Handout: Scaffolding Explanations

When students give explanations in class, often the explanations are either incomplete or difficult for all the other students to follow. Teaching requires attending to two important tasks: (1) to scaffold the individual child's effort to explain, and (2) to engage the other students in the partially developed explanation.

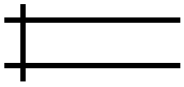
The following are examples of student explanations. Each is incomplete in some important way. For each example:

- Analyze the ways in which the student's explanation corresponds (or does not correspond) with the features of "good" explanations (clear purpose, logical structure, representations and language are used clearly and accurately, and focused on meaning and oriented to listeners)
- Use your analysis to help focus the next moves that you might take, such as:
  - — Generate one or two questions/prompts that you would pose to the student. How do those questions address what you noticed in your analysis?
  - — Formulate one or more moves that you could use that would engage the class with the ideas in the explanation and/or engage the class in enhancing the given explanation.
  - — Determine how you could use the explanation as an opportunity to make explicit features of the mathematical practice of explaining to the class.

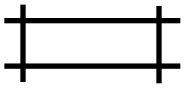
1) For the statement, "Any parallelogram with at least one right angle is a rectangle," a student responds "true." She explains with the following justification:

A right angle looks kind of like this.

If it is going to be a parallelogram, I have to have other lines that line up with the lines in that right angle. So if I draw one that is lined up with the bottom line in the right angle, that would look like this.



If I draw one that is lined up with the one on the left, that would look like this.



So you can see that all of the angles end up being right angles and sides end up being lined up with each other, so it has to end up being a rectangle.

2) To the statement, "All polygons with four straight connected sides are quadrilaterals," a student responds "false." He justifies his conclusion as follows:

This statement would be true for any polygon that has 4 or more sides. I think the only polygon this rules out is triangles because those have 3 straight connected sides and are polygons. This doesn't say that four is the most sides you can have.