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Discovery of Angle Relationships

Procedures:

1. Fold paper in half vertically and crease. While paper is folded in this “hot dog” style, fold it once more along the pink margin line. When paper is unfolded there should be three creases.
2. Using a ruler draw a vertical line along the middle crease---transversal. (The outside fold lines are an aid in drawing parallel lines.)
3. Fold paper in half horizontally in the “hamburger” style and crease. Unfold paper.
4. Draw Parallel Lines---On the top half of the paper, left of the transversal, place a point at the intersection of blue line and the left hand crease. Your choice which line is chosen. Label point as point A.
5. Count down from point A five (5) lines. Follow this line to the right hand crease and place another point. Label the right hand point as point B. Use ruler to connect points to form line AB.
6. On the bottom half of the paper, left of the transversal, place a point at intersection of a blue line and the left hand crease. Label as point C.
7. Count down five lines from point C. Follow this line to the right hand crease and place another point. Label the right hand point as point D. Use a ruler to connect points form line CD.
8. Number angles 1-4 down the left hand side of the transversal and 5-8 down the right hand side of the transversal.
9. Shade the exterior angles gray, (they are located outside the parallel lines). The angles in the white area are called interior angles because they are between the parallel lines.
10. Use scissors to cut along the transversal, both parallel lines, and the hamburger crease.
11. Using the cut out angle pieces fill in the chart by determining which angles are congruent.

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Use the cut out angle pieces to fill in the charts.

Note: You may wish to reconstruct your original paper to help determine location.

*To describe Location of the Angles use the following terms/abbreviations:

Transversal (T), Parallel Lines (PL), Intersecting Lines (IL), Interior Angles (IA), and Exterior Angles (EA).

Congruent Angles	Location of the Angles*	Angle Relationship-- TYPES

Define Supplementary: _____

Define Linear Pair: _____

Supplementary or Linear Pairs	Location of the Angles*	Angle Relationship-- TYPES

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Use your charts to help answer the following. (Angles are numbers in the same order as your cut out pieces.)

I. $m\angle 1 = 2x + 5$ $m\angle 5 = 75$

A. State the relationship between the angles. _____

B. Determine the value of x .

C. Find any unknown angle measure.

II. $m\angle 1 = 5x - 3$ $m\angle 5 = 97$

A. State the relationship between the angles. _____

B. Determine the value of x .

C. Find any unknown angle measure.

III. $m\angle 2 = 2x - 90$ $m\angle 7 = x + 15$

A. State the relationship between the angles. _____

B. Determine the value of x .

C. Find any unknown angle measure.

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IV. $m\angle 6 = 7x - 75$ $m\angle 8 = 4x - 15$

A. State the relationship between the angles. _____

B. Determine the value of x .

C. Find any unknown angle measure.

V. $m\angle 2 = x + 7$ $m\angle 3 = 5x + 41$

A. State the relationship between the angles. _____

B. Determine the value of x .

C. Find any unknown angle measure.

Extension:

Use the Extension Illustration to answer the following questions.

1. List the Corresponding Angles: _____

2. List the Alternate Interior Angles: _____

3. List the Alternate Exterior Angles: _____

4. List the Vertical Angles: _____

5. List the Same Side Interior Angles: _____

6. List the Linear Pairs: _____

7. List the Supplementary Angles: _____

Find X .

8. $m\angle 6 = -2x + 35$ $m\angle 3 = x - 22$

9. $m\angle 4 = -x + 25$ $m\angle 7 = 5x + 23$

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