

# LOOK WHO'S TALKING TOO! USING STRUCTURED INTERACTIONS TO DEEPEN STUDENT COLLABORATION AND DISCOURSE


**NCTM Conference San Diego**

**Convention Center Room 31AB**

**Saturday, April 6, 2019 8:00 am**



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- Melody Morris
  - Olympian High School, SUHSD
  - Integrated Math II and Discrete Math
  - [melody.morris@sweetwaterschools.org](mailto:melody.morris@sweetwaterschools.org)
  - @melodymorris78 
- Esmeralda Orozco, M.Ed.
  - Bonita Vista High School, SUHSD
  - Integrated Math I and III
  - SDSU Noyce Fellow @SDSUNoyce
  - [esmeralda.orozco@sweetwaterschools.org](mailto:esmeralda.orozco@sweetwaterschools.org)
  - @1coolmathlete 



You  
have  
written  
the best  
lesson  
ever!



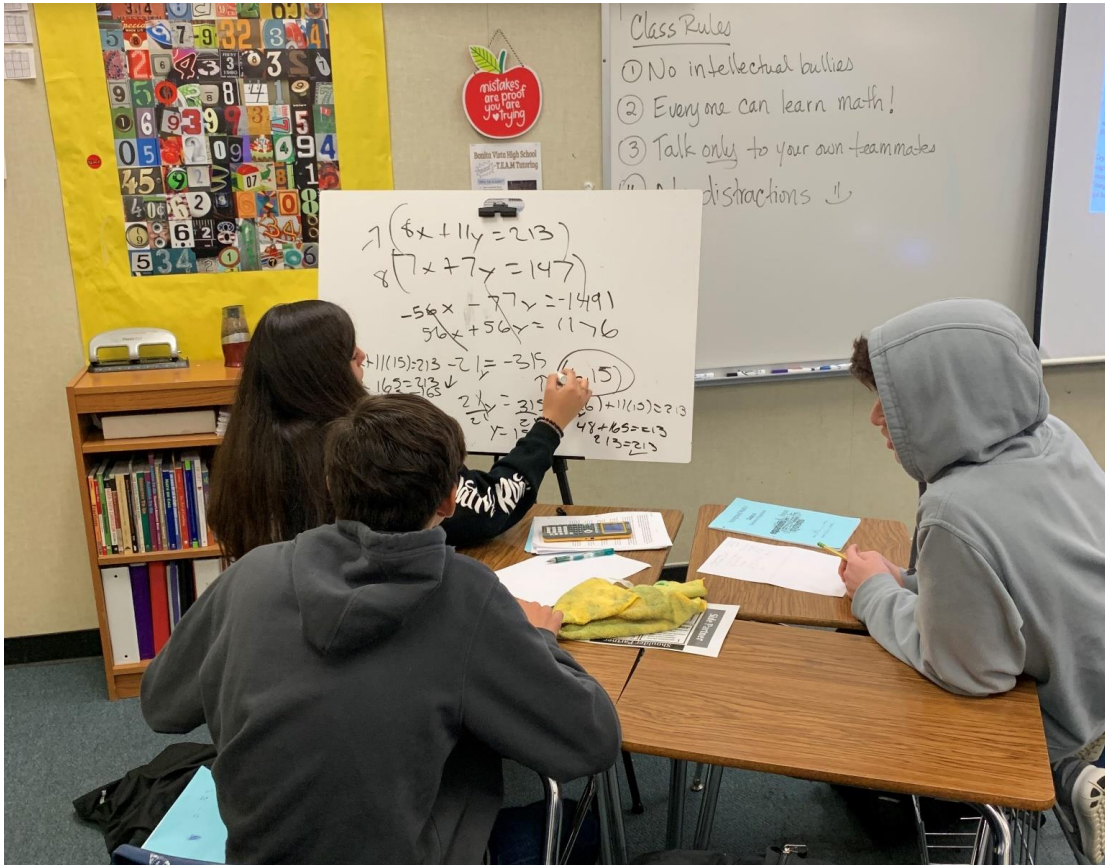
You selected  
the best task  
for the lesson.



You spent extra time  
developing the task  
into an engaging  
exploration for your  
diverse students.



You have invested  
time building  
relationships with  
your students and  
their families.



How do you make sure  
**EVERY** student has a  
voice?

