

Using Team Roles

This resource is adapted from the *Algebra Connections Teacher Edition* for teachers of any course who want to use team roles. The first section (pages 2-9) is a reprint of the “Using Study Teams for Effective Learning” information found in the front of the Teacher Edition. The rest of this resource is a compilation of notes from the “Suggested Lesson Activities” and some of the resource pages that support team roles in Chapter 1.

Using Study Teams for Effective Learning

Study team interaction is an integral part of the learning process in the CPM curriculum. The daily activities in this course depend on students working and discussing problems in teams to make sense of concepts. The teacher has an active and important role in supporting these interactions and encouraging students’ thinking. However, the teacher’s responsibility is to ask good questions that stimulate student thinking and develop self-sufficient learners. This section outlines the value of student interactions in study teams and offers suggestions for creating and maintaining a learning environment that supports effective study teams.

Purpose of the Study Team Structure:

Why have students work in study teams?

The CPM curriculum is guided by the philosophy that students need to be active participants as they develop mathematical understanding. The study team structure – where students work in teams of four – creates a setting where students are in the continuous presence of others with whom they can discuss, share ideas, and articulate their thinking. (A pair structure is also possible, although less desirable.) In study teams, students refine their ideas, questions and approaches in the security of a few classmates, where it may be easier to take risks than in the large class setting. Students also make connections to different ideas through their communication with students who see things differently, and are encouraged by their peers to put their ideas into words.

As students have opportunities to investigate, to build an understanding of algebraic concepts, and to apply their learning to challenging problems in the study team context, they are empowered to see themselves as mathematical thinkers and discoverers and to recognize their own strengths and those of their peers.

Five major Ways of Thinking weave through the problems in this course: making connections, justifying, reversing, generalizing, and extending/applying. See the opening notes for Chapter 1 for further explanation of these. Each of these Ways of Thinking is more fully realized as students converse about the problems and their approaches to solving them. Students’ discovery of different ways to approach a problem and represent a solution, for example, has a much more lasting impact when it emerges as they examine each others’ work than when students are handed the approaches in a lecture.

This is not to say that direct instruction has no place in this course. Rather, when using study teams, the role typically assumed by teachers must be modified. The teacher blends prescriptive intervention with structured, problem-based learning as students develop conceptual understanding concurrently with skills acquisition. To do this, students need to explain and listen to each other. Sometimes their solutions will not work, but our goal is to have students find this out for themselves as they investigate further and discuss with their peers. On the other hand, teacher-led discussions are essential to bring students' ideas into the class conversation as they investigate topics, and to summarize results of study team activities and tie together big ideas after the students have had a chance to work on the pieces. These guided discussions should be conducted in an open, accepting way with the purpose of helping students make connections to see where and how the pieces of information fit together. In short, most discussions and lectures are based on what the teacher observes while the students work in their study teams.

**Teaching
Students How
to Work in
Teams:**

Students will need to learn how to work in teams. Part of teaching these skills is clearly communicating expectations to students, modeling the kinds of questions you hope to hear them asking each other, and reinforcing this behavior throughout the year. If team conversations appear to be lagging, begin the day with a discussion of what kinds of comments you expect to hear from each role during that session. Describe what you would recognize as active team participation.

Give students feedback about how well they are meeting your expectations. This can be done in a class discussion at the end of the day, where you highlight behaviors that they saw helping teams move forward. On other occasions you can take public notes about the conversations you hear in teams over the course of a class period. These notes – organized by teams and posted on the overhead or chalkboard – include quotes or behaviors that you recognize as meeting the study team expectations. You can focus on the quality of team conversations, the content of the conversations, or particular role behaviors, depending on what you choose to emphasize during a particular activity.

It takes time and effort at the beginning of the school year to get study teams to work effectively. **Do not be discouraged if the study teams do not work effectively from the start.** Just as you expect students to develop conceptual understanding and skills over time, team skills need cultivating and will improve as students learn them. Information in the lesson notes will help you with using study teams. Once you get your study teams functioning well, the pay-off will be tremendous. As the year goes on you will find that students are asking better questions, are able to work through their confusion, and are relying on each other as resources. Successful teamwork requires ongoing support and maintenance. Regular reminders about roles and norms and giving students feedback about the quality of their conversations throughout the year will help teams' interactions to continue to support effective learning.

