

## Points of Emphasis in M153

A key component of M153 is an emphasis on similarity transformations. Whereas a typical instructional unit might focus on performing transformations on coordinates without connections to proof and the concept of similarity, in M153, students should:

- be given opportunities to explore and discuss similarity transformations using technology and physical models, starting with cases that do not involve coordinates (LP 7, LP 2).
- explore and reason about the properties of dilations (LP 3).
- make and justify claims about the effect of dilations on points, line segments, angles, and other figures (LP 3).
- use similarity to logically develop the triangle similarity criteria (SSS, AA) (LP 3).

Often when engaging with the ideas of proofs and similarity, students are asked to spend time on lower-level skills, such as memorization of triangle similarity criteria. When proofs are introduced, attention is paid to the notational conventions of two-column proofs. Time is also often allocated to finding missing measurements in diagrams, absent justification, or reasoning. In M153, students should instead develop triangle similarity criteria from a definition of similarity based on transformations and focus deeply on the development of logical arguments. Students should:

- spend significant time constructing logical arguments and proofs, which can take a variety of forms (prose, diagrams, two-column, etc.) (LP 3).
- use repeated reasoning to make generalizations about similarity through transformations (LP 3).
- engage with their peers to describe their thinking using precise language and critique and revise their logical arguments (LP 2).
- see geometry and the development of proofs as a form of problem-solving and engage in frequent experiences where they must make sense of given information, construct diagrams, test solution methods, and revise their thinking (LP 1).
- engage in learning experiences that emphasize reasoning over notation and other conventions (LP 2).
- employ a variety of tools, such as graph paper, tracing paper, and geometry software to illustrate and understand congruence (LP 7).