

# NUMERAL WRITING

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## NUMERAL WRITING ACTIVITIES...

...*teach* children the pattern and shape of numeral forms.

... concepts of quantity, order of the number names, one-to-one correspondence or any other mathematical concept.

Learning to write numerals is not a mathematical skill. However, it is necessary for children to be able to recognize and write symbols when they begin working with number operations. Adequate time must be allowed for children to learn to recognize and write numerals before they are expected to use the symbols mathematically. Numeral writing experiences can be scheduled throughout the year during the class time allotted for other handwriting activities.

The goal of the following activities is to provide a variety of handwriting experiences that encourage children to internalize the starting position, order, and direction of the strokes which combine to form the numerals. The numeral activities suggested in *Mathematics Their Way*, *Workjobs* and this newsletter are divided into two different areas:

### **Numeral Recognition Activities:**

These activities provide tactile experiences to help young children internalize the numeral forms.

### **Numeral Writing Activities:**

These activities provide a variety of meaningful paper and pencil experiences.

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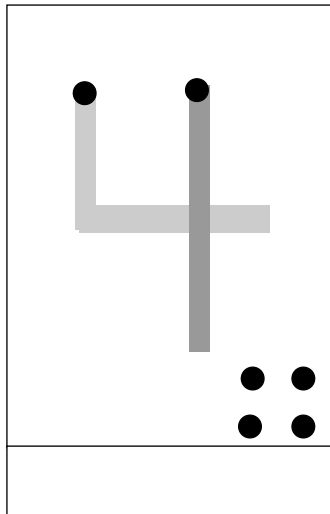
## GROUP NUMERAL WRITING EXPERIENCES

The following activities can be used with a small group or the whole class. The sequence only takes a few minutes. Focus on one numeral per session. Vary the numeral each day.

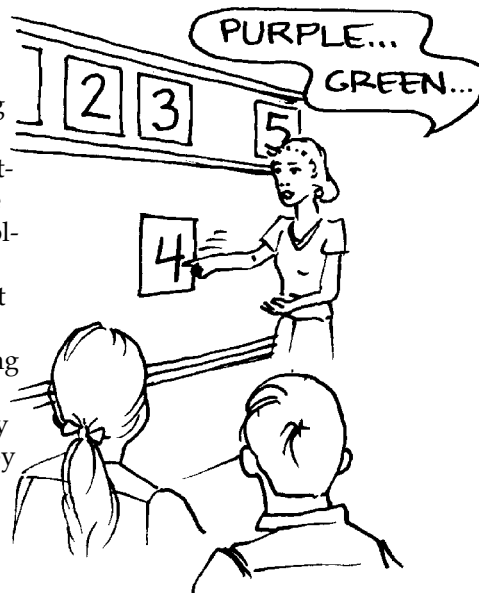
The numeral writing activities use a two-color pattern indicating stroke sequence to help the children with directionality. The order of the colors should always be kept the same. *Mathematics Their Way* numeral writing activities use the colors purple and green to illustrate the numeral strokes. Mary originally chose the colors for a very practical reason. The most common ditto masters available to her were purple and green. The Baratta-Lorton Reading Program uses the colors blue and orange for its alphabet activities because these colors provide most color blind children the least amount of difficulty. If you prefer other colors or your school has an existing handwriting program that uses different colors, adapt the suggested activities to fit your needs.

## LARGE NUMERAL CARD ACTIVITIES

*Materials:* Large purple-green numerals (see MTW, pp. 44-45, NL, p. 6.8), salt boxes



Encourage children to trace with their index and middle finger extended. By extending the two fingers, they use the same muscles used when writing with a pencil. Initially, the group says the name of the colors as they form the numeral. It's not important at this point for the children to know the numeral's name. In fact, saying the name may confuse some children. The children will say the numeral's name when they begin to connect the numeral form to rote counting (see Chalkboard Activities p. 6.2).



