Unit 6: Discrimination of ALL THREE PROBLEM TYPES- Group, Compare, & Change

Teaching Instructions: During Lesson 3, you will present students with problems from all three problem types. It is important to vary both problem type included daily, as well as the order of introduction from day to day. For example day 1 may include group, change-subtraction, and compare-more. Day 2 may include compare-fewer, change-addition, and group. Provide students with an opportunity to respond using the steps from the student self-instruction sheet, and then provide least intrusive prompting as needed. 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 provide system of least prompts. 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: Aim for at least 2-3 problems per day with numbers filled-in ahead of lesson using rules (vary order and selection of problem type daily); student problem solving mat; student self-instruction sheet (referred to as "checklist" in script); highlighter; Vis-à-vis marker/Expo 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):

- *Group*: Noun #1, Noun #2, and Label are all different in group
- *Change*: Noun #1, Noun #2, and Label are all the same in change problem type; The action verb/key word will be in the third sentence of the word problem (where the noun appears for the second time).
- *Compare*: label should have phrase "how many more" or "how many fewer"

*Remember, the goal of this lesson is for the student to be as independent as possible. Ensure you are providing enough wait time before prompting student! Don't forget to provide positive reinforcement, especially as students succeed at new steps!

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Review (aim for 3 minutes or less)

Begin this lesson with a review of problem types and operations, using steps 4, 5, 6, and 9 on student checklist.

- **Select targeted problem type. Vary order reviewing each day (i.e., so group does not always come first).**

Group Example:

- **Start with Step 4:** Point to step 4 and then each picture icon as you say, **Do group problems have same things, different things, or compare things using more/fewer?** Wait for student to say "different."
- **Transition to Step 5: That's right! Group problems have different things.** Point to step 5. **Can you do the group rule for me?** Wait for student to respond.
- **Transition to Step 6:** Point to step 6 and 3 picture options. **Can you point to the *group* graphic organizer?**
- **Transition to operation in Step 9:** Point to + or -. **In group problems do you add or subtract or both?** Wait for student to respond. **That's right, in group problems you combine two small groups so you add.**

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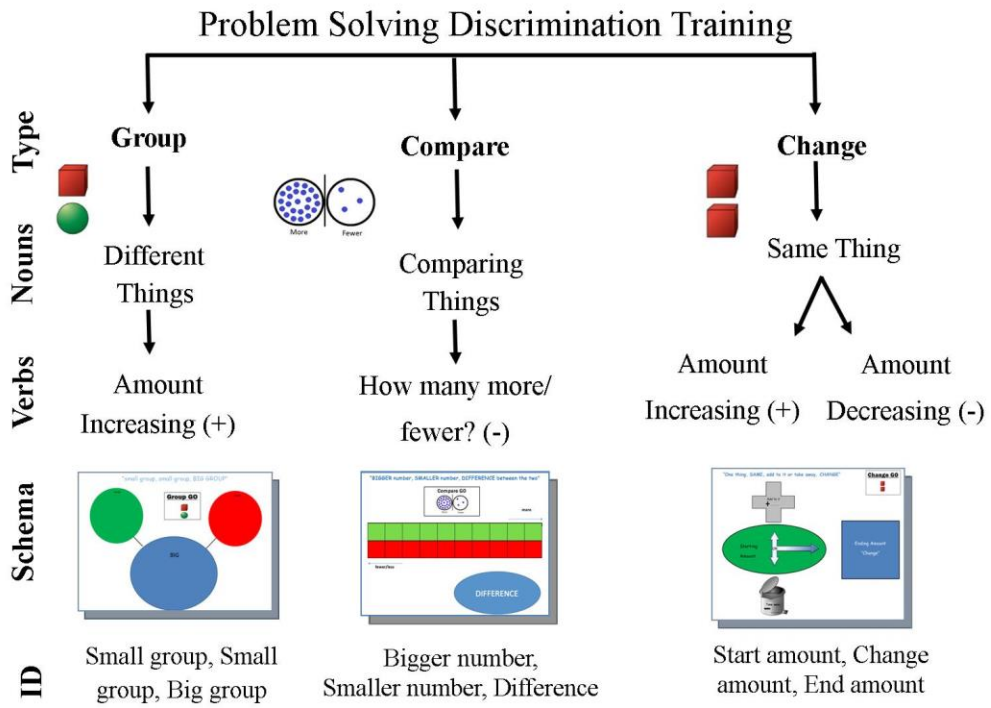
- **Repeat for all three problem types using a fast pace. All errors should be immediately corrected with correct answer.**



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Let's get started solving our word problems! We will solve 3 problems today. You have to pay close attention to the problem to decide what kind of problem it is.