**Additional
Help to
Improve
Study Teams:**

Please see the www.cpm.org web site for additional ideas on how to get your study teams functioning well. Below is a list of articles from past CPM newsletters that are currently on-line. Most team issues you will face with your students have been covered in one of these articles written by CPM teachers.

- Maintaining Effective Study Teams, January, 2004
- Seven Proven Ingredients For A Successful Year, Aug – Sept, 2003
- Managing & Interacting With Study Teams, February, 2003
- Assertive Study Team Management, February, 2002
- Advice For First-Year Teachers, Aug – Sept, 2001
- Modeling Effective Team Behaviors, March, 2001
- Ideas For Managing A CPM Classroom, September, 1999
- Study Team Fundamentals, January, 1999
- Helping A Parent Understand CPM, November, 1998
- Everyday Instructional Strategies, November, 1998

**Student Roles
in Study
Teams:**

Assigning students particular roles in their teams can support students in working together productively. The purpose of the roles is to give each student a clear way of participating in the team conversation. Roles also allow students to share responsibility for the effective functioning of the team and class.

While this textbook is written so that a teacher may choose to use team roles or not, specific strategies are outlined here and in key lessons to help the teacher implement defined student roles during this course. The student text only mentions team roles in problem 1-1, so it is up to the teacher to use the team role transparencies to help each student learn his or her role throughout the rest of the course.

Team roles can be structured in a variety of ways. We suggest assigning students the following roles when they are working in teams of four: Resource Manager, Facilitator, Recorder/Reporter, and Task Manager. These roles are further described below.

Ideally, students will have the opportunity to serve in each role over the course of the school term. Some teachers will want to assign students roles that last for a week or for the full time the student sits with a particular team. Other teachers may wish to change students' roles daily. Roles should be assigned randomly. Some teachers post roles on class seating charts, while others assign them to specific seats within each team (for instance, by using colored dots on the table corners).

In order for the roles to be a successful structure to support learning, students need to see that these roles have value in the study team interactions. Teachers must stick to the roles and emphasize them over time. Students need opportunities to learn how to perform the different roles that they assume. Many students will need to understand the function of their role as well as hear quotes of what their role might sound like in action. The teacher notes in the first unit provide suggestions for how to assign team roles in the context of each activity. Similar suggestions are offered at different places in the course, and we encourage teachers to look for additional opportunities to make the most of these

team roles. The specific team roles:

Resource Managers get necessary supplies and materials for the team and make sure that the team has cleaned up its area at the end of the day. They also manage the non-material resources for the team, seeking input from each person and then calling the teacher over to ask a team question. Typically, a teacher could expect to hear a resource manager asking:

“Does anyone have an idea?”
“Who can answer that question? Should I call the teacher?”
“What supplies do we need for this activity?”

Facilitators help their teams get started by having someone in the team read the task aloud. They make sure each person understands the task and that the team helps everyone know how to get started. Before anyone moves on, the facilitator asks to make sure each team member understands the team’s answer. Typically, a teacher could expect to hear a facilitator asking:

“Who wants to read?”
“Does anyone know how to get started?”
“What does the first question mean?”
“I’m not sure – What are we supposed to do?”
“Do we all agree?”
“I’m not sure I get it yet – can someone explain?”

Recorder/Reporters share the team’s results with the class (as appropriate) and serve as a liaison with the teacher when s/he has additional information to share with the class and calls for a “huddle” with all of the recorder/reporters. In some activities, a recorder/reporter may make sure that each team member understands what information s/he needs to record personally. Recorder/reporters may also take responsibility for organizing their team members’ contributions as they prepare presentations. Typically, a teacher could expect to hear a recorder/reporter asking:

“Does everyone understand what to write down?”
“How should we show our answer on this poster?”
“Can we show this in a different way?”
“What does each person want to explain in the presentation?”

The **Task Manager** keeps the team focused on the assignment of the day. He or she works to keep the team discussing the math at hand and monitors if anyone is talking outside of her/his team. Additionally, a task manager helps the team focus on articulating the reasons for the math statements they make. Typically, a teacher could expect to hear a task manager saying:

“Ok, let’s get back to work!”
“Let’s keep working.”
“What does the next question say?”
“Explain how you know that.”
“Can you prove that?”
“Tell me why!”