### In the Air

Begin the year by making each large purple-green numeral in front of the class (see MTW, p. 44). Introduce one numeral per session. Demonstrate how the numeral is formed by tracing the large numeral with your index and middle finger extended. Ask the children to look at the large purple-green numeral and trace the numeral in the air with their index and middle fingers extended. The children say the color sequence as they trace the numeral form. Repeat approximately four or five times.

After each numeral is written, display it with the other numerals previously introduced. The numerals should be displayed in sequence in the classroom where the whole class can refer to them. Encourage the children to use the numeral cards as a reference when they need help forming or recognizing a numeral.

### On the palm

Ask the children to trace the numeral on the palm of their hand.

### On a friend's back

Ask the children to trace the numeral on a friend's back. One way to do this is to form a circle (sitting down facing in one direction). Each person writes on the back of the person ahead of him or her.

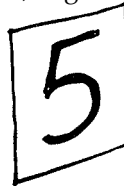
### In a salt box

Each child should have a salt box. The children trace the numeral in the salt box with their index and middle finger.

## CHALKBOARD ACTIVITIES

*Materials:* large purple-green numerals, 1 small chalkboard per child (see NL, p. 6.9), chalk, eraser (socks or felt pieces)

*Prerequisite:* Chalkboard writing requires good fine motor coordination. Be sure your children are prepared. The numeral recognition and finger tracing activities should be introduced before the chalkboard writing activities. When the children are comfortable writing numerals on the chalkboard, begin to introduce the independent numeral writing activities.

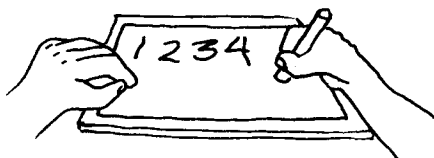


### Writing a numeral

Choose a large purple-green numeral. Ask the children to write the numeral five times on their chalkboard. Remind them to allow enough room on their chalkboards for five numerals. Ask the children to circle the numeral they think is their best. Walk around the room as the children write or have them hold up their chalkboards so you can assess at a glance which children have correctly internalized the numeral form. Take note of any children who seem to be having difficulty writing the numeral. A special small group session can be scheduled for these children. Review the large numeral writing activities and numeral recognition activities.

### Numeral Sequence

Ask the children to write several numerals in a sequence — three or four times. This time, they can verbalize the number name as they record the numerals. For example: 1 2 3 4 5, 1 2 3 4 5... When the children can comfortably record the numerals 0 - 10, choose a larger number sequence (e.g., 55 56 57 58 59...).



# INDEPENDENT ACTIVITIES

## NUMERAL RECOGNITION

### Clay (Cookie Dough) Numerals

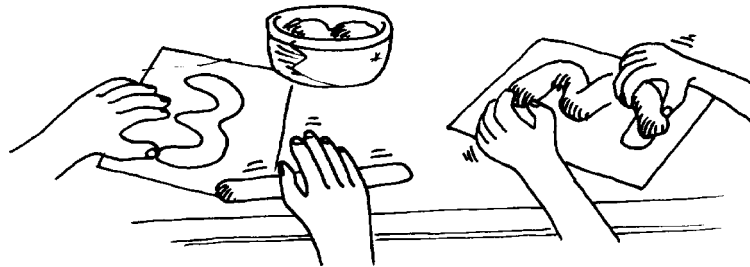
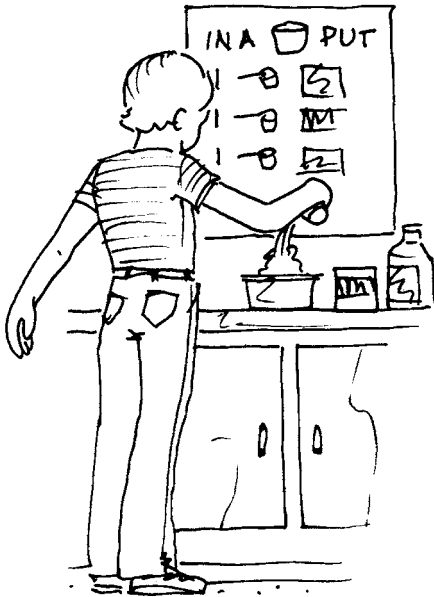
*Materials:* Clay (cookie dough may be substituted), numeral cards covered with Contact paper or acetate (see NL Blackline #5-7)

The child makes a snake out of the clay (or cookie dough). Then he or she places the snake on the numeral card in the shape of the numeral. Later, the child might try to form the numeral on the surface next to the card.

