

Lesson 1 Script Template: Modeling “Group” Problems

Preteach Key Vocabulary and Concepts for Grouping Problems using Constant Time Delay			
	Vocabulary to Teach	Student Response	Instructional Strategy
Grouping Vocabulary	Add Put together Combine Join Group	Says vocabulary word and shows putting hands together	Time delay: 0 seconds for first week; then 4 seconds delay
Concept of same or different	Same Different	Student correctly labels two objects as the same or different.	Example/nonexample training with objects using model, lead, test format.

Teaching Instructions: During the first teaching session or first few sessions of teaching Lesson 1, you will model reading the student self-instruction sheet and you will model how to perform each step. Once you have provided the model, then give the student a chance to try. Students should have their own problem solving mat and should fill in the mat after teacher model. If the student makes an error, stop the student as soon as possible and model the skill. If student continues to make errors, remind the student to wait and you will help them before guessing.

Bolded text indicates words to be read aloud to student. Nonbolded text indicates instructions for you to do, such as point to step on student self-instruction sheet or point to a specific component of the word problem.

Materials needed: 3-5 group word problems with numbers filled-in ahead of lesson using guidelines; student problem solving mat; student self-instruction sheet (referred to as “checklist” in script); highlighter; Vis-à-vis marker and wipes/wet paper towel; manipulative materials, such as counters; If needed: premade response options and numbers

Prior to teaching:

Prior to teaching each problem, be sure to identify the following items in the word problem and fill them in throughout the script (if needed):

“Noun #1” = First small group (green circle)

“Noun #2” = Second small group (red circle)

“Label” from question = BIG group (blue circle)

Script:

Note to teachers: The first two sections: (I) introduce problem type and (II) introduce graphic organizer, will be performed only on the first few days of instruction. Once the students have grasped the “group rule” and can identify the parts of the “Group GO”, these steps can be done as needed for review.

As students become more familiar with the process of problem solving, it may be unnecessary to read through each step. For example, students may grasp “Step 2: Circle the ‘what’” after a few trials, so reading beyond the instructional cue may be unnecessary. The goal is for the student to use the self-instruction sheet (checklist) to solve problems independently, so fading as much of the support as

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possible is the ultimate goal. After a couple of days modeling, move to Script 2: Least Intrusive Prompting to encourage independence!

I. Introduce Problem Type

Today we are going to learn about math word problems! The first kind of problem we are going to learn about is called a “group problem.” Can you say group? Students choral respond, “Group!” Give each student self-instruction sheet.

Group problems mean we ADD two small groups to make one BIG group. We are going to say a rule to help us remember what a group problem is. Are you ready?

Perform hand motions for group problem with the rule. Hold up left hand in an “o” shape as you say “small group,” hold up the right hand in an “o” shape as you say “small group,” then bring your hands together and make one big “O” with fingertips touching and thumbs touching and say “BIG Group” in a deeper voice. **The rule goes, ‘small group,’ ‘small group,’ ‘BIG GROUP’.** Let’s practice a few times together. Teach students the motions and rule until they can do it on their own. If students are nonverbal, they can still perform the hand motions.

II. Introduce Graphic Organizer

Here is a graphic organizer to help us solve group word problems. Show students diagram. **Just like the rule says- here is a small group** (hold left hand in “O” shape above green circle), **here is the other small group** (hold right hand in “O” shape above red circle), **and then we combine the two small groups to make one big group** (drag hands to blue circle and form a large “O” with fingertips and thumbs touching). Repeat using model, lead, test:

1. [Model] **Watch me** (perform over GO): “small group, small group, BIG group.”
2. [Lead] **Do it with me:** (perform over GO): “small group, small group, BIG group.”
3. [Test] **Your turn.** Wait for student response.

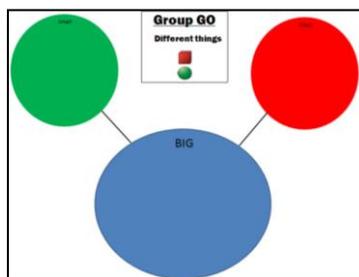


Figure 1. “Group” Diagram

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Do this section at the beginning of each daily theme: **Each day we are going to practice math problems about an activity.** Provide video clip, object, sound bite, pictures, etc. that anchor the theme for the day. [Example: **Let's watch this video and see if we can figure out today's activity.** Show YouTube clip of basketball.]

“What activity did you see? Wait for students to respond. **That's right! We watched a video about _____, so all of our problems today will be about a _____. Has anyone ever _____ (e.g., been to a basketball game)?** Wait for students to respond. Briefly discuss activity and relate to students' previous experience to build engagement and excitement.

Sample Problem for this Script:

Aaron bought snacks for his friends.

