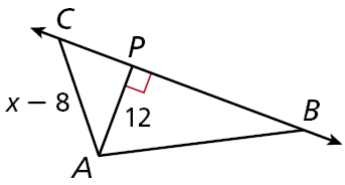
Name _____ Date _____ Period _____

All about Perpendicular Lines

Distance from a point to a line: this distance is the length of the _____ segment from the point to the line.

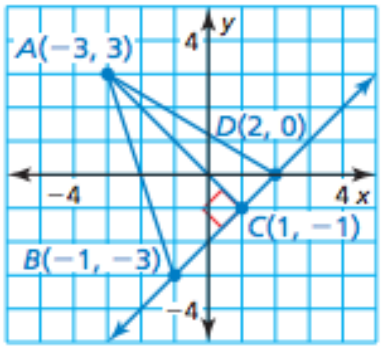
→ This _____ segment is also the _____ distance between the point and the line.

Example:



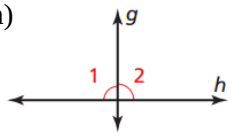
1. Name the shortest distance from point A to $\overline{BC}$:
2. Write and solve an inequality to solve for the values of x that are valid.

3. Find the distance from point A to $\overleftrightarrow{BD}$.

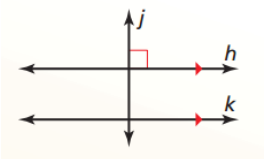


Perpendicular Line Theorems (*** to abbreviate "transversal," we will use _____.***)

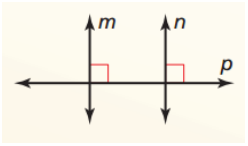
Linear Pair Perpendicular Theorem: If two lines intersect to form a linear pair of _____ angles, then the lines are perpendicular. (Lin. Pair ⊥ Thm)



Perpendicular Transversal Theorem: In a _____, if a transversal is _____ to one of the two parallel lines, then it is _____ to the other line. (⊥ Transv. Thm)

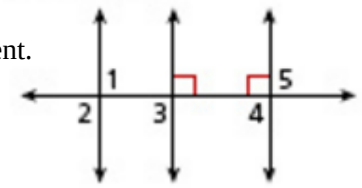


Lines Perpendicular to a Transversal Theorem: In a _____, is two lines are _____ to the _____ line, then the two lines are _____ to each other. (Line ⊥ to Transv. Thm)



Examples:

1. Determine if there is enough information given in the diagram to prove each statement.



   a. $\angle 1 \cong \angle 2$ b. $\angle 1 \cong \angle 3$

   c. $a \perp d$ d. $b \parallel c$

2. Solve to find x and y in the diagram.