*Note:* It is helpful to set up the cookie dough activity at two stations.

*Station 1:* A place to measure and mix the ingredients. Display a large recipe card for the children to follow. (See p. 6.8 for the cookie dough numeral recipes.)

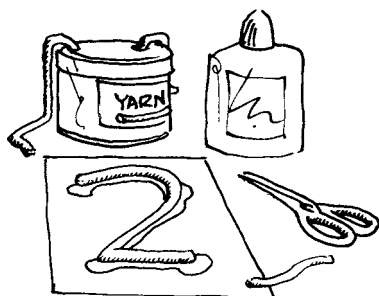
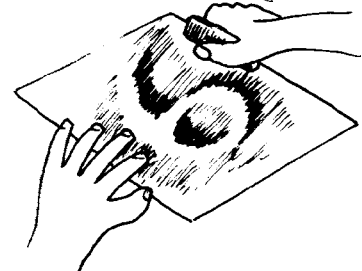
*Station 2:* A place to roll out the dough and form a numeral on top of a numeral card. The children eat the numeral at this station.



### Rub-Over Numerals

*Materials:* newsprint (the size of the rub-over cards), crayons with the paper removed, clothespins, Rub-Over Numerals (see NL, p. 6.8)

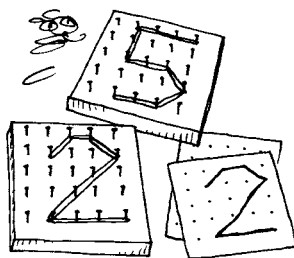
The child places a piece of newsprint on top of the rub-over numeral card and secures it with a clothespin. Then, using the side of the crayon, he or she rubs over the numeral card. The numeral's image will emerge.



### Yarn Numerals

*Materials:* wet rags, Yarn Numeral dittos 0-9 — each numeral individually bagged in zippered bags (see NL Blackline #5-7), Elmer's glue, rug yarn, scissors (small sewing scissors work well for this activity)

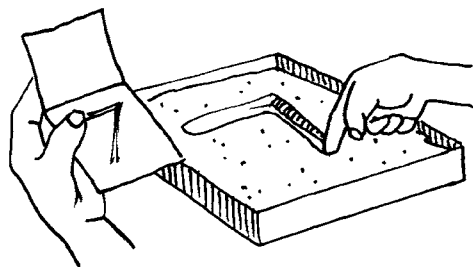
The child chooses a numeral worksheet. Then he or she estimates the length of yarn needed to make the numeral. The child then checks the estimate. After making any necessary adjustments, he or she cuts the yarn and glues it to the numeral paper.



## Geoboard Numerals

*Materials:* Geoboard Numeral Cards see NL, p. 6.10, geobands and geoboards

Using the geoboard numeral cards as a reference, the child makes a numeral on a geoboard with geobands.



## Salt Box

*Materials:* Numeral Sequence cards (see MTW, pp. 363-364; NL p. 6.9), salt boxes with the bottoms spray-painted black (see NL, p. 6.10)

The children work in pairs. One child holds the numeral sequence card while the second child forms the numeral in the salt. The partners take turns in each role.

The pair begin working side by side with the numeral sequence card in view (see MTW, p. 47). The child with the card verbalizes the color sequence (one color at a time) as the other child writes the numeral form in the salt.

