

Parallel Lines cut by a Transversal
Lesson #3

Name: Carrie Seitz
Grade level(s)/Subject taught: 7 th Grade Math
Objectives: Students willl... <ul style="list-style-type: none">Determine angle pair relationships when given two parallel lines cut by a transversal

State Standards:

- 8.G.1 Identify pairs of vertical angles as congruent
- 8.G.2 Identify pairs of supplementary angles
- 8.G.4 Determine angle pair relationships when given two parallel lines cut by a transversal

Warm Up

We will start the class by reviewing the definitions of angles:

- acute angle** - an angle whose measure is less than 90 degrees
- obtuse angle** - an angle whose measure is greater than 90 degrees
- right angle** - an angle whose measure is 90 degrees

and have students draw examples of each.

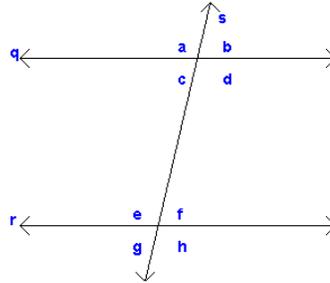
Mini Lesson:

I will introduce the new vocabulary :

- **adjacent angles** - two angles that share a ray, thereby being directly next to each other.
- **alternate exterior angles** - angles located outside a set of parallel lines and on opposite sides of the transversal.
- **alternate interior angles** - angles located inside a set of parallel lines and on opposite sides of the transversal.
- **transversal** - A line or ray that divides other lines or rays
- **vertical angles** - angles that share only one point. They are on opposite sides of the transversal.

Student work Time

I will hand out the angles worksheet and instruct the students on how to create the parallel lines on *GSP*. They will then create the transversal. I will discuss how to name angles correctly and show them how to measure the angles. They will be working in pairs at a computer, but each student will need to hand in their own worksheet. The worksheet instructs the students step by step how to complete the worksheet. They need to measure each angle and identify congruent angles. They will be practicing how to name an angle as well as checking their results. Each pair of students will have a different set of angle measures because they create them themselves. This maximizes their effort since they cannot copy!! When the worksheets have been completed, I will have students identify the angles that were always congruent by posting a generic example of the lines.



After identifying the congruent angles, I will then ask students to identify the alternate interior and exterior angles and vertical angles. I will then discuss supplemental angles and have them check their angle measures and identify the supplemental angles. I expect students to have trouble with the supplemental angles that are not consecutive angles.

Closing

To end class, I will have a "ticket out the door". I will give them a copy of the general example (above) and have them identify the congruent angles. If they can they can label the acute and obtuse angles and the vertical angles. This will show me how many students understood the main concept of congruent angles formed by parallel lines cut by a transversal.

Grading Rubric

<ul style="list-style-type: none">• Created lines and transversal correctly• Measured angles correctly• Identified congruent angles• Explanation of what happens when transversal is moved is reasonable• Worksheet complete	3
<ul style="list-style-type: none">• Worksheet complete• Measured angles correctly• Identified congruent angles• Explanation of what happens when transversal is moved is not reasonable	2
<ul style="list-style-type: none">• Worksheet semi-complete• Measured some angles correctly• Did not identify congruent angles• Explanations not valid	1
<ul style="list-style-type: none">• Worksheet not complete• No angles measured• Did not identify congruent angles• Explanations not valid or done	0

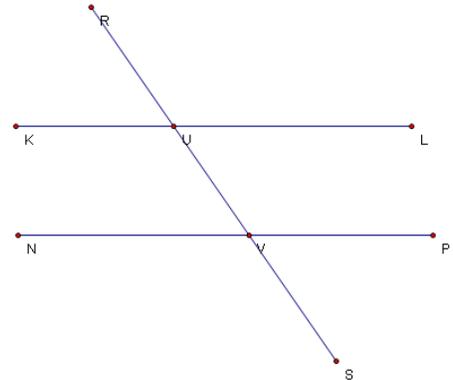
Comments:

Name _____ Date _____

Angles Worksheet

Using Geometers Sketchpad, explore the relationships between angles formed when two parallel lines are cut by a transversal.

Step 1: Create two parallel line Segments and draw a line through Them. (see diagram).



Step 2: Measure each angle Using the measure tool and list Them below.

<	=	_____	<	=	_____
<	=	_____	<	=	_____
<	=	_____	<	=	_____
<	=	_____	<	=	_____

Step 4: Identify all of the congruent angles below.

<	=	<	=	<
<	=	<	=	<

Step 5: Click and drag the transversal to a new position and measure each angle.

<	=	_____	<	=	_____
<	=	_____	<	=	_____
<	=	_____	<	=	_____
<	=	_____	<	=	_____

Step 6: Identify all of the congruent new angles below.

\angle = \angle = \angle
 \angle = \angle = \angle

What can you say about what happens to the angles created by the transversal after it is moved?

The Geometer's Sketchpad - GSP lines_cut_by_transversal

File Edit Display Construct Transform Measure Graph Window Help

GSP lines_cut_by_transversal

$m\angle KUR = 55.31^\circ$
 $m\angle NVU = 55.31^\circ$
 $m\angle SVP = 55.31^\circ$
 $m\angle VUL = 55.31^\circ$

Properties of angles created from parallel lines cut by a transversal.

Students will measure the angles and identify the congruent angles. Then they will adjust the transversal and remeasure all the angles and identify the congruent angles. They can make conjectures about the properties of these angles.

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