

Integrating Language Routines Into Instruction

Stronger and Clearer Each Time

Mathematical understandings and language competence develop interdependently. When students discuss mathematical ideas with one another, they **strengthen** and **clarify** their academic thoughts.

Grades 6–8

Language Routine: Stronger and Clearer Each Time

This routine is well-suited for circumstances that call for students to construct a mathematical argument or defend an idea. Each time students talk with partners, they build from and borrow the ideas and language of previous partners.

Routine							
PRESENT	Teacher poses a problem/question to students						
PREPARE	Students Pre-Write <ul style="list-style-type: none"> Students study the problem individually, writing down any questions or ideas/reasoning about how to solve the problem, using complete sentences if possible. Scaffolding: Provide sentence frames or a skeletal paragraph framework to support students with the language structures, while leaving room for their independent mathematical reasoning. 						
	Think Time <ul style="list-style-type: none"> Provide a minute for students to think about what they will say to their first partner, considering what they are currently doing (or did) to solve the problem. Students cannot look at what they wrote during their partner conversations. 						
PARTNER	STRUCTURED PAIRING: <table> <tr> <th colspan="2">PARTNER ROTATIONS</th></tr> <tr> <th>Students</th><th>Teacher</th></tr> <tr> <td> <ul style="list-style-type: none"> Listener asks clarifying questions, especially related to justifying (Why did you do that?). Partners switch roles. Each person shares and each person listens, asking clarifying questions. Rotate to additional partners, strengthening and clarifying their ideas each time </td><td> <ul style="list-style-type: none"> Circulates and listens during student discussions Prompts students at each turn to emphasize strength (focus on math concepts and skills) or clarity (how to describe the math to others) Removes scaffolds with each successive pairing to build student independence </td></tr> </table>	PARTNER ROTATIONS		Students	Teacher	<ul style="list-style-type: none"> Listener asks clarifying questions, especially related to justifying (Why did you do that?). Partners switch roles. Each person shares and each person listens, asking clarifying questions. Rotate to additional partners, strengthening and clarifying their ideas each time 	<ul style="list-style-type: none"> Circulates and listens during student discussions Prompts students at each turn to emphasize strength (focus on math concepts and skills) or clarity (how to describe the math to others) Removes scaffolds with each successive pairing to build student independence
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PROCESS	Post-Write <ul style="list-style-type: none"> Students return to seats and write down their final explanations using sentences or drawings supported with sentences. 						
	Compare <ul style="list-style-type: none"> Students analyze their pre-writes and post-writes, noticing how their ideas were strengthened and/or clarified during partner discussions. 						

(continued)

From the Classroom	
PRESENT	<p>Ms. G: <i>Look up here [directing students to look at the board where she has written: $x^2 > x$]. Do you agree or disagree? Study this individually, writing down any questions, ideas, or reasoning about this inequality. Use complete sentences if possible.</i></p>
PREPARE	<p>Students Pre-Write</p> <p>[Ms. G pauses for a full minute while students write their thoughts.]</p>
	<p>Think Time</p> <p>Ms. G: <i>In a moment you will partner up to discuss if you agree or disagree and why. You won't take your papers with you, so pause now and study your notes.</i></p>
PARTNER	<p>Structured Pairing</p> <p>Ms. G: <i>To start you will partner up. When you talk with your partner, explain your ideas like a mathematician would. Partners, ask questions to clarify. It is important to be clear in your explanations. The purpose is to borrow ideas from your partner to make your argument stronger and clearer.</i></p>
	<p>In Pairs</p> <p>Ms. G: <i>Find your first partner and start your discussion.</i></p> <p>[Ms. G circulates while students discuss and listens for common justifications. After one minute she signals students to switch listener/speaker roles.]</p>
	<p>Rotate Partners</p> <p>Ms. G: <i>Rotate to a new partner and repeat the sharing and listening. Incorporate ideas you heard as you make your arguments stronger and clearer.</i></p> <p>[Ms. G circulates again while students discuss and listens for common justifications. She has students switch one more time for a total of three partner discussions.]</p>
PROCESS	<p>Post-Write</p> <p>Ms. G: <i>Head back to your seats. You have 2 minutes to revise your original argument. Take things you heard from your partners and strengthen and clarify your original thoughts about whether x^2 is greater than x.</i></p>
	<p>Post-Write</p> <p>Ms. G: <i>Now that you've refined your arguments, look at what you first wrote and your final draft. What do you notice?</i></p> <p>Raaqim: <i>In my first draft I forgot about the word variable. When I was talking with my second partner, she said that word and so I added that in my explanation. It sounds more like a mathematician with the actual word.</i></p> <p>[Ms. G continues to facilitate the class discussion. Students share how their arguments are improved after their partner discussions.]</p>