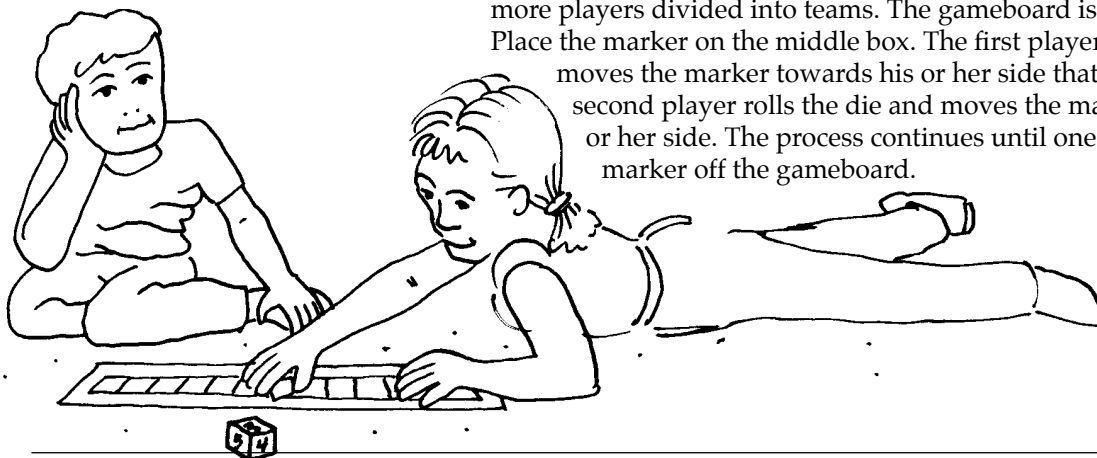
Later, the child with the numeral sequence card stands behind the child who is tracing the numeral form in the salt (so the child who is tracing cannot see the numeral sequence card). The child with the card traces the numeral on the back of his or her partner, while verbalizing the strokes in the color sequence — i.e., “Purple” (Pause while the child writes the first sequence in the salt), “Green”. (Child finishes the sequence in the salt). They compare the numeral sequence card with the numeral form traced in the salt.

## My Turn, Your Turn

*Materials:* die with numerals 0-5, a gameboard (see NL, p. 6.9) with 11 or more boxes in a straight line (always make an odd number of boxes), marker (e.g., a bean, button,...)

This game provides an opportunity for children to identify the numerals, as well as attach quantitative meaning to the numeral. They learn that two is less than five, etc. The numerals begin to take on meaning, rather than being meaningless squiggles.

This game requires at least two players. It can also be played with more players divided into teams. The gameboard is divided in half. Place the marker on the middle box. The first player rolls the die and moves the marker towards his or her side that many boxes. The second player rolls the die and moves the marker towards his or her side. The process continues until one person moves the marker off the gameboard.



## NUMERAL WRITING

### Dot-to-Dot Templates

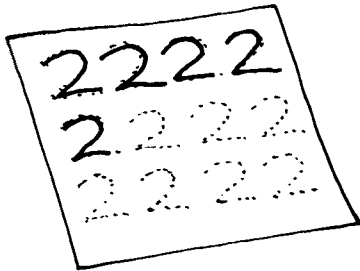
*Material:* Dot-to-Dot Templates (MTW, p. 49), 9"x 12" newsprint, pencils, crayons, clothespins

The child places a template over a piece of paper and secures it with a clothespin. He or she then records the numerals in the appropriate squares. Then the child removes the template and, beginning with numeral one, connects the numerals in sequence with a line.



### Writing Papers

*Materials:* Writing Papers (see NL, p. 6.10), water-soluble pens, wet rags



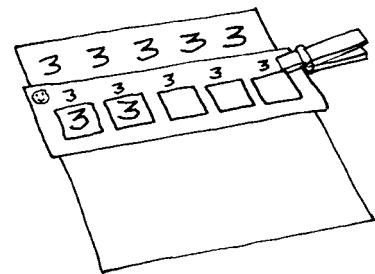
Trace the purple-green numerals with a pen. Wipe off the papers with a wet rag before putting them away.

Extension: Duplicate the numeral writing blacklines (MTW, pp. 388-389) onto regular paper. Ask the children to trace the purple stroke and then complete the numeral by writing the second stroke. (The second stroke is not outlined on the ditto.) The children can take these papers home to show their parents.

