

MATHEMATICAL ARGUMENTATION

IN MIDDLE SCHOOL—
THE WHAT, WHY, AND HOW

A Step-by-Step
Guide With Activities,
Games, and Lesson
Planning Tools

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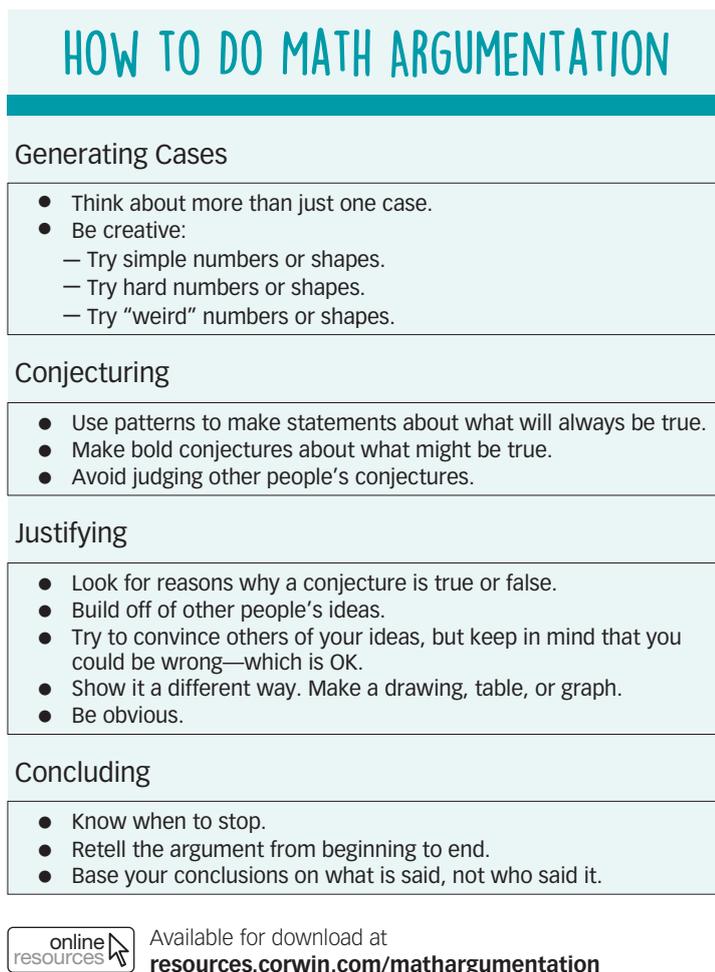
Thank you

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Please enjoy this complimentary excerpt from *Mathematical Argumentation in Middle School*. This activity helps students understand that it is OK to make mistakes, speak so that everyone can hear, and pay close attention to one another.

LEARN MORE about this title, including Features, Table of Contents, and Reviews.

FIGURE 1.4 Argumentation Norms Poster



The poster is titled "HOW TO DO MATH ARGUMENTATION" in large, bold, teal letters. Below the title, it is divided into five sections, each with a list of bullet points:

- Generating Cases**
 - Think about more than just one case.
 - Be creative:
 - Try simple numbers or shapes.
 - Try hard numbers or shapes.
 - Try “weird” numbers or shapes.
- Conjecturing**
 - Use patterns to make statements about what will always be true.
 - Make bold conjectures about what might be true.
 - Avoid judging other people’s conjectures.
- Justifying**
 - Look for reasons why a conjecture is true or false.
 - Build off of other people’s ideas.
 - Try to convince others of your ideas, but keep in mind that you could be wrong—which is OK.
 - Show it a different way. Make a drawing, table, or graph.
 - Be obvious.
- Concluding**
 - Know when to stop.
 - Retell the argument from beginning to end.
 - Base your conclusions on what is said, not who said it.

At the bottom left, there is a logo for "online resources" with a mouse cursor icon. To its right, the text reads: "Available for download at resources.corwin.com/mathargumentation".

Zip, Zap, Zop is a classic simple warm-up game (e.g., Lobman & Lundquist, 2007) helps students understand that it is OK to make mistakes, speak so that everyone can hear, and pay close attention to one another.

ZIP, ZAP, ZOP

- Players stand in a circle so that everyone can see everyone else.
- The players throw an imaginary ball to one another within the circle, saying “zip,” “zap,” or “zop” (one with each throw, in that order, repeating the sequence until the game is over).
- The first player starts by throwing a “zip” to someone else in the circle.
- The catcher then becomes the thrower and throws the “zap” to someone else in the circle.
- Players continue, in any order, until most have had a turn.