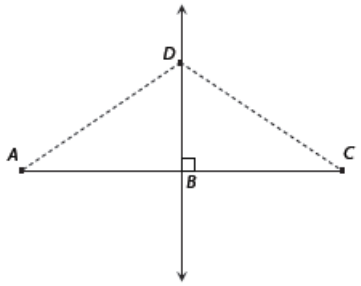
Secondary 2H **Name**_____ **Desk** _____

Unit 8 **Proving Theorems About Lines, Angles, and Parallelograms**

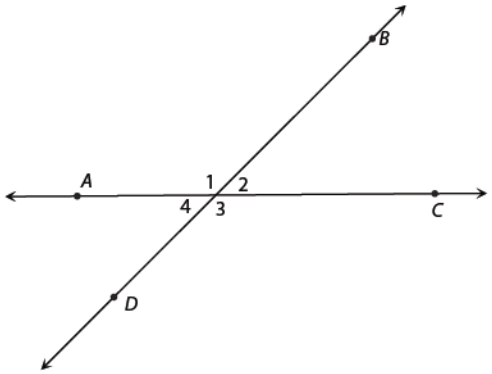
Score _____

1. In the diagram below, $\overleftrightarrow{BD}$ is the perpendicular bisector of $\overline{AC}$. If $AD = 4x - 1$ and $DC = x + 11$, what are the values of AD and DC?



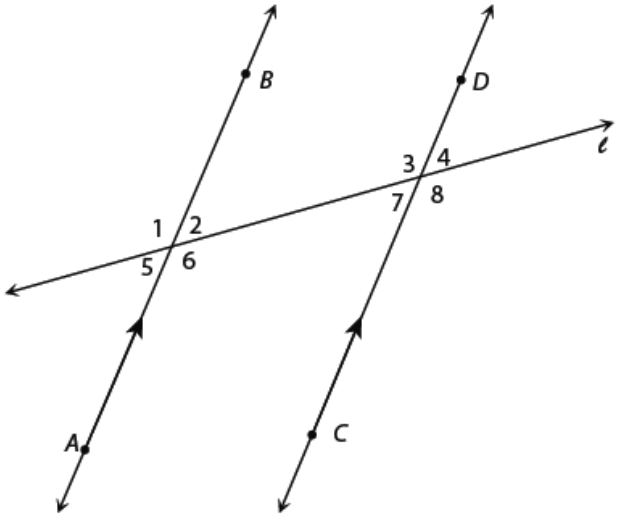
In the diagram below, $\overleftrightarrow{AC}$ and $\overleftrightarrow{BD}$ intersect. Use the information to solve for the measure of the unknown angles. Show and justify your work.

2. Find $m\angle 4$ if $m\angle 1 = 3x + 4$ and $m\angle 2 = 2x - 4$.



3. Find $m\angle 1$ if $m\angle 1 = 13x + 7$ and $m\angle 3 = 7x + 49$.

Use the diagram below to solve the following problems. Given that $\overleftrightarrow{AB} \parallel \overleftrightarrow{CD}$ and line *l* is the transversal. Justify your answers using angle relationships in parallel lines intersected by a transversal.



4. Find $m\angle 5$ if $m\angle 5 = 2(3x + 13)$ and $m\angle 7 = 3x + 50$.

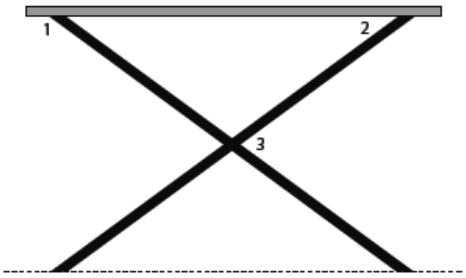
5. Find $m\angle 2$ if $m\angle 2 = 4x + 39$ and $m\angle 7 = 12x - 17$.

6. Find $m\angle 6$ if $m\angle 6 = 7x + 41$ and $m\angle 7 = 3x - 1$.

7. Find $m\angle 4$ if $m\angle 4 = 2(5x - 9)$ and $m\angle 5 = 3(x + 8)$.

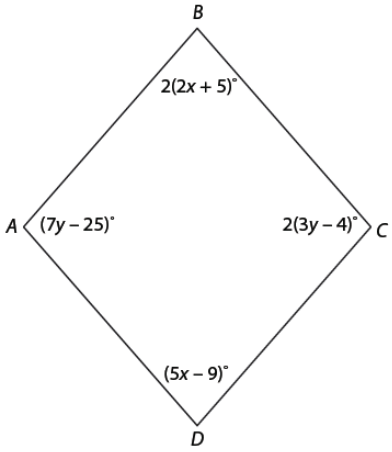
8. Find $m\angle 1$ if $m\angle 1 = 11x + 35$ and $m\angle 4 = x + 1$.

Use the following diagram of a table to complete problem 9. The floor is represented by a dashed line.



9. What is $m\angle 3$ given the tabletop is parallel with the floor, $m\angle 1 = 134°$ and $m\angle 2 = 46°$?

10. Find the values of *x* and *y* if the quadrilateral $ABCD$ is a parallelogram.



11. If the diagonals of a given quadrilateral are perpendicular, how could the quadrilateral be classified?

12. Classify a quadrilateral as precisely as possible given four vertices: $E(0,-1)$, $F(3,5)$, $G(-2,-5)$, and $H(-5,-1)$.

13. Classify a quadrilateral as precisely as possible given four vertices: $A(1,1)$, $B(6,6)$, $C(11,1)$, and $D(6,-4)$.

14. Classify a quadrilateral as precisely as possible given four vertices: $A(3,-5)$, $B(3,3)$, $C(9,1)$, and $D(9,-3)$.