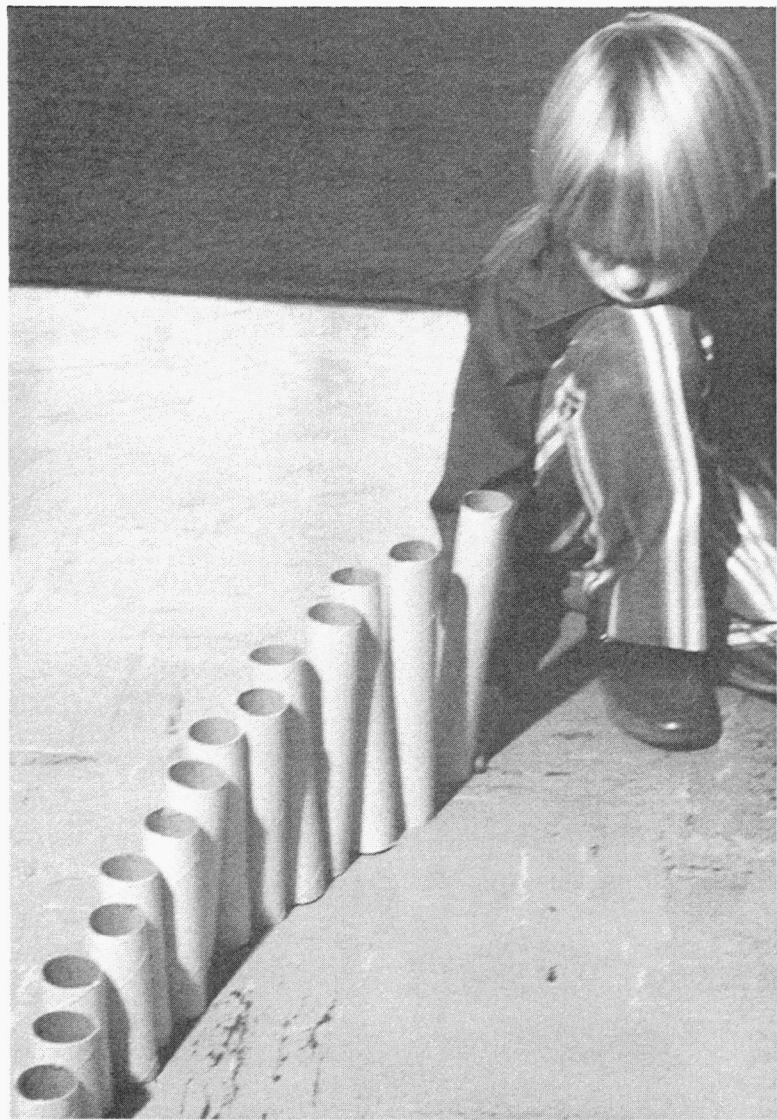
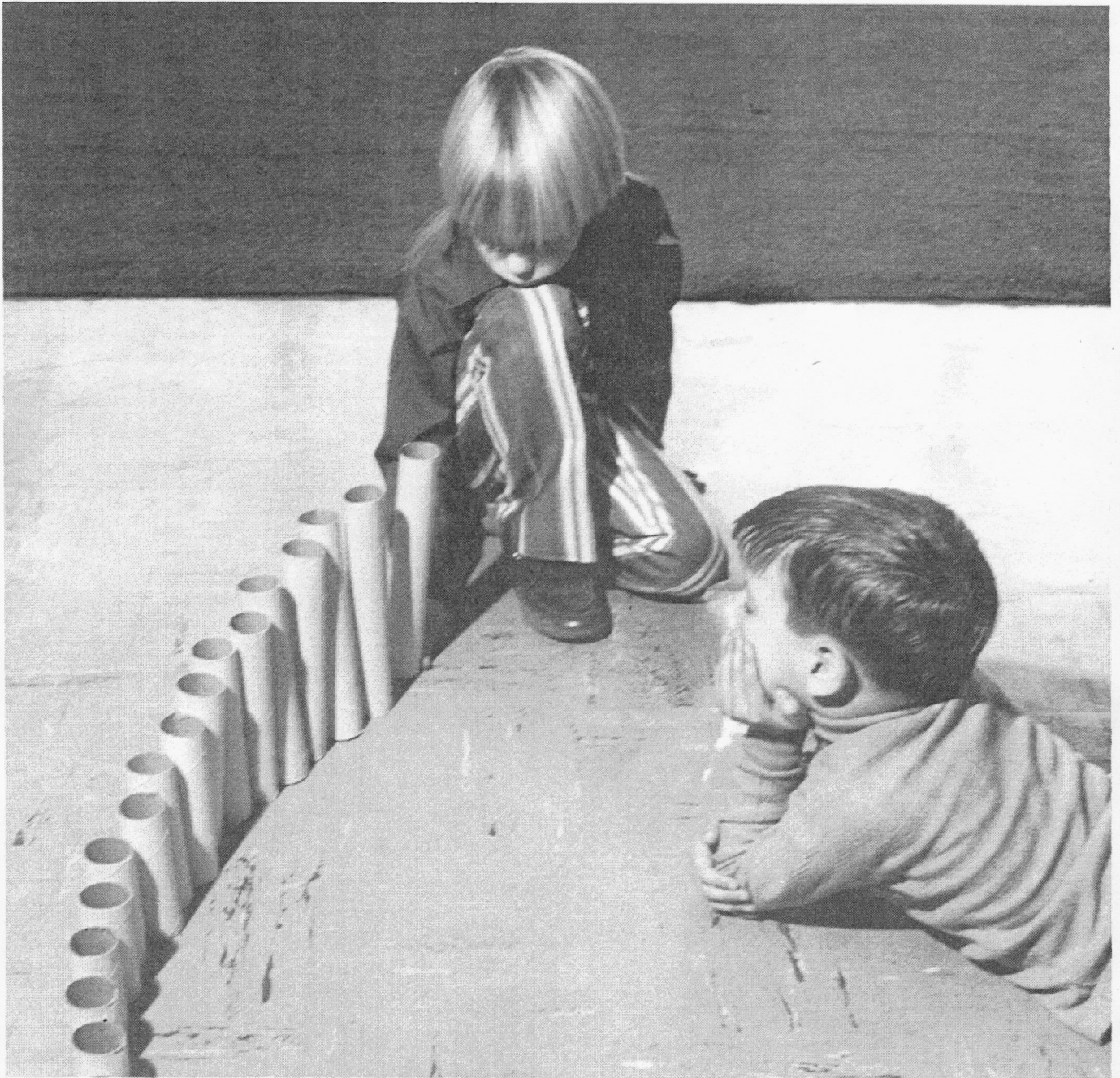