So that **EVERY**  
student will:

- share their thinking
- explain their reasoning
- listen to others' thinking
- be given immediate feedback
- give feedback to peers

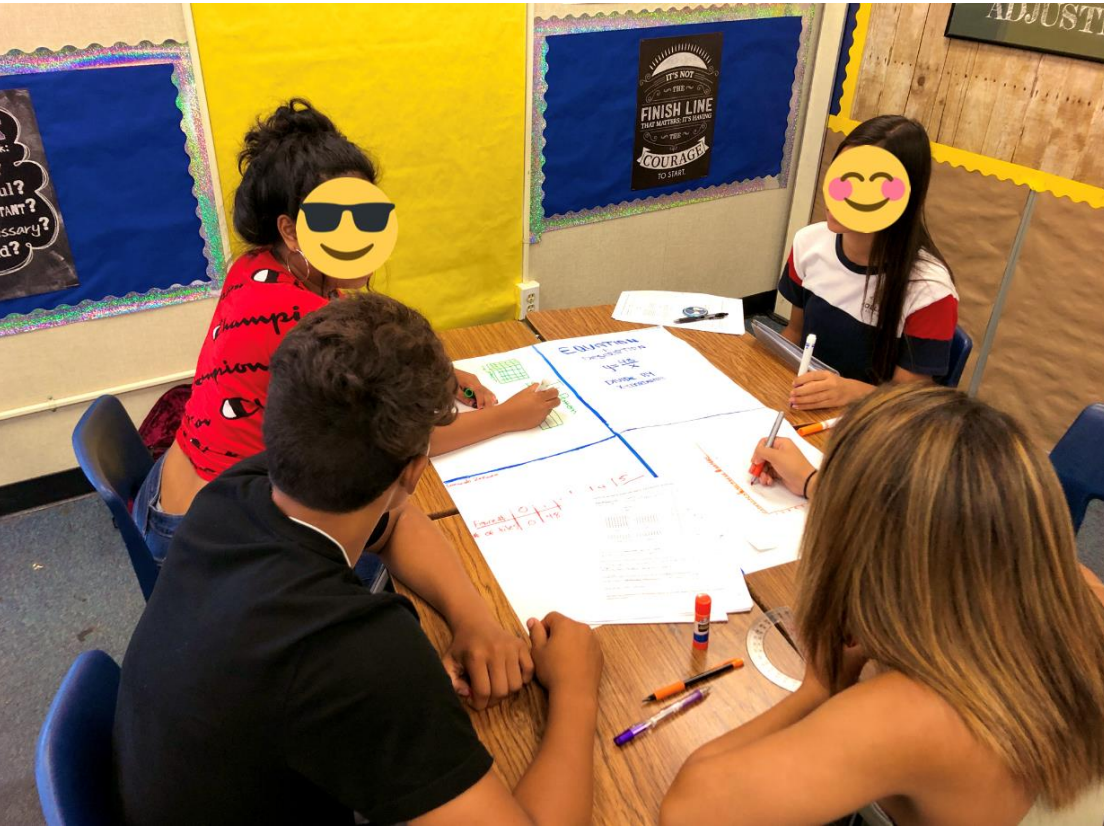
# Talking in Math Class

- To introduce concepts
  - Explore ideas, strategies, procedures, and facts.
- To clarify thinking
  - Use vocabulary in context, explain reasoning.
- To deepen understanding
  - Defend ideas and justify reasoning.
- To extend learning
  - Analyze reasoning of others and agree or disagree with their reasoning.





# Five Major Reasons That Talk Is Critical to Teaching and Learning



- Talk can reveal understanding and misunderstanding.
- Talk supports robust learning by boosting memory.
- Talk supports deeper reasoning.
- Talk supports language development.
- Talk supports development of social skills.

[Cooperative Learning in the Secondary Mathematics Classroom](#)

Use  
structured  
interactions  
for EVERY  
part of a  
lesson.