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Do this section at the beginning of each daily theme: **Today's theme is _____.** Provide video clip, object, sound bite, picture, discussion, etc. that anchors the theme for the day. **"What activity are we going to talk about today?"** Wait for student(s) to respond by stating activity. Link to prior experiences or learning. For example, **Has anyone ever _____ (e.g., been to a basketball game)?** Wait for students to respond. Briefly discuss activity to build engagement and excitement.

Instructional Cue: "Solve the word problem. Use your checklist, mat, and graphic organizer to help you."

Note: You can use pacing prompts which are NOT coded as prompts, such as "how do we get our problem started" (step 1 only), "keep going," and "what's next"? Do not read individual steps to student. Even non-readers should be proficient in using pictures on TA to guide steps. The goal for this unit is to place the problem in front of the student and have the student solve as independently as possible, with perhaps the support of having the problem and question read aloud upon request at most. Fade praise/feedback for independent responses as student becomes more proficient, so eventually praise/feedback will only be offered for solving entire problem.

Step 1: Read the Problem

Independent Response	Least Intrusive Prompts		
↓	Verbal →	Specific Verbal →	Model/Incorrect
Simply read the problem unless the child needs reinforcement for asking	**Step 1 says read the problem.**	**Ask me to read the problem.** Wait for students to ask.	**Say "read the problem please."** Wait for student to ask, then read.

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appropriately.			

Step 2: Circle the "what"			
Independent Response	**Least Intrusive Prompts**		
↓	**Verbal** →	**Specific Verbal** →	**Model/Incorrect**
Great job! The two "whats" are (noun #1) and (noun #2).	**Step 2 says circle the whats.**	**Find the "whats" in the problem and circle them. Remember the "whats" have pictures over them.**	Point to 1st picture and say, **Here is the 1st 'what-' (state noun #1). Circle it.** Wait for student to circle, then repeat for 2nd 'what.'

Step 3: Find label in question (*Student may request question read aloud again, but teacher should not automatically do so.)			
Independent Response	**Least Intrusive Prompts**		
↓	**Verbal** →	**Specific Verbal** →	**Model/Incorrect**
Excellent job! The questions asks, (read question), and you found the label- (state label).	**Step 3 says find label in question.**	[Point to task analysis] **"how many what?"** Then read question with finger tracking (e.g., How many …?). **Can you find the label or what we are solving for?** Wait for student to find label in question, then prompt student to put it in blank on number sentence if s/he does not do it automatically.	**The question says- (read question and highlight). Remember, the label is what we are solving for.** Point to the respective words as you read, **This question says, "how many (read label)," so the label is (underline label). Write the label in the blank.**

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			Wait for student to write.

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DISCRIMINATION OF PROBLEM TYPE: CRITICAL STEPS: 4, 5, 6			
Step 4: Same, different, more/fewer?			
Independent Response	**Least Intrusive Prompts**		
↓	**Verbal**	→ **Specific Verbal**	→ **Model/Incorrect**
Yes! (Noun #1) and (noun #2) are (same/different).	**Step 4 says same, different, more/fewer.**	**Does the label have a compare word more/fewer?** Student should respond yes or no. If no…**Then, are (noun #1), (noun #2), and (label) the same thing or different things? Circle it on the problem solving mat.** Wait for student to circle the word.	Point to label or words after "how many" in question if student did not write entire label. **There [is/is not] a compare word here-** if there is point to it and say "more" or "fewer." If not, point to whats and label and say, **(noun #1), (noun #2), and (label) are (different/same).** Point to problem solving mat and say, **Circle here.** Wait for student to circle the word.

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Step 5: Use my rule			
Independent Response	**Least Intrusive Prompts** ***Note to teacher: Try not to gesture and give step away!**		
↓	**Verbal** →	**Specific Verbal** →	**Model/Incorrect**
***Group*: "Yes! Small group, small group, BIG group. (Repeat using words from problem)."** ***Compare*: "Bigger number, smaller number, difference between the two."** ***Change*: "You got it! 1 thing, same, (noun), add to it or take away, change."**	**Step 5 says use my rule.**	***Group:* The problem talked about two small groups of different things, so what kind of problem is this?** Pause. **Can you tell me the *group* rule?** Wait for student to respond. Student should then use words from problem. ***Compare:* The label had a compare phrase, "how many more/fewer" so what kind of problem is this?** Pause. **Can you tell me the *compare* rule?** Wait for student to respond. ***Change:* This problem was about the same thing (noun), so what kind of problem is this?** Pause. **Can you tell me the *change* rule?** Wait for student to respond.	Model the hand motion with chant. Wait for student to repeat. Provide physical guidance if needed and break into chunks.