Aaron bought 2  buckets of popcorn.

Aaron bought 1  hotdog.

How many snacks did Aaron buy for his friends?

Now we are ready to learn about group word problems. Give each student self-instruction sheet. We are going to use these steps to help us. I am going to show you how to solve the problem.

1.			Read the problem
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Step 1: Place problem on student problem solving mat in designated area. **Step 1 says** (point to “read the problem” and say) “**read the problem.**”

Ask me to read the problem. Wait for a student to ask and then read the problem aloud.



Enhancing Comprehension: Practice teaching students to retell the problem in their own words to enhance students’ comprehension of story problem. **Let’s review what we KNOW from the problem, and what we need to FIND OUT.** See example specific to this problem and follow format for each problem hereafter. **We know Aaron bought...**(point to first number and noun so students fill in verbally; e.g., “2 buckets of popcorn”). **We also know he bought...**(point to second number and noun so students fill in verbally; e.g., “1 hotdog”). **We need to find out “how many snacks he bought.” That is what we are solving for.**

Let’s check off “Read the problem” on our checklist. Place a check beside “1.” on the student self-instruction sheet.

2.			Circle the “what”
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Step 2: **Step 2 says** (point to “Circle the ‘what’” and say) **circle the “what”.** The “what” are things our problem is about that will help us solve the problem. They are the two small groups in a group problem.

The “what” have pictures over them. I am going to circle the first “what”, (circle the words and picture and say) (**state noun 1**). **Who can help me circle the second “what”?** Students should find noun 2. If students make an error, model the correct response by pointing to the word and picture of noun 2.

Excellent! Circle (noun 2). The second “what” in our problem is (noun 2).

Great job finding the “whats” in our problem. Who remembers what they are again? Try to get students to recall nouns 1 and 2 before moving forward. If student makes an error, model. **Let’s check off “Circle the what” on our checklist.** Place a check beside “2.” on the student self-instruction sheet.

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3.	<p style="text-align: center;">How many _____?</p> <p style="text-align: center;">□ ○ □ = □ _____</p>	<p style="text-align: center;">Find label in question</p>
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Step 3: Point to step 3 on student self-instruction sheet. **Step 3 says “find the label in the question.”**

The label is the BIG group (model BIG group with hands) **in a group problem. It is WHAT you are solving for.**

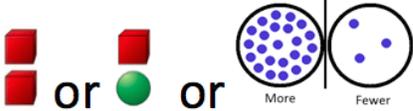
Pick up word problem to demo to students. **The label is found in the question. The question is the last line in the problem.** (Point to the last line, finger on top of question mark). **Touch the question in the word problem.** Wait for student to point to “?” **Excellent. Now listen for the word that comes after “how many.”**

- For readers who can read with fluency to comprehend, say: **Read the question and look for the word after “how many.”**
- For non-readers or students who cannot read with fluency, say: **Ask me to read the question.** Wait for student to read the question or ask you to reread the question.



This question says “(read question emphasizing label).” Did you hear the label?” That is the BIG group. Pause and wait for student to respond. **“How many (label)”** (emphasize label when reading and point to word) **so we are solving for the number of (label). Touch (label).** Model touching with non-dominant finger. **Now, copy the label into the blank on the number sentence. This is what we are solving for (e.g., “snacks”).**

Check off “find label in question” on the checklist. Place a check beside “3.” on the student self-instruction sheet.

4.			<p>same different</p> <p>more/fewer?</p>
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Step 4: Now that we know our “whats” and our label, we have to decide if the problem talks about the same thing (pause & sign), different things (pause & sign), or compares things using more/fewer (pause & sign). This is the first step in choosing our problem type.

GROUP problems talk about different things. The two whats (point to pictures) and the label (point to word) are all different. Noun 1, noun 2, and label are all different.

Your turn. Does this problem talk about the same thing, different things, or compare things using more or fewer? Wait for students to tell you “different.” If student makes error, immediately model correct answer. **Yes, (noun 1), (noun 2), and (label) are all different things, so I am going to circle the word** (circle the word on the student problem solving mat as you say) “different”. **Your turn, circle “different”.** Wait for student to circle different.

Check off step 4: “Same/Different/More or Fewer?” on your checklist. Place a check beside 4.” on the student self-instruction sheet.

5.			<p>Use my rule</p>
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Step 5: Point to step 5 on student self-instruction sheet. **Step 5 says “use my rule.” This is a very important step. We have to decide what is happening in our problem.** Pause.