Sources:

- [Kagan Publishing & PD](#)
- [AVID](#)
- [Teacherarium](#)
- [ASCD Collaborative Learning Routines](#)

Group Worthy Tasks	Guided Practice	Independent Practice
<b>Reciprocal Teaching</b>	<b>Coach &amp; Mathlete</b>	<b>Appointment Book Activity</b>
<b>Team Accountability Quiz</b>	<b>Whiteboard Drill</b>	Student-Led AVID Tutorial Session
Participation Quiz	Numbered Heads Together	Scavenger Hunt
Collaborative Poster		



# Reciprocal Teaching

Group-Worthy Tasks  
Focused on Conceptual  
Understanding



# Reciprocal Teaching

- A collaborative group work structure originally developed for reading and comprehending informational texts.
- Original Segments: Predict, Question, Clarify, and Summarize



# Reciprocal Teaching

- Every person on the team receives a reciprocal teaching role card.
- When it is your turn, read the questions/tasks on the card one at a time.
- Discuss each question and reach consensus with your team.
- After reaching consensus, everyone writes down the agreed upon responses.
- The summary at the end could be completed collaboratively or individually.

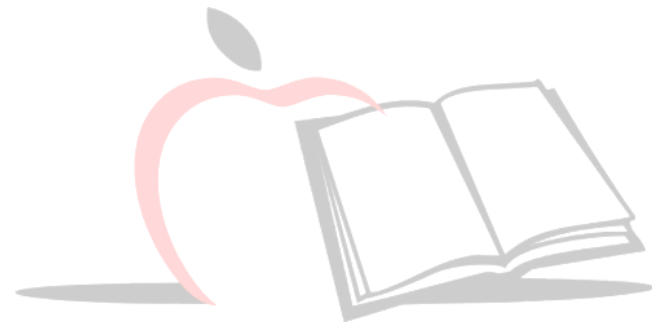
# Reciprocal Teaching

## Management Tips

- Individual accountability: collect and grade one paper per team
- Rotate roles after each problem
- Change columns/titles of roles, depending on the problem and your goals for the lesson

## Ways to Use the Structure

- Word problem analysis
- Break multi-step problems into manageable parts
- Investigate a new skill or concept



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# Coach & Mathlete Whiteboard Drill

Guided Practice and  
Checking for Understanding

# Coach and Mathlete (with Whiteboards)

- Pair students and assign Student A and Student B (darker color shirt, birthday, Sitting on left, etc.)
- **Student A is the Coach for first problem**, and explains to Student B how to work out the problem step-by-step. (Cannot touch the marker/whiteboard)
- **Student B is the Mathlete** and does what the Coach says on the whiteboard.
- When done, they show the whiteboard to the teacher to check their answer/work.
- **Students switch roles for next problem.**