### Numeral Templates

*Materials:* 9"x 12" newsprint, 0-9 or 0-20 Numeral Templates (see NL, p. 6.10), pencils, clothespins

The child writes the appropriate numeral in the hole below the numeral. He or she can repeat the same template several times on one piece of paper or use several different templates.



### Tic-Tac-Toe

*Materials:* blank paper or chalkboard, pencils or chalk

This activity is played in pairs. Each child chooses a numeral (instead of the traditional X's and O's). They then play tic-tac-toe using the numerals.

0					
0					
0	1		3		5
0	1	2	3		5
0	1	2	3	4	5



### Numeral Dice Toss

*Materials:* five dice numbered with 0, 1, 2, 3, 4, 5; five dice numbered with 4, 5, 6, 7, 8, 9; dice toss charts (NL Blackline #8-9); pencils

The child shakes one die and records the numeral rolled in the appropriate column. He or she continues to roll and record until one column is filled. If the student rolls a smiley face, he or she can choose any numeral on the sheet.

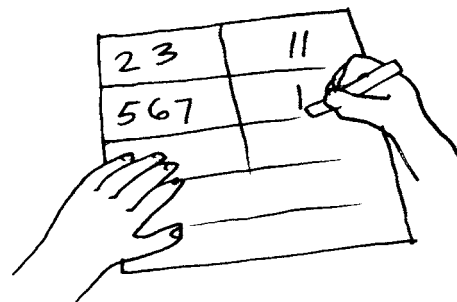
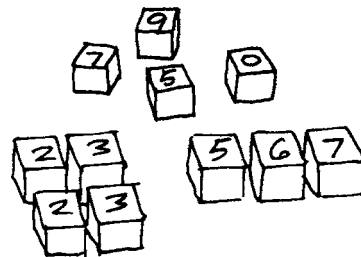
Note: Sometimes a child might choose to continue after one column is filled to find out which column will fill next.

### Numeral Sequences

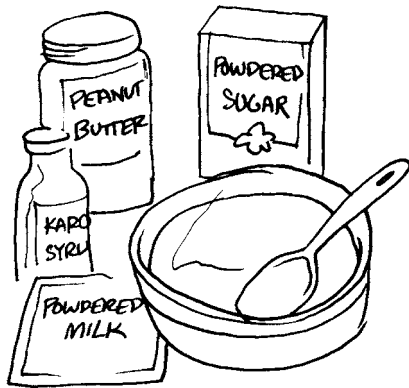
*Materials:* five dice numbered 0, 1, 2, 3, 4, 5; five dice numbered 4, 5, 6, 7, 8, 9; NL Blackline #10, pencils

The child shakes and rolls the ten dice. He or she arranges the dice in as many sequences as possible. The child continues to roll the dice and record any new sequences (one sequence per line). He or she makes tally marks next to the sequences that are repeated.

Note: You may want to duplicate the recording chart on both sides of the paper so the child can choose to continue to explore the different sequences when he or she has filled up the first side.



# NUMERAL WRITING MATERIALS



## Edible Play Dough Recipes

Here are two recipes for edible play dough. Do try them! The dough is delicious and so easy for the children to use. The children can measure everything themselves. Best of all, it does not require cooking! Use anything to measure the "one part". A plastic spoon measures enough for one person. Use a measuring cup for large batches of the dough.

### Recipe #1:

- 1 part: peanut butter
- powdered milk
- Karo syrup
- powdered sugar

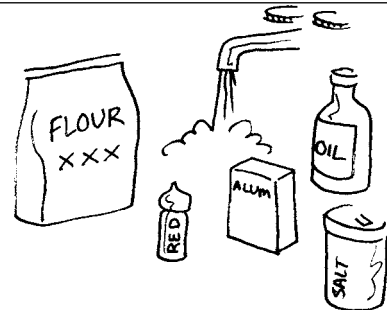
### Recipe #2 (the healthy version):

- 1 part: peanut butter
- powdered milk
- wheat germ
- 1/2 part: honey

## Homemade Play Dough

(not edible)

- 3 c. flour
- 1-1/2 c. salt
- 6 t. oil
- 3 t. cream of tartar or alum
- 3 c. water
- food coloring