**Norms for
Student
Interaction in
Study Teams:**

To maximize their learning opportunities, students are expected to actively participate with their study teams. To create this norm in the class, it is important to begin teaching students your expectations for effective teamwork from the beginning. Activities and lesson structures suggested in the teacher notes, resource pages, and descriptions of team roles begin to communicate this to students in Chapter 1 (see description below). While these guidelines were not placed in the student text to allow flexibility for each teacher to determine his or her own class rules, the following guidelines for teams are recommended:

- **No talking outside your team.**

Focusing students on working with their team of four helps them to see each other as resources and to find their own way of solving a problem. It helps to prevent any student from being excluded from conversation by making students look to the others in their team rather than friends in other parts of the classroom. It also minimizes cross-classroom conversations that disrupt the learning environment. Responsibility for monitoring this can be assigned to the task manager, helping to free the teacher to address questions from teams.

- **Discuss questions with your team before calling the teacher over.**

This can be reinforced by how the teacher responds to questions from a team. This norm should not imply that the teacher does not answer questions, but instead that the other members of the team are a student's first resource. While this can be as difficult for the teacher as for the student, you must develop the habit of asking, "*Is this a team question?*" or "*Does everyone in the study team want the question answered?*" This norm will help students work on answering their own questions.

- **Within your team, keep your conversation on math.**

This norm reminds students that their conversations in study teams have an intellectual, rather than social, purpose.

- **You must try to help anyone in your study team who asks.**

While this is one of the more difficult ideas for competitive students to accept, it is critical to effective team functioning. Over time, students will begin to see that explaining something to someone else is one of the best ways to assure that they understand the idea themselves. Explaining is also a means of deepening understanding and increasing long-term retention.

- **Helping your teammate does not mean giving answers. Help by giving hints and asking good questions.**

This helps to set a tone of community support and challenges students to help a teammate understand and discover for themselves rather than simply having an answer to write down.

- **Explain and justify your ideas; give statements and reasons.**

This norm links directly to one of the learning themes of the course and underscores the expectation that there are multiple valid ways of solving different problems.

- **No one alone is as smart as all of us together. Do not leave anyone behind or let anyone work ahead. Your team is not done until everyone is done.**

Again, this norm emphasizes that the process is just as important as the answer and that understanding others' approaches improves an individual's understanding.

- **Clear off tables (or desks) before getting to work so you can see everyone's paper.**

This emphasizes the importance of creating an uncluttered space to share ideas and converse openly about the mathematics.

- **You must use study team voices.**

The volume of students' voices should remain within the hearing range of their study team only. You will need to develop signals to indicate the end of team discussion, such as turning the lights out, clapping, ringing a bell, or raising a hand.

**Using the
CPM Text
and Resource
Materials
with Study
Teams:**

Norms of interaction and student roles in study teams are often best introduced and reinforced in context. Roles can also be used to help teach students classroom norms as students work on problems. For instance, by insisting that only resource managers call the teacher over for team questions, the teacher can show students that their first resource should be their teammates, but that the teacher will indeed help when necessary.

The problems and activities in the student text are constructed to encourage discussion among teammates. The teacher notes for Chapter 1 contain explicit suggestions for introducing roles and norms in each lesson. Information about specific student roles is included in that chapter in the teacher notes only; teachers who want to use roles should copy the resource pages provided onto a transparency or make handouts for each team (creating "role cards" by inserting the resource page in a plastic sleeve works well). We recommend discussing your expectations for team participation and roles with the class before they begin to work on an activity in study teams. While displaying a transparency with the team roles, ask students to stand or raise their hands as you explain their role. This allows you to see which students are in each role and ensures that students know which role they have been assigned.

Discussing the roles allows you, as the teacher, to identify sentence starters or quotes that you might expect to hear as students perform their different roles. As students become more comfortable with the different roles, they can also suggest what the roles might "sound like" during the day's activity.

The teacher notes in Chapter 1 describe simplified roles in the first activity, as students get used to their jobs and work in study teams, with the roles getting more complete with each activity. Although the notes for use of roles are less explicit in the subsequent chapters, students will need regular reminders of the functions the different roles perform in the team. Returning to the transparency of roles and quotes regularly throughout the course or creating new role descriptors tailored to particular activities will help students learn to use the roles in their team discussions. This will be especially important as students rotate roles or work in new teams.

**Teacher
Interaction
and
Intervention
with Study
Teams:**

Your job as the teacher is to circulate among the study teams to reinforce a productive learning environment and to offer support to teams as needed. The CPM texts are designed to guide students to develop and consolidate the concepts and skills in the course. A major part of your role as teacher is the constant assessment of the needs of individuals, study teams, and the entire class. Move from team to team, listening. (You can often get a more accurate assessment of how a study team is functioning by listening to a team you are not looking at or currently working with.)