Relationships



The Cylinders

Skills Making comparisons; observing the relationship of one size to another; ordering by height; making selections; developing visual perceptions; predicting and checking.



The child takes the graduated cardboard tubes and experiments until he has the pieces in an orderly, progressive row.

The child should be allowed to experiment to find the best system, for him, for getting the tubes into the desired arrangement. A child with little experience will usually begin haphazardly in the middle and work toward both ends. This same child will soon begin to work from one end, judging with his eye and predicting which cylinder goes next in the series. Each child should be allowed to gain this insight through his own experience.

The teacher, pointing to the reference card, might say, "Arrange the cylinders to look like this pattern."

How did you line the cylinders up?

Which cylinder is the tallest? Is it on the right or left side?

If I take this cylinder away, which one is the tallest? If I take this one away too, is it still the tallest?

How can you make this cylinder the shortest in a series without cutting it shorter?

Can you mix the cylinders up and work backwards, so the little one is on the other side?

Close your eyes. I'm going to do something, and I want you to tell me where the pattern is broken. (Teacher removes a cylinder leaving the others in place. The child points to the space. The teacher repeats but closes the space up. Finally she does it and mixes up the cylinders to the child must rebuild the pattern to find which one is missing.)

ACTIVITY

GETTING STARTED

IDEAS FOR FOLLOW-UP DISCUSSION

Cardboard tubing cut into 1/2" graduated pieces.

Spray paint.

Container for cylinders.

Reference card, glued to container which shows gradation.

MATERIALS

Syrup Game

Skills Making comparisons; observing the relationship of one size to another; ordering by size; making selections; developing visual perception; making and checking predictions.



A child takes the bottles of colored water, which have been filled at 1/2" gradations, and lines them up in order.

