

TEACHER NOTES

M302B – Developing Knowledge about Quadrilaterals

Note: This series of activities is intended to bring forth and utilize students' prior knowledge about quadrilaterals. Instruction/review of definitions of quadrilaterals and characteristics of quadrilaterals is not necessary and may, in fact, be counterproductive to the goals of these activities.

Lesson Goals:

- 1) Students will increase the accuracy and power of their internal representations of various quadrilaterals
- 2) Students will develop knowledge of the characteristics of various quadrilateral (square, rectangle, rhombus, kite, parallelogram, isosceles trapezoid, trapezoid) including side, angle, diagonal, and symmetry relationships
- 3) Students will develop their powers of investigation
 - a. students will develop their ability to utilize The Geometer's Sketchpad to measure side lengths, slopes, and angles
 - b. students will develop their ability to make and test conjectures
- 4) Students will examine the necessary and sufficient conditions for defining quadrilaterals
- 5) Students will develop understanding of class inclusion within the quadrilateral family

Before Activity 1:

Use a computer screen projection to demonstrate how to open the sketch and use the arrow tool to point and drag a shape.

Before Activity 3:

Use a computer screen projection to show students how to measure lengths and angles, and how to draw diagonals in shapes.

After Activity 6:

Lead the class in developing a list of the characteristics of each of the seven quadrilaterals based on their work from Activity #3-5. Next, help students select defining characteristics from among those listed. Finally, engage students in examining the relationships among characteristics and across shapes – in particular, the way that some quadrilaterals are “special cases” of others – that is, the special cases share all the characteristics of the more general quadrilateral, plus have additional characteristics as well.

Activity 7 can be used for homework before and/or after the whole-class discussion.

Anticipated Timeline:

Computer lab time: 2 ½ to 3 hours

Whole-class discussion: At least 50 minutes