When a team calls you over with a question, your first response should be to help determine what the students need. Often, they simply need to be directed to ask members of the team for help, to read the problem, or to take note of a particular direction in the problem. If the question is more substantive, make an effort to ask them a question or two that they can answer that will help them resolve the question they asked. Asking the team to review with you what it has figured out so far, asking guiding questions, or suggesting that they review an idea that will help in the solution may be all it takes to get a team moving forward. Sometimes a question may simply need to be answered, especially if it is for clarifications that we would not expect students to work through on their own.

When joining a study team model the behavior you expect to see from the participants. If possible, communicate with students at their eye-level. For example, sit on a student chair, kneel on the floor, or for short stops, squat. Do not lean over. Students are used to seeing the teacher as the authority figure, and teacher intervention in a team discussion invariably changes the tone of the discussion. Be aware of how your body position projects you as an authority; putting yourself at the same physical level as students helps you to act as a catalyst for the discussion. It also helps to keep the conversation directed among the team members at the table (with you as a temporary team member), allowing you to extricate yourself from the conversation more easily as the team gets past its obstacle and is ready to move forward alone.

Also remember that you can leave the study team with a question or in the middle of a discussion and come back later to check on their progress. You do not have to spend time telling anyone how to do the whole problem; once students have a way to get started, they can and should take responsibility for moving ahead. They may seek additional help later if it is needed.

As you circulate among the study teams, you are also assessing the general progress of the class on the assignment. At different times, different interventions may be necessary. For example, to quickly disseminate information to all teams, you can call all the resource managers over to “huddle” and receive special information to return and share with their teams. Other strategies include stopping the team discussions to clarify something with the whole class or asking one or more teams to share their results or methods with the whole class. Note what you observe as you eavesdrop on teams and use what you notice to guide any clarification or summary that you want to provide in the lesson closure or to shape your introduction to the next day’s activity.

The teacher’s role in a study team setting is active and demanding. You will need to make dozens of decisions about how to intervene (or not to do so!) in the course of each class. You will have opportunities to question and share your experiences and math knowledge, but those will arise from what the students in particular teams need at a given moment. It is never appropriate to be seated at your desk as students are working in their study teams.

**Choosing
Study Teams:**

Early in the semester it is most efficient to randomly assign students to study teams. Some methods that work include: dealing a deck of cards, finding the four parts of a puzzle that fit together, finding the two pieces of a broken crayon that match, or dealing out student name cards onto desks or into a seating chart.

Students should remain with the same study team for a definite period of time. Some teachers change teams every two or three weeks, others at the end of every chapter, others wait months before changing teams. Each time period has its advantages: shorter periods of time allow for students to work with a broader team of students in the class and allow teams that are having difficulty functioning to reshuffle more quickly. Longer periods of time allow students to build good habits of working together and create a deeper understanding of each other’s mathematical and teamwork strengths.

**Organizing
the Classroom
for Study
Team
Interactions:**

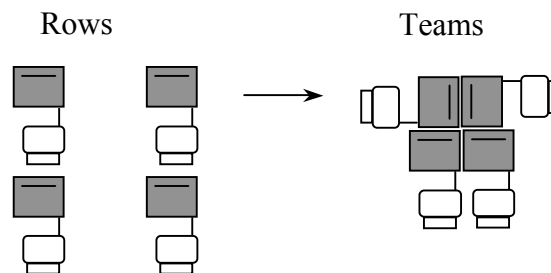
Study teams are most successful when the physical space of the room is configured to support small team conversations. Pairs should be seated next to each other, and teams of four should be seated so that their tables or desks form a continuous surface for teamwork. All team members should be able to see each other’s faces and math work to facilitate conversation. If the team members are too far apart or cannot easily see each other, students may find it too difficult to work with teammates, give up, and try to work alone (if they work at all).

Additionally, teams or pairs must be close enough together that they can hear each other speak without disrupting those around them by getting up or shouting. Teams should be spaced throughout the classroom so that there is enough space between teams for the teacher to circulate freely from team to team and so that a conversation in one study team does not interfere with a neighboring team’s work.

Depending on the teacher and school facilities, the desks (or tables) may remain arranged in pairs or fours from day to day. Other teachers may have students move their desks from rows into tight configurations for study team work, then back into rows again.