ACTIVITY

The teacher might discuss the activity as follows: "Do you remember the cardboard cylinder game, Tim? This is a lot like that game. Will you arrange these bottles in the same order?"

GETTING STARTED

What can you tell me about the bottles?

IDEAS FOR FOLLOW-UP DISCUSSION

If you had all your relatives over to breakfast next Sunday, which bottle would you want to have on the table filled with syrup? Why?

If you were going to have pancakes after school and you were the only one that was going to have them, which size would you choose to be filled with syrup? Why?

Which bottle has the least amount in it? The most? How many are in between? Which ones would you say have a lot? Which ones would you say have just a little bit?

Empty bottles.

Colored water in increasing amounts in each bottle.

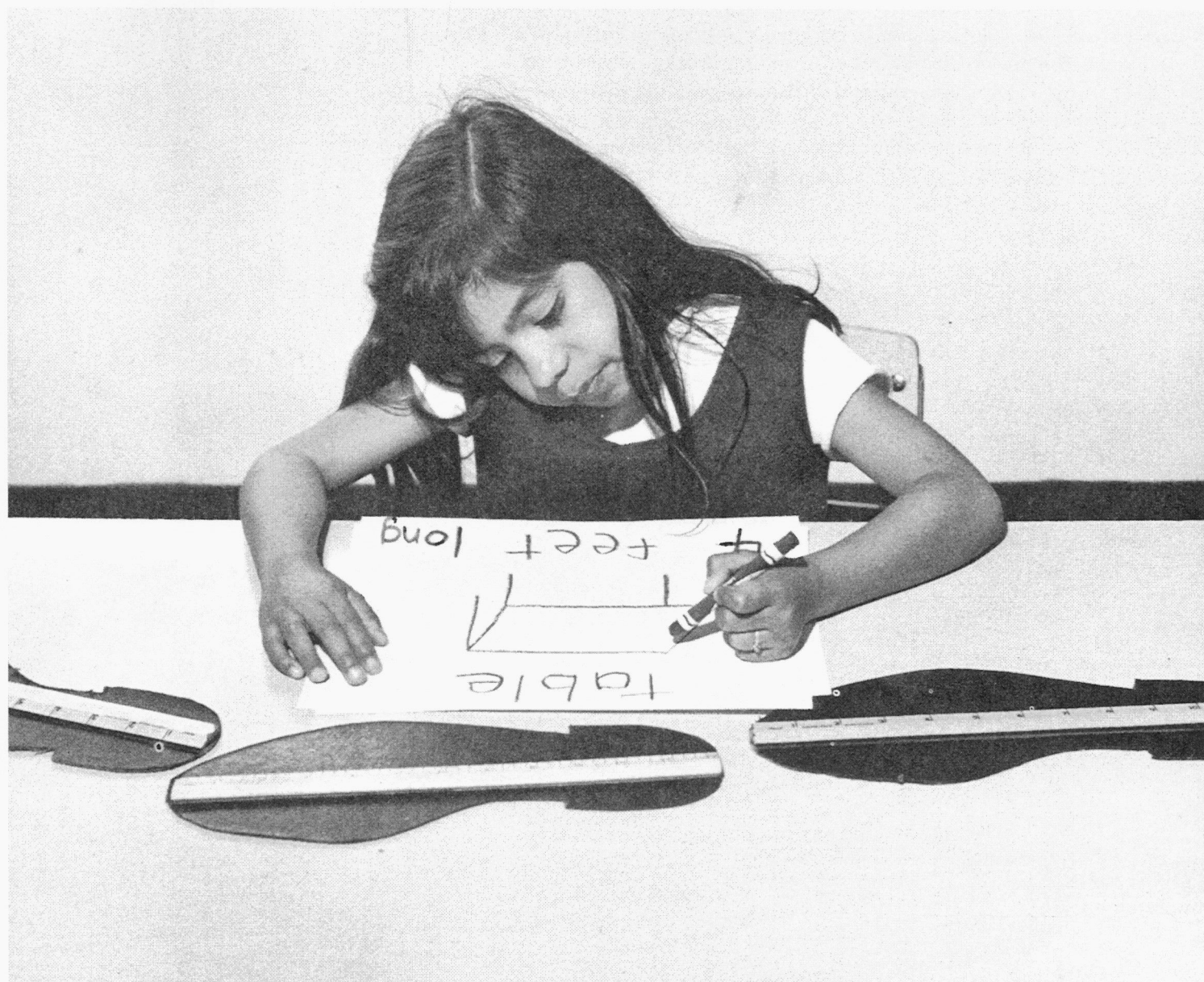
Cloth tape to seal bottles.