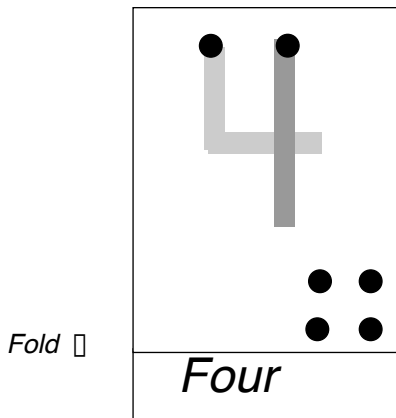


Cook over low heat and stir until you have play dough consistency. Store in a margarine tub or a zippered plastic bag in a cool place.

## Large Numeral Cards

*Materials:* 12" x 18" pieces of construction paper; purple and green crayons with the paper removed

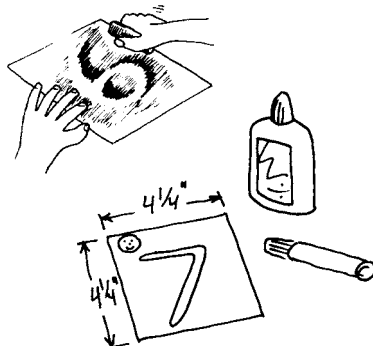
Fold back the bottom 3 inches of the paper. Make a large numeral above the fold. Using the side of a purple crayon, draw the first stroke of the numeral. Using the side of a green crayon, draw the second stroke of the numeral. Make a dot where the stroke begins. If the pencil must be lifted to draw the second stroke, make another dot. Indicate the value of the numeral with dots in the right hand corner. Write the numeral name below the fold. The numeral name can be folded back until it's time to introduce the word.



## Rub-Over Numerals

*Materials:* 22 pieces of tagboard (4-1/4"x 4-1/4"), Elmer's glue, permanent markers

Make a large numeral on each card with a marker. Trace over the numeral with Elmer's glue. Allow the glue to dry overnight. Put a happy face in a top corner of the card to provide children a frame of reference for the top of the card.

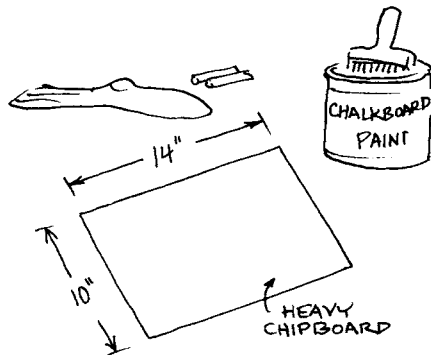


Rub-over numerals can be made with other materials — e.g., heavy string, sandpaper or textured fabric.



## Individual Chalkboards

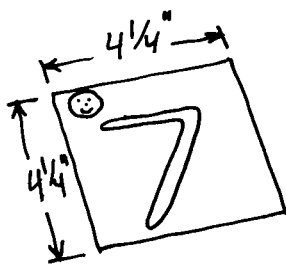
*Materials:* 10" x 14" chipboard or heavy cardboard, slate or chalkboard paint (available in hardware and paint stores), 3" foam paint brush



Make one board for each child. Cut the chipboard or cardboard into 10" x 14" pieces. Paint each with two coats of chalkboard paint. Allow to dry. The boards need to be seasoned before the children write on them. Using the side of the chalk, cover each chalkboard with chalk. Once the boards are erased, they are ready to use. Use cheap chalk. You can find it in the dime store. School chalk is dustless and has a hardener added which scratches the boards. Ask each child to bring in an old sock. It can be used both as an eraser and as a place to store the chalk.

