

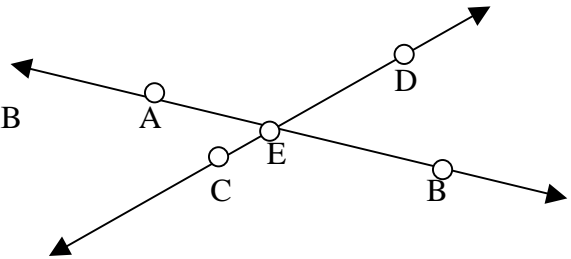
Vertical Angles and Linear Pairs Using Geometer Sketchpad©

Purpose:

To discover the relationships between pairs of vertical angles and between linear pairs.

Procedure:

1. Select the **Line** tool and construct Line AB.
2. Construct another line, making sure it intersects Line AB between Point A and Point B, and that Point C and Point D are on opposite sides of Line AB.
3. Select the **Arrow** tool and highlight both lines.
4. Select Construct, then Point of Intersection.
5. Your figure should now resemble the figure shown above.
6. We now want to measure some angles. To measure $\angle AEC$, you select the **Arrow** tool, then select those three points in that order- A, E, C, - with the vertex letter of the angle in the middle. Once all three points are highlighted, select Measure, then Angle. Record this measurement in the space provided for that angle for intersection 1 in the chart on the next page.
7. Repeat this procedure to measure the following angles: $\angle CEB$, $\angle BED$, and $\angle DEA$. Record these measurements in the chart for intersection 1.
8. Click and hold on either Point A, Point B, Point C, or Point D and drag it to a new location in order to create a new intersection. The only restriction to your movement is that Points A and B must remain on opposite sides of line CD and Points C and D must remain on opposite sides of Line AB, and that Point E remain between the other four points.
9. Your measurements will change as you move the point. Record these new measurements for intersection 2.
10. Repeat this process to complete the chart.



Vertical Angles and Linear Pairs- Sketchpad Worksheet

Data:

	$m\angle AEC$	$m\angle CEB$	$m\angle BED$	$m\angle DEA$
Intersection 1	_____	_____	_____	_____
Intersection 2	_____	_____	_____	_____
Intersection 3	_____	_____	_____	_____
Intersection 4	_____	_____	_____	_____
Intersection 5	_____	_____	_____	_____
Intersection 6	_____	_____	_____	_____
Intersection 7	_____	_____	_____	_____
Intersection 8	_____	_____	_____	_____
Intersection 9	_____	_____	_____	_____
Intersection 10	_____	_____	_____	_____
Intersection 11	_____	_____	_____	_____
Intersection 12	_____	_____	_____	_____
Intersection 13	_____	_____	_____	_____
Intersection 14	_____	_____	_____	_____
Intersection 15	_____	_____	_____	_____

Exploration:

1. There are two pairs of vertical angles showing on the screen. Please identify these two pairs.
 _____ and _____
2. What do you notice about each pair of vertical angles for each intersection? _____
3. There are four linear pairs of angles on the screen. Please identify all four.
 _____ and _____
 _____ and _____
 _____ and _____
 _____ and _____
4. What do you notice about the sum of the measures for each linear pair at each new intersection?

Conjectures:

1. If two angles are vertical angles, then _____
2. If two angles form a linear pair, then _____