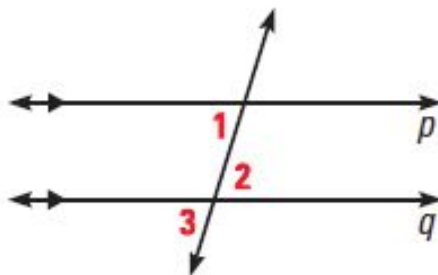


SchoolNova, Math 5c
Homework 16
Coordinate Geometry
February 2, 2020

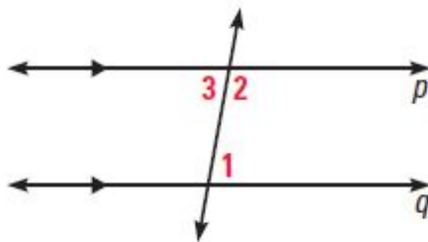
Please provide sufficient details about how you solved the problem. More difficult problems are marked with a *. If unable to solve a problem, please present your thoughts and any partial solution.

In this homework, please use graph paper for drawing on the coordinate plane.

1. Given two points $P_1(3, 4)$ and $P_2(7, 2)$ in a coordinate plane, find the distance between them, using the **distance formula**. The distance between two points $P_1(x_1, y_1)$ and $P_2(x_2, y_2)$ is given by $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$.
2. Find the coordinates of the midpoint of \overline{AB} , with endpoints $A(-2, 3)$ and $B(5, -2)$. Plot on the coordinate plane.
3. Plot the triangle defined by the points $D(1, 3)$, $E(8, 3)$ and $F(4, 7)$. Next, find the area and the perimeter of the triangle.
4. Given $p \parallel q$, prove that $m\angle 1 = m\angle 2$ (alternate interior angles theorem).

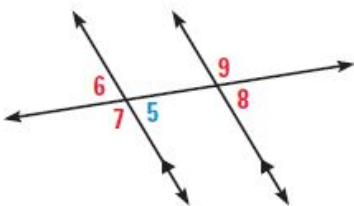


5. Given $p \parallel q$, prove that $m\angle 1$ and $m\angle 2$ are supplementary (consecutive interior angles theorem).

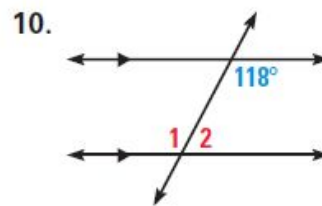
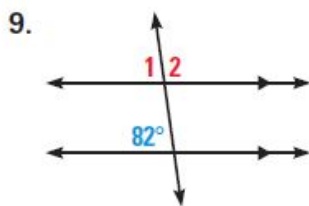
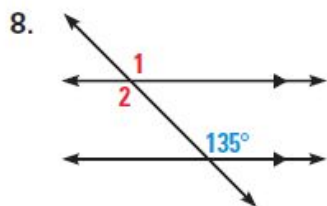


6. Given two parallel lines cut by a transversal, and $m\angle 5 = 65^\circ$; use the properties of parallel line traversal to find the measures of each angle:

- (a) $m\angle 6$
- (b) $m\angle 7$
- (c) $m\angle 8$
- (d) $m\angle 9$



7. Using parallel lines traversal, find $m\angle 1$ and $m\angle 2$, in each case.



8. Using the given figure, determine the following (note that these are three different questions, not necessarily true at the same time):

- (a) If $\overrightarrow{AB} \parallel \overrightarrow{DE}$, and $m\angle 2 = 55^\circ$, find $m\angle 6$.
- (b) If $\overrightarrow{BD} \parallel \overrightarrow{CF}$, and $m\angle 3 = 140^\circ$, find $m\angle 4$.
- (c) Which lines must be parallel if $m\angle 3 + m\angle 6 = 180^\circ$.