Tall container for bottles to prevent them from tipping over.

MATERIALS

Measuring Game

Skills Making comparisons; observing the relationship of one size to another; counting; developing visual perception; estimating; measuring; gathering simple data; learning about area.



The child chooses various objects to measure which are about ___ feet long (a length chosen by the child). For example, if he chooses to measure things about five feet long, he finds five things which are about this length and draws a picture of each.

Children should measure many things with *their* feet, their hands, a book, or toys before doing this workjob. For example, one child might measure a table and find it "four spelling books long." Another child might measure the same table and find it "fifteen hands-spread-out long." Still another child might measure the table as "three toy airplane wings long." Through this kind of experience and recording, children gradually become aware of the need for standard measurement.

The teacher might discuss the activity as follows: "How long are the things you would like to measure? Write down how long the things you are going to measure will be. Good. Now, find some things and draw pictures of them."

Tell me about your work and the things you measured.
How many things did you find that were ___ feet long?
What part of each object did you measure?
Do you think this box is more or less than ___ feet long?
How about this book? The rug? How about *you*?

ACTIVITY

GETTING STARTED

IDEAS FOR FOLLOW-UP DISCUSSION

10 to 20 feet (exactly 12" long) cut from cardboard.
Paint.
Glue.
Rulers, if desired.
Container for "foot" cutouts.

MATERIALS

How Tall Are You ?

Skills Making comparisons; observing the relationship of one size to another; counting; developing visual perception; predicting and estimating; measuring; gathering simple data and drawing conclusions.



The child measures heights and records them on the recording sheet. He writes the number of long blocks used on the long block by the child's name he measured. He writes the number of short blocks used on the short block.

ACTIVITY

The teacher might discuss the activity as follows: "Who would you like to measure first? Find out how many long and short blocks tall your friend is. Have him write his name down and write down how tall he is."

GETTING STARTED

What did you find out about Gina when you measured her?
 How many long blocks tall was Gina? How many long blocks was Tim?
 How many short blocks was Gina? And Tim? Was Tim taller or shorter than Gina? Who was shorter? Show me with your fingers how much Tim would have to grow to be as tall as Gina.

IDEAS FOR FOLLOW-UP DISCUSSION

1. <u>Tim</u>	3	7
2. <u>Gina</u>	4	1
3. <u>Fred</u>	3	8

- 2" x 8" x 14" piece of wood.
- 1/2" bit for drilling hole in wood for dowel.
- 5' of 1/2" doweling.
- 12 1" pieces of cardboard tubing.
- Four 1' pieces of cardboard tubing.
- One piece of plywood 1-1/2" x 7" with hole drilled in one end to check the height of each child's head.
- Recording sheets for recording and comparing heights of children.
- Container for cardboard tubing.

MATERIALS

Graphing Game

Skills Making comparisons; observing the relationship of one quantity to another; counting; making selections; graphing; collecting simple data; drawing conclusions.



In consultation with the teacher, the child decides what he is going to survey (how many children have on black shoes, or how many have on brown shoes; who is absent, or who is present; who has a dog for a pet, or who has a cat; who has lost a tooth in the front of his mouth, or who hasn't). The child draws a picture of each category and places them at the top of the graphing chart. Then he does the survey of the class and pins each picture on the appropriate side.

ACTIVITY

The teacher might discuss the activity in this way, "Think of something you would like to know about our class." (Later) "Draw a picture of these two things and then ask each person in class what his or her opinion is. Then pin his picture under his opinion."

GETTING STARTED

What did you find out?

How many children are there altogether in our class?

How many boys are in our class? How many girls?

Which group in your survey had the most in it? What does that mean?

Where did you put *yourself*? How many boys were in the group that had the most in it? How many girls? Were there more boys or more girls in this group?