# Coach and Mathlete

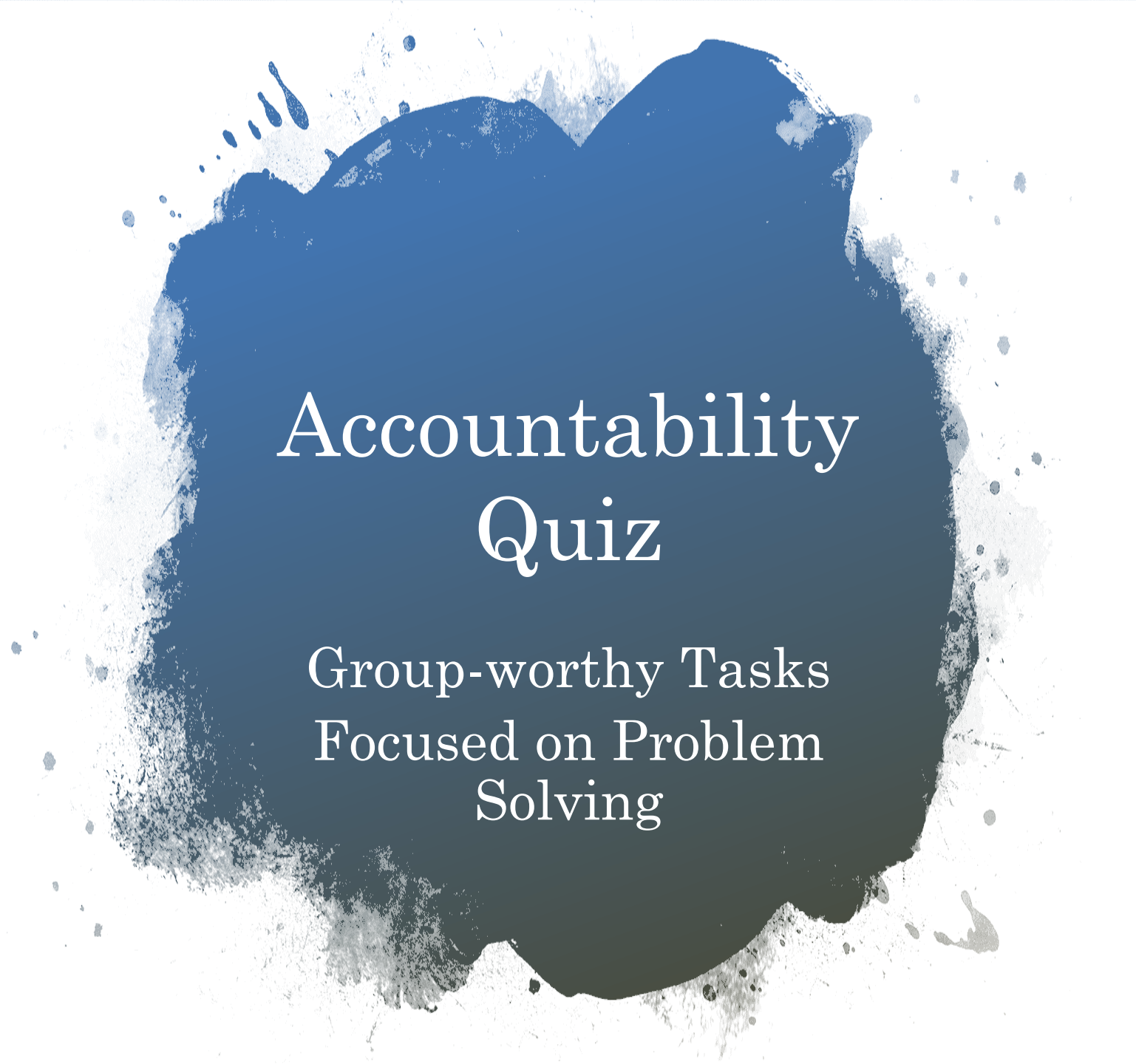
## **Management Tips**

- Keep track of student progress on seating chart.
- When first pair is finished, allow them to take over so you can help students who are struggling, or let them do the tutoring.

## **Ways to Use the Structure**

- Guided practice
- Checking for understanding
- Give immediate feedback
- Build fluency





# Accountability Quiz

Group-worthy Tasks  
Focused on Problem  
Solving

# Accountability Quiz

## Management Tips

- Prepare 3-4 varied level questions
- Emphasize that it is the TEAM's responsibility to pass the quiz
- If a team member cannot fully answer a question the first time, circle back to their group for a second opportunity
- Assign a student with strong leadership skills as the Accountability Manager

## Ways to Use the Structure

- Focus on the HOWs and WHYs of mathematics
- Apply skills in a new context
- Team Assessment

[Teacherarium](#)



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# Appointment Book

Independent Practice to  
Build Fluency

# Appointment Book Activity

- Make 6 appointments
  - 6 different partners who are NOT in your team
  - Stay on your feet until all 6 appointments are filled
  - When appointment book is full, return to your seat
  - Be ready for instructions



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## Appointment Book Activity

- Meet with the appointment announced
  - Work with your appointment partner on the problem assigned
  - Listen to your partner's reasoning
  - Come to an agreement on the answer
  - Wait for the next appointment announcement



# Appointment Book Activity

- Meet with the appointment announced
  - **Check your answers with your new partner!**
  - Work with your appointment partner on the problem given
  - Listen to your partner's reasoning
  - Come to an agreement on the answer
  - Wait for the next appointment announcement