Note to teachers who are moving desks from one configuration to another:

One way to move desks from rows to teams is to ask the two team members closest to the front of the classroom to turn their desks toward each other and move together. As the diagram below shows, the two team members sitting farther from the front of the classroom then only need to move their desks together and forward, so that corners are touching. This allows all students to still see the front of the classroom.



Starting Team Roles (from Chapter 1)

If you choose to use team roles to support student collaboration, begin by discussing each role with the class. A summary of several resource pages is provided below. Regardless of whether you use team roles, it is important to begin teaching students your expectations for effective teamwork. Use Chapter 1 to stress appropriate class norms such as:

- No talking outside your team.
- Discuss questions and issues with your team first before calling the teacher over.
- Keep your conversations centered on math.
- Helping teammates does not mean giving answers; help by giving hints and asking good questions.
- Explain and justify your ideas: Give statements and reasons.
- No one alone is as smart as all of us are together. Do not leave anyone behind or let anyone work ahead. Your team is not finished until everyone is finished.
- Clear tables (or desks) before getting to work so you can see everyone's paper.

The team roles give all students a clear way of participating and provide a way for students to share responsibility for the effective running of the team. Roles can also be used to help teach students classroom norms. For instance, by insisting that only Resource Managers call the teacher over for team questions, the teacher can show students that their first resource should be their teammates, but that **the teacher will indeed help when everyone has the same question.**

The success of team roles depends both on the teacher sticking to them over time and on having students recognize that the roles have value for learning. As with any new classroom structure, students must be taught how to perform their roles. The suggestions below include sentence starters that convey what performing the roles sounds like. Students should have copies of these examples. Some teachers post roles on class seating charts, while others assign them to specific seats within each team (for instance, by using colored dots on the table corners).

Team Roles with Sample Questions

Resource Manager – If your name comes first alphabetically:

- The teacher may call you over to give you extra information to share with the team.
- Get supplies for your team and make sure that your team cleans up. You could say, *“I will put away the _____ while you _____.”*
- Ask the teacher when the **entire** team has a question.
“No one has an idea? Should I ask the teacher?”

Facilitator – If your name comes second alphabetically:

- Help your team get started by having someone read the task.
“Who wants to read?”
What are some ideas to get started?”
- Make sure everyone understands what to do.
“Does anyone know how to get started?”
“Let’s check the directions.”
“What does the first question mean?”
“I’m not sure – what are we supposed to do?”
- Make sure everyone understands your team’s answer before you move on.
“Do we all agree?”
“Can we figure out which one is right?”
“I’m not sure I get it yet – can someone explain?”

Recorder/Reporter – If your name comes third alphabetically:

- Take notes for the team. The notes should include phrases like, *“For part one...”* and explanations like, *“Because we figured out that...”*
- Be prepared to share your team’s ideas with the class.
- Make sure your team agrees about how to show your work.
“How can we write this?”
“How can we show it on the diagram?”
“How can we keep track of our calculations?”

Task Manager – If your name comes fourth alphabetically:

- Remind the team to stay on task and not to talk to students in other teams. Suggest:
“Let’s move on to another part of the problem.”
“Okay, let’s get back to work!”
“Let’s keep working.”
“What does the next question say?”
- Listen for statements and reasons.
“Explain how you know that.”
“Can you prove that?”
“Explain why!”
“Can you show us another way?”

Team Roles Overhead Master

Resource Manager:

- Get supplies for your team, and make sure your team cleans up.
- Your teacher may call you over to give you extra information.
- Call the teacher over for team questions.
“No one has an idea? Should I call the teacher?”

Facilitator:

- Help your team get started by having someone read the task.
“Who wants to read?”
- Make sure everyone understands what to do.
“Does anyone know how to get started?”
“What does the first question mean?”
“I’m not sure – what are we supposed to do?”
- Make sure everyone understands your team’s answer before you move on.
“Do we all agree?”
“I’m not sure I get it yet – can someone explain?”

Recorder/Reporter:

- Share your team data with the class.
- Make sure your team agrees about how to show your work.
“How can we write this?”
“How can we show it on the diagram?”

Task Manager:

- Make sure no one talks outside your team.
- Help keep your team on-task and talking about math.
“Okay, let’s get back to work!”
“Let’s keep working.”
“What does the next question say?”
- Listen for statements and reasons.
“Explain how you know that.”
“Can you prove that?”
“Explain why!”