

Properties of Quadrilaterals

By Sonja Barrera

Time required
45 minutes

Topic: Exploring the Properties of Special Quadrilaterals

- *Exploring the properties of special quadrilaterals including:*
 - *A parallelogram*
 - *A rectangle*
 - *A square*
 - *A rhombus*
- *Play a "Guess My Quadrilateral" game by using the measurements of parts of the quadrilateral*

Activity Overview

This activity allows students to explore the properties of quadrilaterals. Students are given a drawing of a quadrilateral with the measures of the sides, the measures of the diagonals, the slopes of the sides, the slopes of the diagonals, and the measurements of each angle. They will also be playing a game where they are given those same measurements of a quadrilateral without a picture and they must determine the type of quadrilateral.

Teacher Preparation

This activity is designed for use in a Geometry classroom.

Prior to beginning the activity, students should be familiar with the parts of a quadrilateral.

- *Refer to the screenshots on page 4 for a preview of the student TI-Nspire document (.tns file).*

Classroom Management

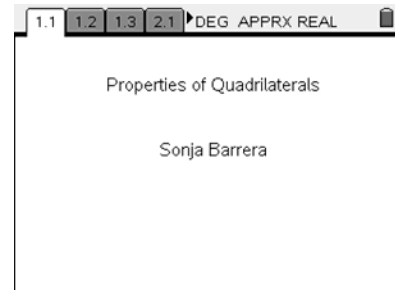
- *This activity is intended to begin as a **teacher-led** activity, but then, students will work in groups to complete the activity. Use the following pages to present the material to the class and encourage discussion. Students will follow along using their handhelds.*
- *The student handout provides added directions for the students.*
- *The group worksheet provides a place for students to record their answers.*

TI-Nspire™ Applications
Graphs and Geometry, Notes

Properties of Quadrilaterals

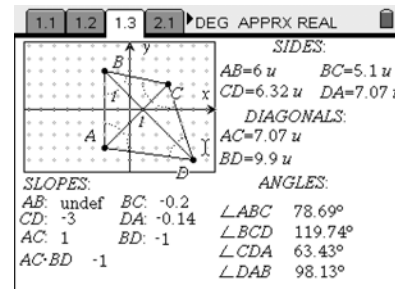
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TEACHER WORKSHEET



Problem 1 – Exploring a Quadrilateral

STEP 1: On page 1.3, students will see a quadrilateral on the coordinate plane. They will also see the measurements of each side and each diagonal, the slopes of each side and each diagonal, and the measure of each angle. Instruct them to move one of the vertices to see that the measurements change as the quadrilateral changes. To move a vertex, put the cursor near it so that it turns into a hand. Press CTRL and the middle button on the Navpad to close the hand. The vertex can then be moved. Caution your students to keep the vertices in alphabetical order, or the measurements of the diagonal will not match up.

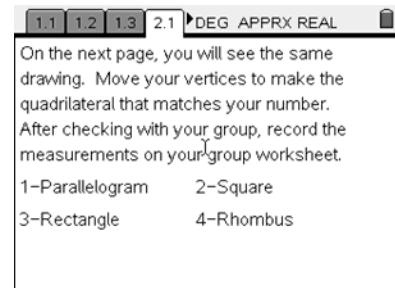


STEP 2: Challenge the students to try to make the product of the diagonal equal to -1 . Explain what this means and why it is important.

Problem 2 – Making a Specific Quadrilateral

STEP 1: Once they have created their assigned quadrilateral, the student will show it to the group to see if they agree. If they do, they will record their measurements on the group worksheet.

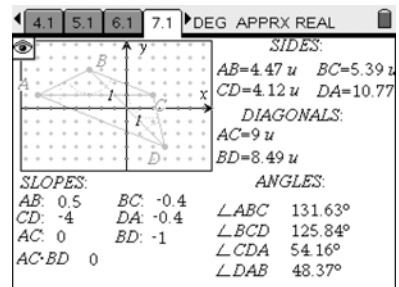
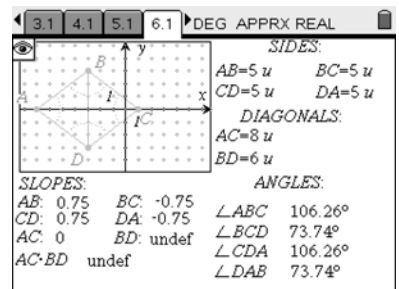
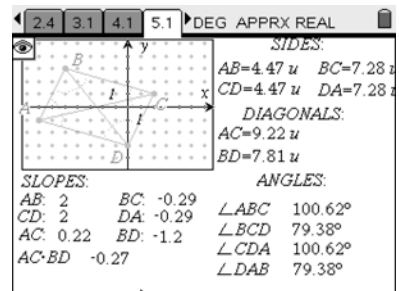
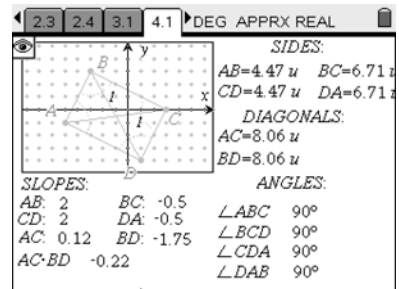
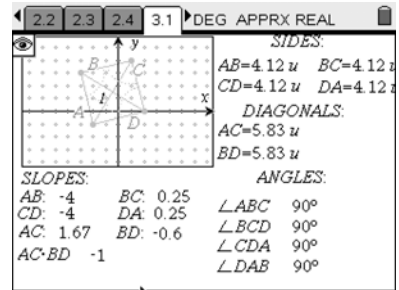
STEP 2: Students will work with their group to fill out the Properties of Quadrilaterals worksheet.



Problems 3-7 – Guess My Quadrilateral Game

STEP 1: Students will be given the measurements of the quadrilateral without the picture. They will try to guess the quadrilateral from the measurements only and explain why they made that guess.

STEP 2: Students will check their guess by using the Hide/Show feature to show the quadrilateral. To do this: Press MENU, ACTIONS, HIDE/SHOW



Problem 8 – Proving a Parallelogram

STEP 1: As a follow-up, students will use their knowledge of parallelograms to determine what they need to show to prove that a quadrilateral is a parallelogram.