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Step 6: Choose GO & Label GO	*Note to teacher: Chunking Identifying GO and labeling together*		
Independent Response	**Least Intrusive Prompts**		
↓	**Verbal** →	**Specific Verbal** →	**Model/Incorrect**
Good job choosing the (*group*/*compare*/*change*) GO!	**Step 6 says choose graphic organizer.** **Go ahead and label.**	Direct the student's attention to the three graphic organizers. **We just decided this was what kind of problem?** Wait for students to respond. You may provide a gesture here from rule as an additional prompt to jog memory.	***Group:* Remember, this is a group problem – small group, small group, BIG group, so choose the *group* graphic organizer.** Point to picture. ***Compare:* The label had a compare phrase, "how many more/how many fewer…" so choose the *compare* graphic organizer.** Point to picture. ***Change:* Remember, this problem talked about one thing, the same thing (noun) so choose the *change* graphic organizer.** Point to picture. If needed: **Can you put that on your mat?**

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Step 7: Circle the numbers			
Independent Response	**Least Intrusive Prompts**		
↓	**Verbal** →	**Specific Verbal** →	**Model/Incorrect**
Nice work! For feedback, restate summary of sentences with numbers in them (e.g., "There were 3 sheep in the pen and 1 sheep got out.")	**Step 7 says circle the numbers.**	***Group:* How many (noun) are in the first small group?** Wait for student to respond. **How many (noun #2) are in the second small group?** Wait for student to respond. ***Compare:* Circle the bigger number.** Wait for student to respond. **Circle the smaller number.** Wait for student to respond. ***Change:* How many (noun) were there to start with?** Wait for student to respond. **How many (noun) did it change by?** Wait for	Point to 1st number and say, **circle (#).** Point to 2nd number and say, **circle (#).**

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Step 8: Fill-in number sentence			
		student to respond.	
Independent Response	**Least Intrusive Prompts**		
↓	**Verbal**	**→ Specific Verbal**	**→ Model/Incorrect**
Nice work filling in the number sentence!	**Step 8 says fill-in number sentence.**	**Fill-in the number sentence using the numbers you circled in the word problem.** Wait for student to fill-in number sentence.	Model finger tracking. Point to 1st number **(#)** in word problem and then point to the first box, **write (#) here.** Point to the 2nd number in word problem **(#)**, and then point to the second box, **write (#) here**.

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Step 9: + or -			
Independent Response	**Least Intrusive Prompts**		
↓	**Verbal** →	**Specific Verbal** →	**Model/Incorrect**
Yes, (ADD/SUBTRACT)! You are right!	**Step 9 says add or subtract.**	***Group:* Do we add or subtract to solve *group* problems?** Wait for student to say "add". Student should write "+" in number sentence. If not, prompt: **write (plus) in the number sentence.** ***Compare:* Do we add or subtract to solve *compare* problems?** Wait for student to say "subtract". Student should write "-" in number sentence. If not, prompt: **write (minus) in the number sentence.** ***Change:* Remember, we have to look for the change action and change amount. Look in this sentence** (point to 3rd sentence) **and find the change action.** Reread sentence and wait for student to find the action verb or key word. **Did the amount get bigger or get smaller?** Wait for S to respond. **Do you need to add or subtract to solve the problem?** Wait for student to say "add/subtract." Student should write "+/-" in number sentence. If not, prompt: **write (plus/minus) in the number sentence.**	***Group*: In group problems we combine two small groups to make one BIG group, so we ADD. Write a plus in the circle.** ***Compare:* In compare problems, we find the difference between the two sets, so we SUBTRACT. Write a minus in the circle.** ***Change:* What happened in our word problem? Listen to this sentence** (reread 3rd sentence with number). **The change action is (action verb/key word).** Act out or demonstrate clue word. **Did I add (noun) or take away (noun)?** Wait for student to say "add/subtract." Student should write "+/-" in number sentence. If not, prompt: **write (plus/minus) in the number sentence.**

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Step 10: Make Sets

Independent Response	Least Intrusive Prompts		
↓	Verbal →	Specific Verbal →	Model/Incorrect
Awesome job! ***Group*: Awesome job! There are (#noun 1) in our first small group, and (# noun2) in our second small group!** ***Compare:* Yes!** Point to respective rows as you say, **The bigger number is (#), and the smaller number is (#).**	**Step 10 says make sets.**	***Group*: Make sets to show how many are in each small group.** ***Compare:* What is the bigger number?** Wait for student to identify bigger number. **Make a set of # in the green row.** Wait for student to respond. **What is the smaller number?** Wait for student to identify smaller number. **Make a set of # in the red row.** Wait for student to respond.	Note to teacher: Intercept counting errors and start from beginning, or have student recount if they are able to self-correct. ***Group:* We need to make a set of (#) in the first small group to show how many (noun #1).** Point to green circle. **Now, make a set of (#) in the other small group to show how many (noun #2).** Point to the red circle. ***Compare:*** Point to 1st number in number sentence and say: **This is the bigger number. Make a set of (#) across the green row.** Wait for student to make set. Point to the smaller number. **Now, this is the smaller number. Make a set of (#) across the red row.** Wait for student to perform action. (change on next page)