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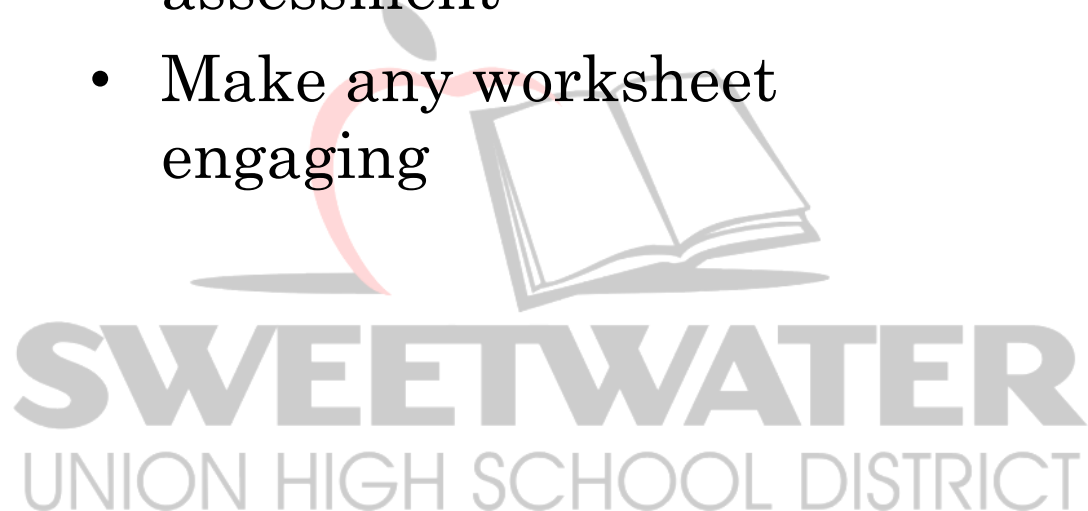
# Appointment Book Activity

## Management Tips

- Make sure students sit once they have made their appointments.
- If there is an odd number of students in the class, join in the fun, or have the extra student join a pair.
- Students **MUST** check all answers with each new partner.
- No time for copies? Use a document camera to post problems on board.

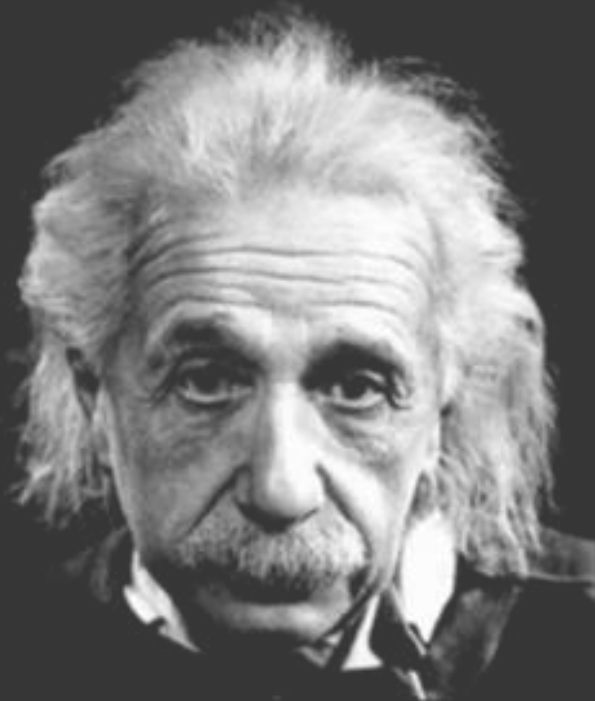
## Ways to Use the Structure

- Guided practice
- Develop fluency
- Review for an assessment
- Make any worksheet engaging



# Tips for Classroom Management

- Some structures work better than others for certain tasks/practice.
- Give clear instructions and be patient the first couple of times.
- Monitor while students are engaged in the activity.
- Use a timer to keep momentum through the activity, and use a signal to get students' attention.
- Activities work best when followed with closure.
- Stick to one or two strategies until they become routine before adding another.



**“If you can't explain  
it simply, you don't  
understand it well  
enough.”**

**Albert Einstein**  
smarty-pants physicist

# Now you're talking!



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Pair up!

- Partner A: Has their bday 1<sup>st</sup>
- Partner B: Has their bday 2<sup>nd</sup>
- Partner A asks the question
- **“Which structure will you try first? What are some classroom management ideas you have for this structure?”**

After listening to Partner B, Partner A responds with **“I understood you said \_\_\_\_\_. I will try\_\_\_\_\_ and my ideas about it are \_\_\_\_\_.”**



# PRESENTATION & HANDOUTS

[bit.ly/talkmath\\_nctm2019](http://bit.ly/talkmath_nctm2019)





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$(\text{THANK YOU})^n$

$n \in \mathbb{N}, n > 1$

$\text{YOU} \in \{\text{Awesome People Set}\}$

ROMANCEMATH.BLOGSPOT.COM