Encourages simple problem solving techniques.

**Indirect aim:**

1. Development of large motor muscles for voluntary movement.
2. Preparation for writing - holding a pencil.
3. Preparation of the mathematical mind.
4. Ten cylinders as a preparation for the decimal system.

**Control of Error:**

1. Each cylinder fits only in its proper place.