# Combining and Separating Groups



### Ice Cream Cones

Skills Counting; combining groups; recording mathematical experience with symbols.



The child puts the scoops of ice cream on the cones. Then he records the combinations formed by the pieces of strawberry or chocolate. For example, one cone may have a scoop of chocolate ice cream with five chocolate chips. The other scoop of ice cream may have six pieces of strawberries on it. The child, in this case, records 5 + 6 = 11.

The teacher might say to the child, "Make the ice cream cones and then **GETTING STARTED** call me." (When the child finishes, the teacher helps the child begin his recording.)

What did you do with the ice cream cones?

Which cones have five or more pieces of fruit or chocolate? Do any cones have the same number of pieces on them?

Does this cone have more chocolate or more strawberry pieces on it?

What would happen if you put one more scoop of ice cream on this cone? How would you record this?

Write your favorite combination on the board without the answer, and see if a friend can give you the answer.

Pieces of  $6'' \times 9''$  tagboard and cardboard. Brown marking pen for drawing ice cream cones. Colored felt for making ice cream and flecks of strawberry or chocolate chips. Paper for recording combinations. Crayon. Container for ice cream.

Container for cards and boxed ice cream.

#### ACTIVITY

**IDEAS FOR FOLLOW-UP DISCUSSION** 

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# Airplanes and Hangars

Skills Counting; adding; experience with the symmetrical property of equality; matching.



The child works out the addition problem placed on the wings and taxis **ACTIVITY** each airplane into the appropriate hangar to show the answers.

The teacher may provide extra airplanes on which the child may write his own combinations with a crayon. The crayon is wiped off with a soft cloth when the child is finished.

The teacher might discuss the activity as follows: "If you add these two numbers together, how many do you get? Good for you. Howard! Can you taxi the airplane into the hangar it should go in?"

What did you do with the airplanes and hangars? How can *both* these planes be in the same hangar?

I am looking at a hangar that has three planes inside. Each one totals seven. What colors are the planes?

I am thinking of a hangar for 4 + 1. Point to it, please.

I see an airplane in hangar 7 that doesn't belong. Can you find it and put it into its hangar?



IDEAS FOR FOLLOW-UP DISCUSSION



Tagboard rectangles 8" X 18" taped onto an 8" X 10" piece of cardboard to make MATERIALS each hangar.

Marking pen to write numerals.

Small toy airplanes with combinations written across their wing spans.

Container for airplanes.

Container for hangars and boxed airplanes.

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### Hide 'n' Go Seek

Skills Counting; subtracting, withdrawing a part from the whole; making abstractions; strengthening memory; recording experience with mathematical symbols.



The child decides the number he wants to work with and sets that number on the table where he can see it. He puts as many blocks into *each* pie tin as the numeral says. When he has finished, he places some of the blocks for each pie tin *under* the tin and the others on top. When a child finishes this procedure he writes on a piece of paper (placed in front of each pie tin) how many blocks he thinks are hiding underneath. For example, if a child is working with number 6 and has four blocks on top of a particular pie tin, he thinks about how many blocks must be under this pie tin since the total number of blocks is six. The child would write two. 4 + ? = 6; 4 + 2 = 6.

The teacher might discuss the activity as follows: "Select a numeral you would enjoy working with, Gina. Okay, put that many blocks into each pie tin. (When she finishes) Now put *some* blocks from this tin underneath and leave some on top. Good! Now do this for all the blocks and try to leave a different number of blocks on top of each one. (When finished) Write down a guess for how many blocks you think are under each one!"

How many blocks did you count into each pie tin?How many blocks are there in each set—on top and underneath?How many blocks are on top of this pie tin? How many do you think are hidden underneath? Peek and see if you're right. Were you?Why do you think there are four blocks under this pie tin? How can you know if they're hidden and you can't count them? Is this magic?

#### ACTIVITY

#### **GETTING STARTED**

### IDEAS FOR FOLLOW-UP DISCUSSION

10 pie plates from small meat or fruit pies.
1" cubes.
Paper.
Crayon.
Plastic numerals 4, 5, 6, 7, 8, and 9.
Container for numerals.
Container for cubes.
Container for pie tins, boxed numerals, and boxed cubes.

## **Bead Frames**

Skills Separating groups; counting; learning to record experience with mathematical symbols; experience with the symmetrical property of equality.



The child separates the set of beads into two groups and records the two subsets. He matches the numerals to the bead frames that are appropriate.

The teacher might discuss the activity as follows: "Can you make two groups of beads on each bead frame? Write how many are in each group and find a numeral to put with each bead frame that tells how many beads there are altogether."

Tell me what you did with the bead frames.

Show me a bead frame that has five beads altogether. How many beads are in each group?

How many beads are over here? And how many are on this side? If you push the beads together, how many would there be altogether?

If I were to add one more bead to this group, how many beads would there be? What would happen if I took three beads away from here? On which side of this bead frame are there more beads?

#### ACTIVITY

**GETTING STARTED** 

#### IDEAS FOR FOLLOW-UP DISCUSSION

Tagboard, cardboard, and transparencies measuring  $9'' \times 12''$ . Hole punch.

Shoelaces or string.

Beads.

Masking tape.

Clothespin stands made by glueing half a clothespin at the base of a complete one. Numeral cards, hinged with dots underneath. Cloth or tissue. Crayon.

Container for numeral stands.

Container for bead frames and boxed numeral stands.

#### MATERIALS

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### **Bead Addition**

Skills Counting; combining groups; making abstractions; learning to record experience with mathematical symbols; experience with the symmetrical property of equality.



The child takes the beads and forms combinations on the nail boards. He counts to see how many he has and writes out the combinations formed. For example, a child who has five beads on the first nail and three on the second would record 5 + 3 = 8.