IDEAS FOR

FOLLOW-UP DISCUSSION

10" x 24" piece of cardboard.

1" x 10" strips of construction paper in two colors.

Rubber cement.

Clear contact paper to protect graphing chart.

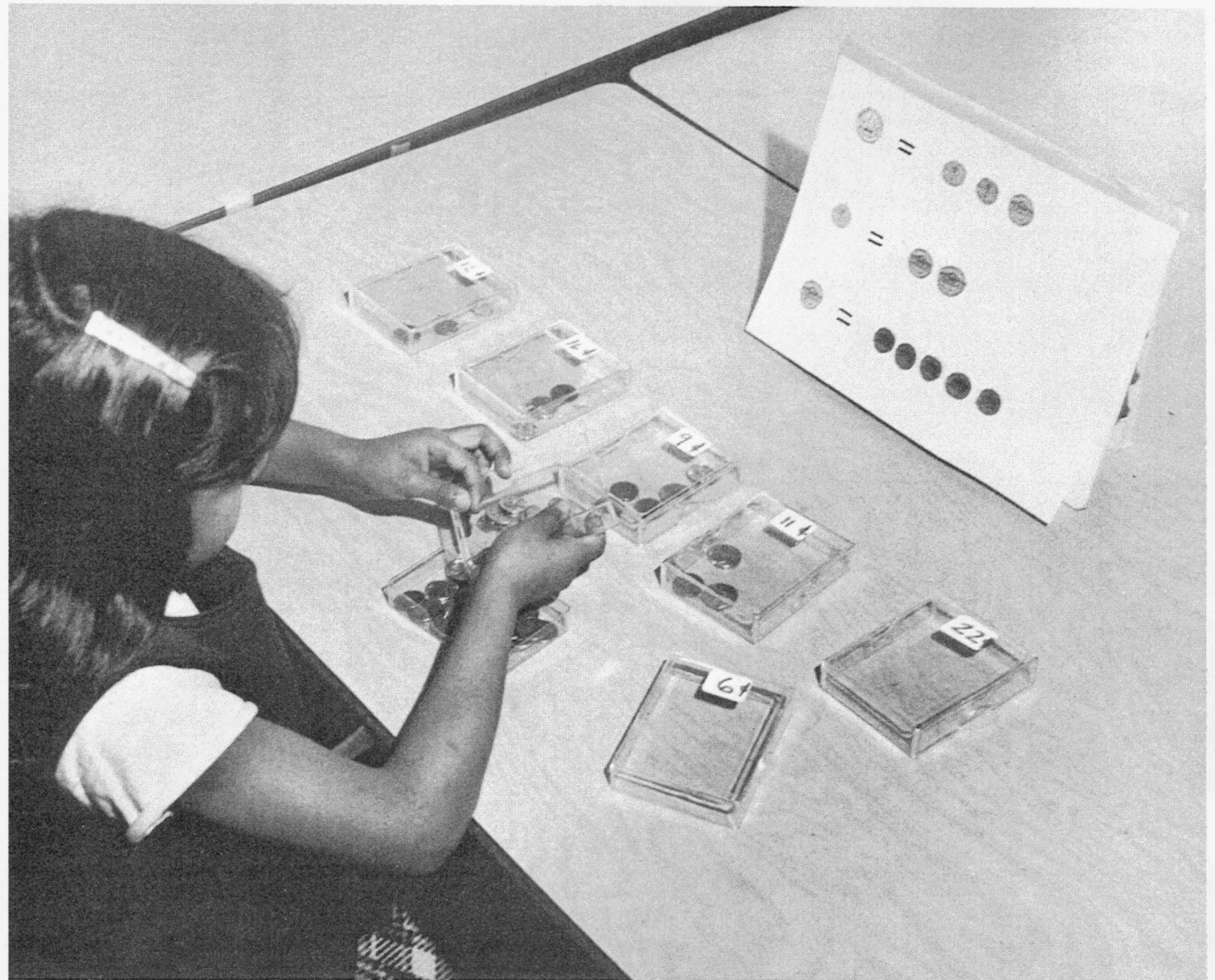
Small pictures of each child cut from a group photo glued to 1" x 2" piece of cardboard and then to a spring-type clothespin.

Container for clothespin pictures.

