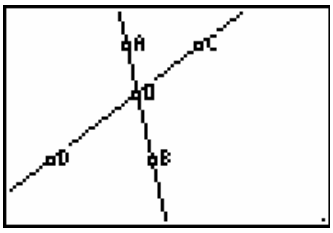
Name: _____ Period: _____ Date: _____

Geometry: Vertical, Adjacent, and Supplementary Angles with Cabri Jr.

Part 1: Vertical and Adjacent Angles



Draw two intersecting lines and measure the angle formed.

- Draw $\overleftrightarrow{AB}$ and $\overleftrightarrow{CD}$ that intersect near the center of the screen.
- Construct the intersection point of $\overleftrightarrow{AB}$ and $\overleftrightarrow{CD}$. Label this point **O**.
- Find the measure of each of the four angles. Place these measures in the interior of each angle.

Exploration:

1. Define Vertical Angles (p. 96) –

Location	1st	2nd	3rd	4th
$m\angle AOC$				
$m\angle BOD$				
$m\angle COB$				
$m\angle AOD$				

2. Drag point A or point B to four different locations where the angles have different measures. Find $m\angle AOC$, $m\angle BOD$, $m\angle COB$, and $m\angle AOD$ for each location. Collect and record your data in the table to the right.

3. If $\angle AOD$ and _____ are vertical angles, then the $m\angle AOD$ _____. If $\angle AOC$ and _____ are vertical angles, then the $m\angle AOC$ _____.

4. Define Adjacent Angles (p. 96) -

5. Identify all pairs of adjacent angles. (4 pairs)

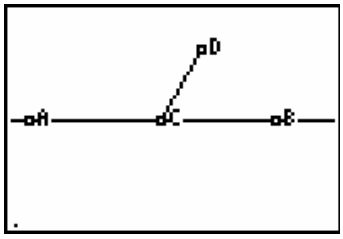
6. If $m\angle AOD = 90^\circ$, what would be the measure of the remaining angles? Verify your answer using Cabri Jr.

7. Write a conjecture about two lines that intersect at a 90° angle.

8. Drag point A or point B so that $m\angle AOD = m\angle AOC$. What must be true about $\overleftrightarrow{AB}$ and $\overleftrightarrow{CD}$?

Show the teacher your calculator screen. Teacher Signature: _____

Part 2: Supplementary Angles



9. Define Supplementary Angles (p. 96) –

10. Draw two adjacent angles that are supplementary.

- Clear the previous construction.
- Draw a horizontal line $\overleftrightarrow{AB}$ near the center of the screen.
- Construct $\overline{CD}$ so that point C is on $\overleftrightarrow{AB}$ between point A and point B, and D is above the line.
- Measure $\angle ACD$ and $\angle DCB$. Place these measures in the interior of each angle.
- Calculate the sum of $m\angle ACD$ and $m\angle DCB$. Label the calculation and place it near the bottom of the screen.

Exploration:

11. Change the size of the angle by dragging D to the left and right and by dragging D to the other side of $\overleftrightarrow{AB}$. Observe the changes in the measures and note how they are related.

12. True or False: Consider the following statements and use a construction to determine if they are valid. Be sure to provide written arguments for your conclusions.

a) Supplementary angles can be drawn without having vertical angles. True or False:_____
b) Vertical angles can be drawn without having supplementary angles. True or False:_____
c) Two adjacent angles can be drawn that are not supplementary. True or False:_____
d) Any two non-adjacent angles are vertical angles. True or False:_____

Show the teacher your calculator screen. Teacher Signature: _____