The teacher might say to the child. "Take some beads and put them on the nails. Then count to see how many you have on each nail and then how many altogether. Try writing it."

- How many beads are on the first nail of this block? How many are on the second nail? How many altogether?
- Find a block that has seven beads altogether, and tell me how many beads are on each nail.
- I am looking at a block that has five beads on the first nail and two beads on the second nail. Which one is it?
- There is one block that has less than four beads altogether. Which one is it?
- I see a mistake on this paper. Can you find it and fix it?

Blocks of wood. 3" finishing nails. Colored beads. Paper. Crayon. Container for beads. Container for blocks and container of beads.

#### ACTIVITY

**GETTING STARTED** 

#### IDEAS FOR FOLLOW-UP DISCUSSION

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### Cars

Skills Counting; combining groups; making abstractions; learning to record experience with mathematical symbols; experience with the symmetrical property of equality.



The child takes the cars one at a time and counts the dots on the wheels. He writes the combinations formed on a piece of paper. If the child has a car with one dot on one wheel and five dots on the other, he writes 1 + 5 = 6.

The teacher might say to the child, "How many dots are there on the GETTING STARTED two tires? Can you write this down?"

What were you trying to find out?

Tell me about some of the vehicles. What are they called and what are they used for? What people use them?

Tell me about the dots on the wheels of one of the vehicles. Tell me about another one.

I see a car that has eight dots on its wheels and it is not blue. Which one is it?

I see a vehicle that men use very early in the morning; it is white. Can you tell me what it is called and how many dots it has on its wheels?

Show me a vehicle with fewer than five dots on it. What is this vehicle called? What color is it?

Show me some vehicles that have the same number of dots on their wheels.

ACTIVITY

#### **IDEAS FOR** FOLLOW-UP DISCUSSION

MATERIALS 10 vehicles-drawn, cut from magazines, or taken from sets of flannelboard vehicles.

Two black felt "tires" for each vehicle.

White crayon to make sets of dots on each tire.

Glue.

Contact paper to cover the tires after the dots have been drawn.

Flannelboard numerals and mathematical signs.

Paper and a pencil.

Container for numerals and signs.

Container for cars, boxed numerals, and signs.

## **Combination Blocks**

Skills Counting; combining groups; learning to record experience with mathematical symbols; experience with the symmetrical property of equality.



The child forms sets with the pegs and records the combinations ACTIVITY formed.

The teacher might say to the child, "Put a few pegs here—you don't have to fill up every hole—and some more over here. Add them up and write down how many are on each side. Try this one and I'll watch to see how you're doing."

How many are in each group of this block? How many is that altogether?

Show me a block that has ten altogether. Without looking, how many pegs would have to be in each group? Look and see if you were right.

I'm looking at a block that has seven altogether. The first group of pegs has four-how many pegs are in the second group?

Show me two blocks that have the same total. Are the groups of these two blocks the same? If not, how can they still add up to the same number?

### GETTING STARTED

#### IDEAS FOR FOLLOW-UP DISCUSSION



Blocks of wood, 3-1/2" X 8". Drill to make holes for pegs. Spray paint in two colors. Pegs. Paper and a pencil. Container for pegs. Container for blocks and boxed pegs.

### Snowmen

Skills Counting; combining groups; learning to record experience with mathematical symbols; experience with the symmetrical property of equality.



The child arranges a snowman on each flannelboard. Then he counts ACTIVITY the number of buttons and writes the combination. When he has finished, the child erases the crayon from the recording sheet before putting the activity away.

The teacher might say to the child, "Make some snowmen with these parts. (Later) Write down the number of buttons beside each part of the snowmen. Under the line you can write how many there are altogether."

Tell me about your work. What did you do?

How many buttons does this snowman have altogether?

How many buttons are there on this first part? And how many are on this second part?

Show me a snowman that has five buttons on his tummy.

Show me a snowman who has more buttons on the middle part than he has on the bottom part of him.

If we took this ball of snow away from this snowman, what would you change the number to in order to show how many buttons he has?

**GETTING STARTED** 

### **IDEAS FOR** FOLLOW-UP DISCUSSION

Individual flannelboards,  $6'' \times 9''$ . White felt for snowmen. Compass for drawing circles. Clear contact paper to cover snowmen. Black crayon for making dots.  $9'' \times 4''$  pieces of tagboard and transparency. Masking tape to strengthen edges. Container for snowmen parts. Container for flannelboards, boxed snowmen, and transparencies.

Note: Cut the snowmen's bodies out of white felt. Draw the "buttons" with the crayon and cover with clear contact paper.

#### MATERIALS

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## The Beans

Skills Counting; learning to record experience with mathematical symbols; experience with the symmetrical property of equality; subtracting, withdrawing a part from the whole.



The child determines how many beans he wishes to remove from each bunch. After removing them, he counts to see how many are left and records the operation. When he has finished, the child replaces the beans on the vine before putting the boards away.

The teacher might discuss the activity as follows: "How many beans would you like to take away from this bunch? Okay. How many do you think will be left? Try it and see. Were you right? Good. Can you write what you did?"

How many beans did you have to start with here? And how many are there now? What happened in between? How many did you take off?

If you put them back on, how many would you have? Show me. Which group has the most beans on the vine? Which has the least? How many beans did you take away from here? And here?

Is there any place where you took all the beans off? What would happen if you did? How many would be left?

How many beans would be left if you removed zero beans from this group? How can that be?



Plastic beans whose pods can be easily removed and replaced on the stem.  $6'' \times 9''$  pieces of 1/8'' plywood on which the beans are secured with heavy staples. Paper and pencil. Container for the bean boards. MATERIALS

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#### ACTIVITY

#### **GETTING STARTED**

#### IDEAS FOR FOLLOW-UP DISCUSSION