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***Change*: There were # (noun) to start with and you (added/took away) #.**	**Step 10 says make sets.**	***Change:* How many (noun) were there to start with? Make a set here** (point to "start" oval). Wait for student to respond. **Do you need to add or subtract and how many?** Wait for student to respond. If no response/incorrect, point to symbol in number sentence. **How many (noun) did it change by?** Wait for student to respond. **(Add/take away) (#).** Wait for student to perform action. If no response/incorrect response, model adding/taking away and have the student repeat.	***Change:*** Point to 1st number in number sentence and then to "start" oval as you say: **We need to make a set of (#) here to show number of (noun) there were to start with.** Wait for student to make set. **Now, we need to (add/take away) (#) to show how many (noun) it changed by. Can you (add # / take away #)?** Wait for student to perform action. If no response/incorrect response, model adding/taking away and have the student repeat.

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Step 11: Solve and Write Answer			
Independent Response	**Least Intrusive Prompts**		
↓	**Verbal** →	**Specific Verbal**	→ **Model/Incorrect**
Nice work! State numeral and label (e.g., 2 sheep).	**Step 11 says solve and write answer.** (change on next page)	***Group:* Combine your small groups into the big group and count to find your answer. Write your answer in the number sentence.** Wait for student to move sets into large blue circle and count. ***Compare:* Move the difference between the two sets to the blue circle and count; then write your answer in the number sentence.** Wait for student to move set to "difference" oval and count. Student should fill-in solution in number sentence. Prompt student to say label, including compare word, if he/she does not.	***Group:* Watch me first.** Combine sets into large blue circle and count. Be sure to say answer with label. Move sets back to original sets and say, **Your turn.** Wait for student to repeat. ***Compare:* Watch me first.** Move difference between two sets to "difference" oval and count. Be sure to say answer with label using compare word. Move sets back to arrays and say **Your turn.** Wait for student to repeat. If student does not say numeral and label with compare word, prompt student.

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		***Change*:** Motion moving hand from starting oval to end box and say, **CHANGE.** If needed, say: **Move your changed set to the end and count; then write your answer in the number sentence.** Wait for student to move set to "end" oval and count. Student should fill-in solution in number sentence. Prompt student to say label if he/she does not.	***Change:* Watch me first.** Move changed set to "end" oval, say **"change,"** and count. Be sure to say answer with label. Move set back to "start" and say **Your turn.** Wait for student to repeat. If student does not say numeral and label, prompt student. ***All*: Write your answer.**

****Teacher Note: Reread question from word problem. If needed prompt student to state answer using both numeral and label.**

Independent Response	**Least Intrusive Prompts**		
↓	**Verbal** →	**Verbal & Gesture** →	**Model**
Nice work! Read number sentence with answer and label (e.g., 3 sheep take away 1 sheep equals 2 sheep).	**What is the answer to our problem?**	Point to the answer (# and label) on student's problem solving map and say **read me the answer.** Prompt student to say label if he/she does	**The answer is (# and label). What was the answer to our problem?** Student should repeat with numeral and label.

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		not.	

Step 12: Sort problem on Discrimination T-Chart (Encouraging Think Aloud Process)

Independent Response	**Least Intrusive Prompts**		
↓	**Verbal** →	**Verbal & Gesture** →	**Model**
Nice work! Provide reasoning: **We said this problem was a (group/compare/change) because it had…** *Group reasoning:* **Two small groups of different things that we combined to make one big group.** *Compare reasoning:* **A compare phrase "how many more/fewer?"** *Change reasoning:* **One thing, same**	**What kind of problem was this: group, compare, or change?**	Point to graphic organizer selected. **We said this problem was a ….**(let student fill-in problem type; group/compare/change). If student does not, prompt to state problem type.	**We said this problem was a (group/compare/change) because it had…** *Group reasoning:* **Two small groups of different things that we combined to make one big group.** *Compare reasoning:* **A compare phrase "how many more/fewer?"** *Change reasoning:* **One thing, same (insert noun), that we (added/took away from) to change**

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(insert noun), that we (added/took away from) to change it.			**it.**

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