(emphasize capitalized words) **This is a GROUP problem because it has two small groups** (make O’s with hands) **of DIFFERENT things** (sign “different”) **that we combine to make one BIG group** (make big O). **In this problem we have two small groups of different things- (noun 1) and (noun 2), and we combine them to make one BIG group- (label from question).** **Small group, small group, BIG group.** Make small “o” with left hand and say, **(noun 1)**, make small “o” with right hand and say, **(noun 2)**, as you bring fingers together to make big “O” say, **and we combine them to make (label).**

[\(Model, lead test for step 5 continues on next page\)](#)

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Demonstrate rule using model, lead, test. The first time state rule, and the second time insert the two whats and the label.

1. Watch me *use my rule* again, “small group, small group, BIG group...[noun 1; e.g., popcorn], [noun 2; hot dog], [label; snacks].”
 2. Do the rule with me, “small group, small group, BIG group...popcorn, hot dog, snacks.”
 3. Call on each student and have them practice. **Your turn. Use the rule.**
- ❖ For error correction, provide the model again and retest. Keep practicing until student can do on his/her own.
 - ❖ For nonverbal/students with limited verbal skills, have them mouth words and make hand motions, then point to two whats and label.

Check off “use my rule” on the checklist. Place a check beside “5.” on the student self-instruction sheet.

6.		Choose GO
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Step 6: Point to step 6 on student self-instruction sheet. **Step 6 says “Choose Graphic Organizer.” (GO stands for graphic organizer). Our rule will help us “Choose Graphic Organizer” that matches our problem type.** Point to the 3 pictures on the student self-instruction sheet. (During first few days of instruction, explain “GO” as needed: Point to letters “GO” on student self-instruction sheet.)



Model the think aloud process describing the decisions made in steps 4 and 5: **This problem is about all different things- the two whats and label are ALL different** (point to parts of word problem), **so this is a GROUP problem** (do hand motions with rule as you say this), **and I will circle the GROUP graphic organizer.** Circle picture, wait for students to circle. **Now I am going to find my GROUP graphic organizer and put it on my problem solving mat.** Pull Group GO and put on problem solving mat. Wait for students to pull out their mat.

Who remembers the group rule? Wait for student(s) to say rule aloud. **Excellent! So what type of problem are we solving?** Wait for student to say “group”, provide rule, or do hand motion. **Yes, a group problem!**

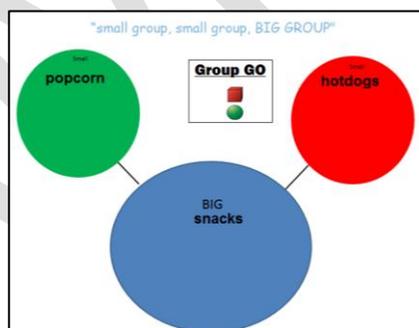
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Check off Step 6: “choose GO” on the checklist. Place a check beside “6.” on the student self-instruction sheet.

LABEL Graphic Organizer



Before moving forward, model labeling the two small groups and big group. **Let’s label our graphic organizer with the small groups and BIG group before we move on to solving. What are the two small groups? Remember these are the what’s we circled in the word problem.** Wait for students to respond. **Yes, the two small groups are (noun 1) and (noun 2), so we need to write them in the green and red circles.** Model writing the names of the two small groups in the circles. There are many options for students to respond: (1) students can copy the words or first letter/letters of items in GO from the actual word problem, (2) students can copy from your model, (3) students can select from pre-printed response options and place on template, or (4) students can tell you what to write in each circle. **Now, who remembers the BIG group? This is the label in our question.** Wait for students to respond. **Yes, the BIG group is (label). We are combining (noun #1) and (noun #2) into one BIG group of (label).** **You are ready to solve!**



Example:

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7.	3	Circle the numbers
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Step 7: Point to step 7 on self-instruction sheet. **Step 7 says, “Circle the numbers.”**

Let’s circle the numbers in our word problem. Point to the number beside noun 1 and ask, **How many (noun 1) are in the first small group?** Select a student to read number. **Yes, (restate number and noun 1; e.g., “2 buckets of popcorn”), so circle (state #) in the word problem.** Point to the number beside noun 2 and ask, **How many (noun 2) are in our second small group?** Select a student to read number and provide specific feedback (e.g., “Yes, Aaron bought 1 hotdog”). **What do you need to do?** Have students guide you to circle number. If student makes an error, model circling number and have student retry. **Now we can check off “Step 7: Circle the numbers” because we found the number for each small group.** Place a check beside “7.” on the student self-instruction sheet.