## Numeral Cards

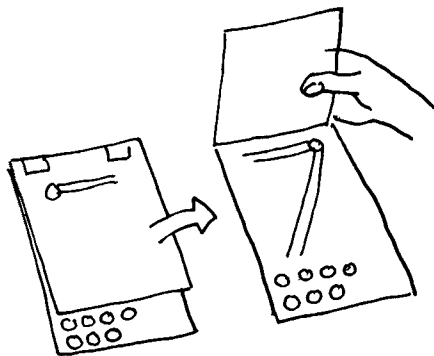
*Materials:* NL Blackline #5-7, tagboard, Contact or laminating paper



Run off the numerals onto tagboard. Cut the tagboard so the numerals are separate. Laminate or contact the numeral cards. Make several sets of numerals for the clay numeral station and several sets for the cookie dough station.

## Numeral Sequence Cards

*Materials:* one 3-3/4" by 4-1/2" piece of tagboard and one 3-3/4" by 4" piece of tagboard for each card; purple, green and black permanent markers; masking or strapping tape; scissors



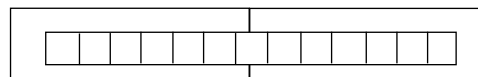
Write the first stroke of the numeral on the 3-3/4" by 4" piece of tagboard with a purple marker. Indicate the starting point with a black dot. Write the whole numeral on the 3-3/4" by 4-1/2" piece of tagboard in the purple-green sequence. Indicate the quantity of the numeral with dots on the bottom of the card. Place the 3-3/4" by 4" piece of tagboard on top of the 3-3/4" by 4" piece and tape the two tagboard pieces together at the top.

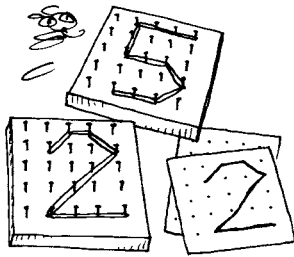
## My Turn, Your Turn Gameboard

*Materials:* 2 pieces of (3' x 9") tagboard; 2 Unifix cube strips at least 7 cubes long (MTW Blackline #32); glue stick; Contact paper

*Note:* Make 3-4 gameboards. Vary the number of boxes on each strip. The total number of boxes should always be odd.

Choose two Unifix cube strips. Cut the boxes with the Unifix nub off. Cut an additional box off one strip to make an odd number of boxes. Tape the two tagboard pieces together to make one long strip that folds in the middle. Glue the strips together onto the tagboard. Either laminate or Contact paper the gameboard for protection.





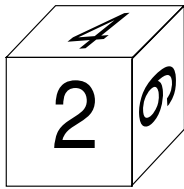
### Geoboard Numeral Cards

*Materials:* 10 geoboard papers (MTW, blackline #17); purple and green markers; 8-1/2" square tagboard; clear Contact paper

Draw a large numeral on each paper by connecting the geoboard dots in the purple-green sequence. Mount the paper onto tagboard. Laminate or Contact paper the the card to protect it.

### Numeral Writing Dice

*Materials:* wooden cubes; blank dice; foam cubes; thin permanent markers (purple and green)



Dice can be made with wooden cubes or foam cubes. You can also purchase a commercial set of blank dice. They are listed in the mathematics section of school supply catalogs.

Write the appropriate numerals (in the purple-green sequence) on the die with permanent markers. Some teachers make a tiny happy face in one of the top corners of each side of a die to help the children position the numeral correctly. This especially helps children distinguish between the numerals 6 and 9.

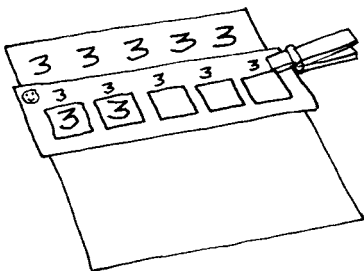
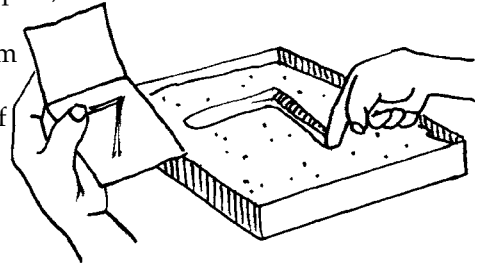
Make a set of dice for each game (My Turn, Your Turn, Numeral Dice Toss and Numeral Sequences). Refer to the directions of each game for the specific number of dice needed per game. Make several sets if a game is popular.

