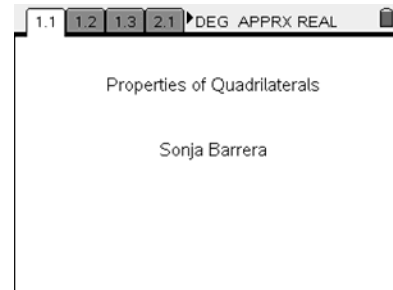# Properties of Quadrilaterals
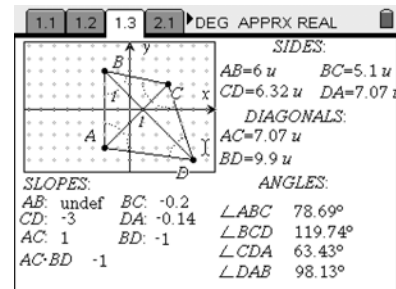
By Sonja Barrera

STUDENT WORKSHEET

Problem 1 – Exploring a Quadrilateral

STEP 1: On page 1.3, you will see a quadrilateral on the coordinate plane. You 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. 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.

1.1 1.2 1.3 2.1 ▶DEG APPRX REAL

SIDES:
AB=6 u   BC=5.1 u
CD=6.32 u   DA=7.07 u

DIAGONALS:
AC=7.07 u
BD=9.9 u

SLOPES:
AB: undef   BC: -0.2
CD: -3   DA: -0.14
AC: 1   BD: -1
AC·BD -1

ANGLES:
∠ABC   78.69°
∠BCD   119.74°
∠CDA   63.43°
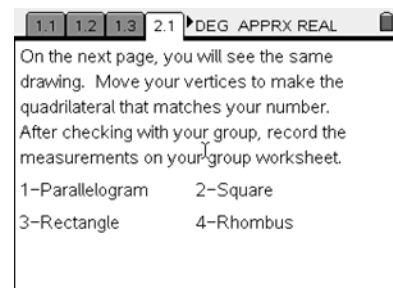∠DAB   98.13°

Things to be cautious about:

- Make sure to keep the vertices in alphabetical order, or the measurements of the diagonal will not match up.

- Make sure that your cursor is on the point, not the text or the segment

STEP 2: 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 you have created your assigned quadrilateral, show it to the group to see if they agree. If they do, record your measurements on the group worksheet.

STEP 2: Fill out the Properties of Quadrilaterals worksheet with your group.

1.1 1.2 1.3 2.1 ▶DEG APPRX REAL

On the next page, you will see the same drawing. Move your vertices to make the quadrilateral that matches your number. After checking with your group, record the measurements on your group worksheet.

1–Parallelogram   2–Square

3–Rectangle   4–Rhombus

Problems 3-7 – Guess My Quadrilateral Game

STEP 1: Try to guess the quadrilateral from the measurements only and explain why you made that guess. Write your answers on your group worksheet.

STEP 2: Check your guess by using the Hide/Show feature to show the quadrilateral. To do this: Press MENU, ACTIONS, HIDE/SHOW
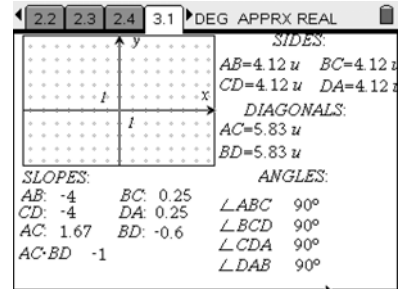
Problem 8 – Proving a Parallelogram

STEP 1: Use your knowledge of parallelograms to determine what you need to show to prove that a quadrilateral is a parallelogram. Write the answer on your group worksheet.