Lab–Angles Formed By Parallel Lines Name _____

WARMUP:
Define transversal in your own words.

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PROCEDURE:

1. Choose the **Line** tool ([F2] menu, WINDOW button) and draw a line by pressing ENTER in three places.

2. Choose the **Point** tool ([F2] menu, WINDOW button) and press ENTER to create a point not on the line.

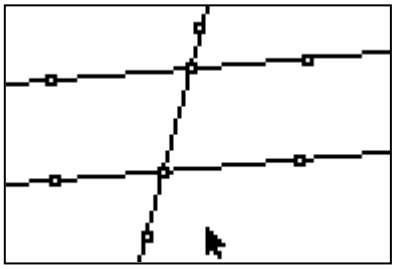
3. Choose the **Parallel** tool ([F3] menu, ZOOM button) and construct a line parallel to the given line through the point not on the line. Press ENTER on the point and press ENTER again on the line.

4. Choose the **Point On Object** tool from the Point submenu ([F2] menu, WINDOW button) and create three new points.
   - Create two more points on the parallel line.
   - Create a new point between the defining points on the original line.

5. Choose the **Line** tool ([F2] menu, WINDOW button) and construct a transversal that intersects the two parallel lines. Define it by pressing ENTER on the *middle* point that exists on each line.

6. Choose the **Point On Object** tool from the Point submenu ([F2] menu, WINDOW button) and create two new points on the transversal. Place one *above* the upper line and one *below* the lower line.

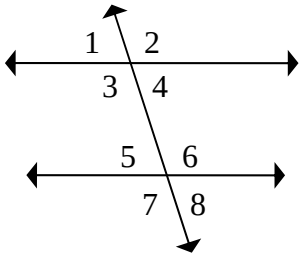
7. If necessary, use the **Hand Cursor** tool (ALPHA button) to drag the points farther apart on the lines. The diagram should look like this:



8. Measure all eight angles with the **Angle Measure** tool ([F5] menu, GRAPH button). To measure an angle, press ENTER on 3 points, with the vertex of the angle 2nd. Use the eight points that already exist, and wait for them to blink before pressing ENTER.

COLLECT THE DATA:

9. Refer to this diagram. Fill in the angle measures from the calculator *according to the numbers in this diagram*.



Classify each angle by type (acute, obtuse, or right).

	Angle 1	Angle 2	Angle 3	Angle 4	Angle 5	Angle 6	Angle 7	Angle 8
Measure								
Type								

10. Choose the **Hand Cursor** tool (ALPHA button) and move your transversal by dragging on one of the points where the transversal intersects the parallel lines. Complete a new table.

	Angle 1	Angle 2	Angle 3	Angle 4	Angle 5	Angle 6	Angle 7	Angle 8
Measure								
Type								

MAKE CONJECTURES:

11. Make some observations about the angles in your tables.

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12. What kind of angles are the following? (alternate interior, alternate exterior, same-side interior, corresponding, vertical, or linear pair)

Angles 1 and 2 _____ Angles 1 and 4 _____

Angles 1 and 5 _____ Angles 1 and 8 _____

Angles 3 and 5 _____ Angles 3 and 6 _____

Angles 4 and 8 _____ Angles 5 and 8 _____

13. Can you make any general rules about the angle measures of certain pairs of angles? List below.

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_____

_____

14. Do your rules hold true if you move the parallel lines farther apart or closer together? Try it.

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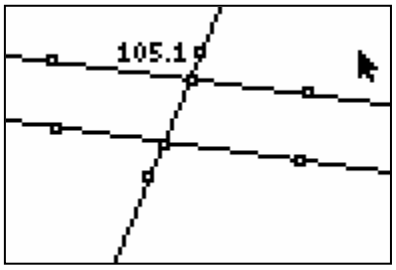
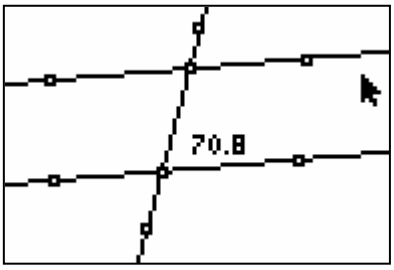
APPLY THE MATH:

15. Fill in the missing angle measures in each diagram based on your rules.

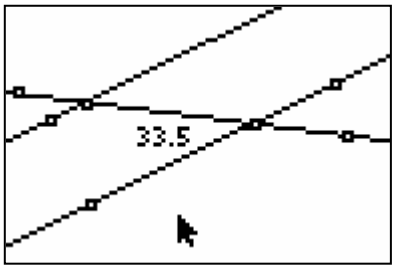
A.



B.



C.



EXTENSION:

16. Do you think your rules will hold true if the original lines weren't parallel? Try it in a new Cabri figure and see what happens.

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17. Are there any pairs of angles that keep the same relationship (congruent, supplementary) even if the original lines aren't parallel?

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