Note: Follow the above directions to make additional dice for other dice games described in Mathematics Their Way and the Summary Newsletter. (The numerals can be recorded on the dice in one color for the other dice games.)

### Salt Box

*Materials:* 5-6 shallow boxes (approximately 1-1/2" high x 8" x 9"); black spray-paint; old newspapers; table salt

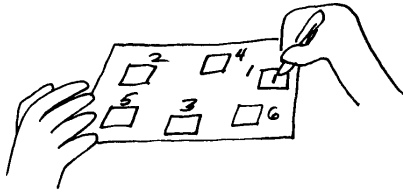
Spray black paint on the bottom of the box. Add enough salt to completely cover the bottom of the box.



### Number Templates

*Materials:* 10 (3" x 9") tagboard; Exacto knife; ruler; purple and green permanent markers; clear Contact paper

Each template focuses on one numeral. Write the numeral five times (equally spaced) across top half of the tagboard. Cover with clear Contact paper. Cut 1" square boxes approximately 1/2" below each numeral. Continue this process with all the numerals (0-9).



### Dot-to-Dot Templates

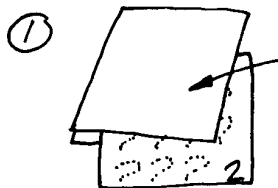
The dot-to-dot templates are difficult to make. This activity is worth purchasing preprinted from the Center for Innovation in Education. All you have to do is cut out the squares on the 14 different templates and cover them with Contact paper. If you would like to try to make your own, refer to MTW, p. 361 for directions.

### Purple-Green Numeral Papers

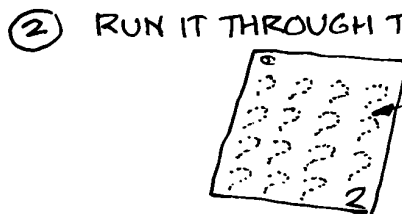
*Materials:* MTW blackline #8-15, green ditto (available in most business supply stores), Thermofax masters, paper

Run the blackline masters through the Thermofax machine. This will give you the purple copy of the first stroke of each numeral. Take a green ditto, tear off the white cover sheet (the part you usually write on) and throw it away. Take the green inked sheet and place it on the back of the Thermofaxed master of the first stroke. Make a dotted line for the second stroke of each numeral. When you finish, the Thermofax master will have both the purple and green stroke recorded. Now you are ready to run off your master. Each duplicated copy will have both the purple and green strokes.

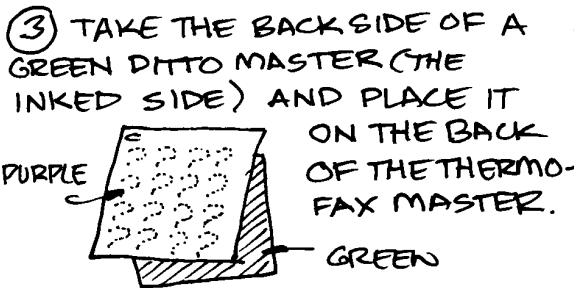
Laminate or cover the writing paper with plastic.



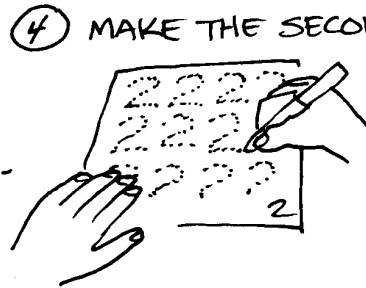
① TAKE YOUR THERMOFAX MASTER AND INSERT THE BLACKLINE MASTER.



② RUN IT THROUGH THE THERMOFAX.  
PURPLE STROKE IS DONE.



③ TAKE THE BACK SIDE OF A GREEN DITTO MASTER (THE INKED SIDE) AND PLACE IT ON THE BACK OF THE THERMOFAX MASTER.



④ MAKE THE SECOND STROKE FOR EACH NUMERAL AND RUN IT OFF ON THE DITTO MACHINE.