8.		Fill-in number sentence
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Step 8: Point to step 8 on student self-instruction sheet. **Step 8 says “fill-in number sentence”. We will use the numbers we just circled in the word problem to fill in our number sentence.**

Point to the first box in the number sentence. **The first box tells us how much is in the first small group.** Point to number in word problem. **We just circled # (e.g., “2”). Write # in the first box...[restate # and noun 1; e.g., 2 buckets of popcorn]. How many (noun 1)?** Wait for student to respond with number. If student responds incorrectly point to number. Provide specific feedback (e.g., “That’s right, 2 buckets of popcorn”). Point to the second box in the number sentence. **The second box tells us how much is in the second small group.** Point to number in word problem. **How many (noun 2) did we circle?** Wait for student to respond with number. If student does not automatically write the second number in the number sentence, point to the box and say, **Write # in the second box.....[restate # and noun 2; 1 hotdog].**

Check off “fill-in number sentence” on the checklist. Place a check beside “8.” on the student self-instruction sheet.

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9.			+ or -
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Step 9: Point to step 9 on student self-instruction sheet. **Step 9 says add or subtract. Now we need to put the right symbol into our number sentence.** Use Group hand motion as you say...**Since we are combining two small groups to make one big group, we ADD.**

Point to the circle in the number sentence and ask, **Do we add or subtract to solve GROUP problems?** Wait for students to say “add” or provide rule below. **That’s right we ADD. Watch me write a plus in the circle on my number sentence** (write “+” on student problem solving mat in number sentence). **Your turn to write plus.** Wait for student to write + in circle.

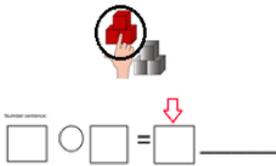
Check off “+ or –” on the checklist. Place a check beside “9.” on the student self-instruction sheet.

10.			Make Sets
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Step 10: Point to step 10 on student self-instruction sheet. **Now that our number sentence is filled in, Step 10 says “make sets.” We need to make sets to show how many are in each small group.**

Point to first box in the number sentence. **How many go in the first small group?** Wait for student to read numeral. **Excellent.** Point to green circle. **We need to make a set of (#) in the first small group to show how many (noun 1). Watch me.** Place manipulative materials in the green circle and count aloud. **Your turn. Make a set of (#) in your first small group to show how many (noun 2).**

Now, we need to make the next small group. Point to the small red circle. **How many goes in the next small group?** Pause and wait for the student to state the number. If student does not respond or is incorrect, point to second box in the number sentence and wait for student to read numeral. **Yes! We need to make a set of (#) in the next small group to show how many (noun 2; e.g., hotdogs). Watch me make a set of (#) in the next small group to show how many (noun 2). Your turn, make a set of (#) in your second small group.** Point to the second circle. Wait for student to help make a set. **Nice work!** **Check off “make sets” on the checklist.** Place a check beside “10.” on the student self-instruction sheet.

11.		<h2>Solve & write answer</h2>
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Step 11: Point to step 11 on student self-instruction sheet. **Step 11 says solve and write answer.** Point to number sentence and read, **(#) plus (#) equals how many?** (point to last empty box on number sentence). **[Repeat question; e.g., How many snacks did Aaron buy?]**

Say the group rule with me one more time... "small group, small group, BIG group." **It's time to combine our two small groups into one BIG group and count to find (reread question and text point as reading [e.g., How many snacks Aaron buy for his friends?]).**

[Model] **Watch me first.** Model combining small groups together into large blue circle by putting manipulative materials in arrays and count aloud using one-to-one correspondence. State number with label (e.g., **1, 2, 3...3 snacks**) and write answer.

Move manipulative materials back to their original sets. **Your turn. Combine your two small groups into one big group and count. Then, write your answer in the number sentence.** Wait for students to combine and count with one-to-one correspondence. To correct an error with counting, stop student, place the manipulative materials in a straight line, and have student start counting from "1" again.

 **ALWAYS REPEAT THE QUESTION AFTER THE STUDENT WRITES THE ANSWER AND HAVE STUDENT READ NUMBER AND LABEL.** [E.g., Instructor: Text point to question in word problem and read, **How many snacks did Aaron buy for his friends?** Wait for student to respond: **3 snacks**].

- If the student does not state the label with the numeral, provide a rule (e.g., **"We have to say what they bought."**). Point to the label in the question. **They bought (# and label). Can you say (# and label).** Wait for student to respond using numeral with label.
- If the student stated answer with label, say **Very good!**

We are all done! Check off "solve and write answer" on the checklist. Place a check beside "11." on the student self-instruction sheet.

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**Note to teachers: Repeat these steps with the remaining 1-2 problems related to daily theme.
Change themes daily.**



Stop here. Perform this lesson several times over a few sessions with different themes each day to ensure student understands the process of solving group problems. Once students begin to demonstrate they have an understanding, move to the Lesson 2 script with least intrusive prompting to fade teacher prompting and to increase student's level of independence.