MATERIALS

The Money Game

Skills Making comparisons; observing the relationship of one quantity to another; counting; identifying common coins; identifying equivalent coin values; developing a respect for property.



The child places the appropriate number of coins into each box. When he has finished, the child matches the silver coins to a matching board and places the pennies in a plastic cylinder. He shows it to the “loan officer” who puts it away.

Children will create different combinations. Some children working with the eleven cent box, for example, will put in two nickles and one penny, while another child will put in one dime and one penny. Still another child will use 11 pennies. It is very interesting to notice how children solve the problem when they near the end of the workjob with perhaps only two boxes left to fill and find they have only silver coins to fill a three cent and a nine cent box.

The teacher might ask the child, “How many cents go into this box? Can you count out that much?”

Tell me about the money boxes, Charles.

Which coin do we call a nickel? How many cents is it worth? Which is a dime? How many cents is it worth? Without looking, can you remember which is larger, a nickel or a dime? Which is worth more? Tell me about the coins in this box.

Which box has the most money in it? Which one has the most pennies? Is it worth the most—could you buy more with the money in this box than with the money in any other?

ACTIVITY

GETTING STARTED

IDEAS FOR FOLLOW-UP DISCUSSION

Small boxes.

Marking pen for writing amounts of money.

Labels.

Real or play money.

Container for money.

Container for boxes.

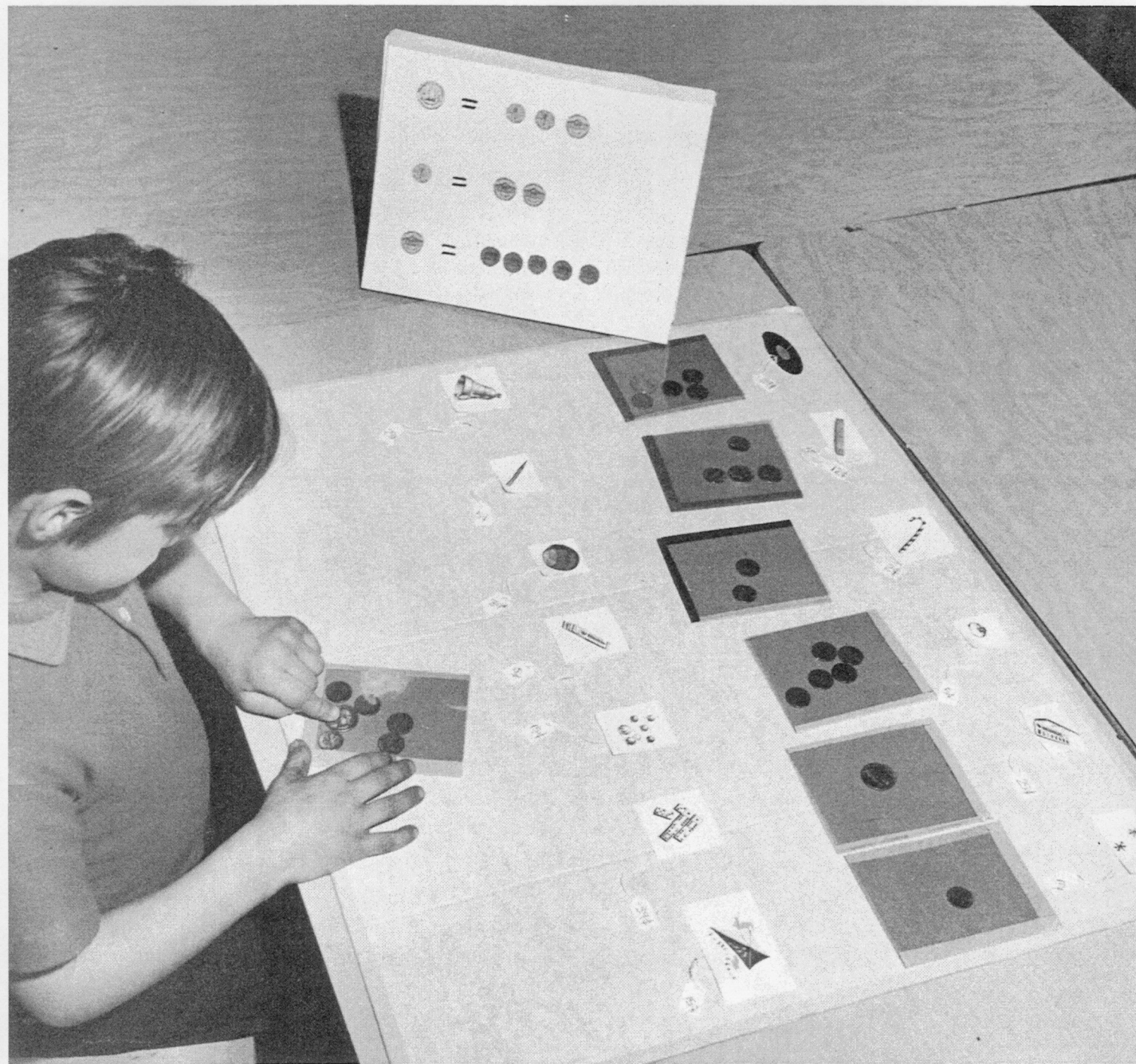
Reference card showing equivalent coin values.

