

## ***QUESTIONING QUADRILATERALS***

Objective: Students will discover the properties of parallelograms, rectangles, rhombuses, and squares using Geometer's Sketchpad.

Procedure:

1. Students should work in groups of two.
2. Students will complete the following chart by constructing the quadrilaterals (with diagonals) and measuring the sides, angles, and diagonals by using Geometer's Sketchpad.
3. Students will create a textbox to summarize and print their findings.
4. Students will share their findings using a powerpoint presentation.

PROPERTY	PARALLELOGRAM	RECTANGLE	RHOMBUS	SQUARE
Opposite sides are parallel.				
Opposite sides are $\cong$ .				
Opposite $\angle$ 's are $\cong$ .				
A diagonal forms 2 $\cong \Delta$ 's.				
Diagonals bisect each other.				
Diagonals are $\cong$ .				
Diagonals are $\perp$ .				
A diagonal bisects 2 $\angle$ 's.				
All $\angle$ 's are rt. $\angle$ 's.				
All sides are $\cong$ .				

## ***CONSTRUCTING QUADRILATERALS***

The following sites contain the instructions on constructing quadrilaterals. The students can also use scripts to construct the quadrilaterals. You can also find the step-by-step instructions in Key Curriculum Press' "Exploring Geometry with Geometer Sketchpad".

[www.sadl.k12.me.us/pihs/math/sketchpad.htm](http://www.sadl.k12.me.us/pihs/math/sketchpad.htm)

[www.keypress.com/sketchpad/index.html](http://www.keypress.com/sketchpad/index.html)

## ***MEASURING ANGLES AND SEGMENTS***

**To select a standard unit of measure:**

- Under the **Display** menu, select **Preferences**.
- Choose a unit of distance, a unit for angle measurement and the displayed precision for each.

**To measure an angle:**

- **Select** three points, which define the angle. Here, selection order is important! You must select: point, vertex, and point.
- Choose the **Angle** command under the **Measure** menu. The measure of the angle will appear in your sketch window.

**To measure the length of segments:**

- Select the segment.
- Choose the Measure menu, the Length command.

## ***CREATING A TEXT BOX***

**To create a text box:**

- Select the **Text** tool in the toolbox.
- Drag a text box in your sketch window.
- When a flashing cursor appears in the text box, you may type in the box.
- To edit your text box once you've clicked outside of it, select the **Text Tool** and click inside the text box. A flashing cursor should appear, allowing you to edit.

## ***QUADRILATERAL POWER POINT PRESENTATION***

Description: In groups of two, the students will create power point presentations on an assigned quadrilateral. The students will use Geometer's Sketchpad to explore characteristics of the quadrilateral and will cut and paste them into a sketchpad presentation.

### ***Quadrilateral to be assigned:***

Parallelogram

Rectangle

Rhombus

Square

### ***Ideas to explore:***

Angle measures

Sides

Diagonals

### ***Requirements:***

1. Number of slides in presentation: 12
2. Number of slides using animation: 4
3. Number of slides using clip art: 2
4. Number of characteristics discovered: 10
5. Introductory slide with students name
6. Slide with definition of quadrilateral

### ***Grading:***

60 points--- Requirements – 10 points for each requirement

- 40 points--- All members must participate (10)  
Well organized and clearly explained (10)  
Smooth hand over from member to member (10)  
Completeness (10)

## ***ACKNOWLEDGEMENTS***

“Exploring Geometry with the Geometer’s Sketchpad” by Key Curriculum Press

[www.userpages.pci.net/mhefty/quadrila.htm](http://www.userpages.pci.net/mhefty/quadrila.htm)

[www.citeform.org/math/instructional/modules/tech/gs/choftriangle/guide.html](http://www.citeform.org/math/instructional/modules/tech/gs/choftriangle/guide.html)

“Geometry” by Houghton Mifflin

## ***WEST VIRGINIA IGO’S***

**G.8** Explore and identify properties of quadrilaterals and verify properties for parallelogram, rectangle, rhombus, square, and trapezoid.

**G23** Use appropriate software to practice and master Geometry instructional objectives