Note: See text at the end of the book for a discussion of the use of real money as opposed to play money (or disks) in the workjobs.

MATERIALS

The Store

Skills Making comparisons; counting; making selections; identifying common coins; identifying equivalent coin values; developing a respect for property.



The child matches the money with the objects on the answerboard according to the amount needed to buy each item. When he has finished, the child calls the "loan officer" to put away the money squares, leaving them on the answerboard until they have been checked.

ACTIVITY

The teacher might ask the child, "If you were going to buy this package of gum, how much money would you need to pay for it? Do you have a card with that much money on it? Where will you put it? How about the car?"

GETTING STARTED

Tell me what you did with all the money squares.

How many things are there to buy on the answerboard? How many things are toys? How many are things you could eat? How many are red or yellow? How much money do you need to buy this apple? How many nickels is that? How many pennies?

IDEAS FOR FOLLOW-UP DISCUSSION

Tell me about the coins on the money square by the candy. How about the coins for the hamburger?

Which ice cream cone could you afford to buy if you only had 10 cents?

How many things are there to buy for less than a nickel? How many things cost exactly 7 cents? How many things cost more than 10 cents?

18" x 24" tagboard and cardboard.

Pictures of objects which children would like to buy in the store.

Marking pen to write numerals.

Tags on which to write each item's price.

Real or toy money glued to 3" squares of cardboard and covered with clear contact paper.

Masking tape for taping the edges.

Container for money squares.

Reference card showing equivalent coin values.

MATERIALS

Note: See text at the end of the book for a discussion on the use of real money as opposed to play money in the workjobs.

Time

Skills Experience with telling time; learning about clocks; decoding symbols.



The child places a time card beside each clock face and draws the clock's hands to indicate the time on the card.

The teacher may want to draw the minute hand on the clocks for the children who are just beginning to work with telling time. Children who are ready to work with half hours or quarter hours can be given a set of cards with these times to write.

The teacher might discuss the activity as follows: "What time does this say? Where is that number on the clock? Can you draw the short hand to that number on the clock face? Good job! Do the same for all the times."

What time does this say? Where is the long hand? Where is the short hand?

Which clock shows the time when we come to school? Which one shows when we go home? If you're not sure, why don't you keep the time board here on the counter until we're ready to go home? Then you'll be able to show me, won't you?

Can you put the time card that shows 5:00 in my pocket. Show me what time it is when we go to lunch. Show me the clock that tells what time it is now.

ACTIVITY

GETTING STARTED

IDEAS FOR FOLLOW-UP DISCUSSION

A clock stamp or materials with which to draw clock faces.

4" squares of tagboard, cardboard, and transparency.

Masking tape for masking edges.

2" x 6" strips of tagboard.

Marking pen with which to draw times.

Clear contact paper.

Container for time cards and clocks.

MATERIALS

Shapes

Skills Learning about area; estimating; predicting; counting; developing visual perception.



The child predicts how many objects (of identical size) will fit into a particular shape and writes that number on a piece of paper. Then the child performs the experiment and sees how close his prediction is.

The size of the number is controlled by the size of the outline the child is to fill in and by the size of the objects he uses.

The teacher might discuss the activity as follows: "How many juice cans do you think will fit inside this outline? Okay, why don't you write that on the answer card and when you've put the cans inside you can see how close your guess was."

What did you learn as you were working here?

How many cans did you think it would take to fill this shape? How many cans *did* it take? Was your guess close?

Did it take more cans or fewer cans than you guessed to fill this shape?

Draw a shape on a piece of paper, and guess how many cans it will take to fill up your shape? Fill up your shape and see how close you are.

ACTIVITY

GETTING STARTED

IDEAS FOR FOLLOW-UP DISCUSSION

Large shapes cut from plywood or heavy cardboard.
30 to 40 objects of identical size: blocks, tin cans, or boxes.
Paper.
Crayons.
Container for objects and shape boards.

MATERIALS

Cups and Pitchers

Skills Making comparisons; observing the relationship of one size to another; counting; estimating; predicting; measuring.



The child makes a prediction of how many cups he thinks can be filled from each pitcher. He writes these predictions on a piece of paper in front of the pitchers. Then he tries the experiment and checks to see how close his prediction came to the actual number of cups each pitcher filled.

A child not yet ready to write may simply make dots or lines or pictures of cups to indicate how many cups he thinks will be filled.

The teacher might discuss the activity as follows: "How many cups do you think this pitcher will fill up? Can you write that number down on the answer card and put it in front of the pitcher? Good. Now, what do you think about the next pitcher? After you have finished, do the experiment yourself and see how close your guess is."

What did you find out?

Which pitcher could fill the most cups? Why? Which pitcher could fill the fewest cups? How many?

What about your guesses? What did you find out about each one?

Did any pitchers fill the same number of cups?

How many cups are there altogether? Are there more pitchers or more cups?

Are these two pitchers the same? How are they different? Can you tell me anything about how many cups they hold? What else can you tell me about them?

ACTIVITY

GETTING STARTED

IDEAS FOR FOLLOW-UP DISCUSSION

Small pitchers of various capacities (1, 2, 3, and 4 cup).

Small cups holding approximately 1/2 cup.

Rice, cornmeal, gravel, or water.

Paper.

Crayon.

Container for pitchers, cups, and pouring material.

MATERIALS

Sharing

Skills Dividing; counting; making comparisons; estimating; problem solving.



The child works from the teacher's directions, placing the appropriate number of biscuits by each dog.

ACTIVITY

The teacher might ask the child, "If each dog is to have three biscuits, how many biscuits will you need altogether? Show me." Or "How many biscuits will each dog get if you share all the biscuits among the dogs?" Or "How many dogs could have five biscuits each? How many dogs get none?"

GETTING STARTED

Tell me what you were trying to find out. What did you discover?
Did all the dogs get the same number of biscuits?
How many dogs are there? How many biscuits did each dog get?
If you had to share the biscuits with three *more* dogs, do you think each dog would get more biscuits than he has now or fewer?

IDEAS FOR FOLLOW-UP DISCUSSION

Apple crate separator.
10 pictures of dogs.
Glue.
30 small bone-shape dog biscuits.
Container for dog biscuits.

MATERIALS

Estimating

Skills Estimating; checking predictions; making comparisons; observing the relationship of one size to another; counting; problem solving; learning about space.



The child puts out the jars and writes on the answer card a prediction of how many walnuts he thinks will fit inside each jar. He places each prediction in front of each jar. Then he checks his prediction by filling each jar with walnuts to see how close his prediction was.

ACTIVITY

The teacher might discuss the activity as follows: "How many walnuts do you think it will take to fill up this jar? Write the number down so we can remember it. Good. Now, can you do the same for all the jars? Then fill them up with the walnuts and see how close you came!"

GETTING STARTED

Tell me what you found out from working with the jars and walnuts. Did you make good guesses? Did any jar surprise you with how many walnuts it held?

IDEAS FOR FOLLOW-UP DISCUSSION

How many jars are there altogether?

Which jars hold a lot of walnuts? Which hold only a few?

How many jars hold less than five walnuts? Is there any jar that holds exactly seven walnuts?

Glass jars of different shapes and sizes.

A large container of walnuts.

Paper.

Crayon.

Container for glass jars and boxed walnuts.

MATERIALS