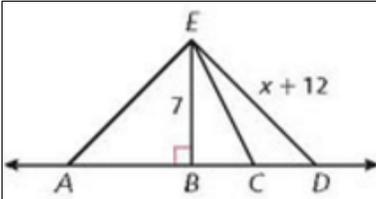


Geometry Chapter 3.4 WS
 Perpendicular Lines

Name _____

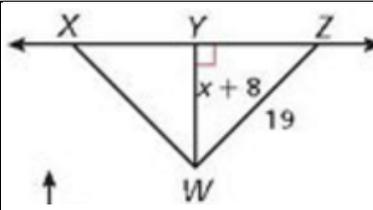
Per _____ Date _____



1. (a) Name the shortest distance from point E to \overline{AD} .
 (b) Which is smaller \overline{EB} or \overline{ED} ?

(c) Write an inequality based on part (b):

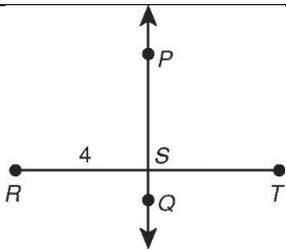
(d) Solve the inequality for x:



2. (a) Name the shortest distance from point W to \overline{XZ} .
 (b) Which is smaller \overline{WY} or \overline{WZ} ?

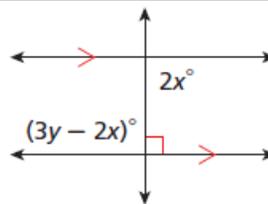
(c) Write an inequality based on part (b):

(d) Solve the inequality for x:



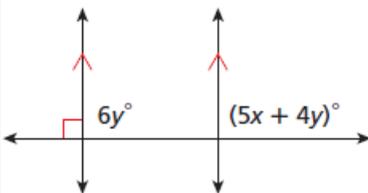
If \overline{PQ} is the perpendicular bisector of \overline{RT} , and $RS = 4$, find the following values.

- 3. ST _____
- 4. RT _____
- 5. $m\angle PST$ _____



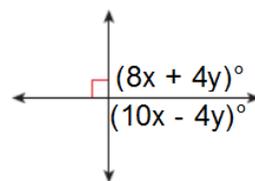
6. Use the diagram to write an equation to find x. Solve the equation.

7. Use the diagram and your answer from #6 to write and solve an equation to find y.



8. Use the diagram to write an equation to find x. Solve the equation.

9. Use the diagram and your answer from #8 to write and solve an equation to find y.



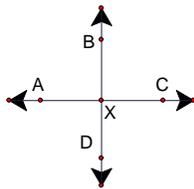
10. (a) write two equations to represent the measures of the two angles.

(b) Add the two equations together. Solve for x.

(c) Find y.

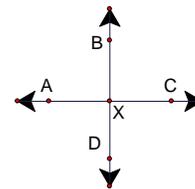
11. Given: $\overline{AC} \perp \overline{BD}$

Prove: $\angle AXB$ is a right angle.



12. Given: $\angle AXB \cong \angle BXC$

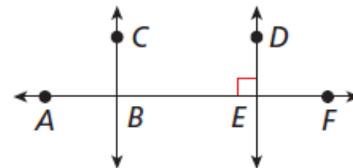
Prove: $\overline{AC} \perp \overline{BD}$



13. Write a two-column proof.

Given: $\angle ABC \cong \angle CBE, \overline{DE} \perp \overline{AF}$

Prove: $\overline{CB} \parallel \overline{DE}$



Statements:

a. _____

b. $\overline{CB} \perp \overline{AF}$

c. _____

d. $\overline{CB} \parallel \overline{DE}$

Reasons:

a. Given

b. If linear pair and congruent, then _____

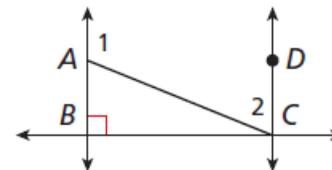
c. Given

d. If 2 lines are _____ to the same line, then _____

14. Write a two-column proof.

Given: $\overline{AB} \perp \overline{BC}, m\angle 1 + m\angle 2 = 180$

Prove: $\overline{BC} \perp \overline{CD}$



Statements:

a. $\overline{AB} \perp \overline{BC}$

b. $m\angle 1 + m\angle 2 = 180$

c. $\angle 1$ and $\angle 2$ are supplementary

d. _____

e. $\overline{BC} \perp \overline{CD}$

Reasons:

a. Given

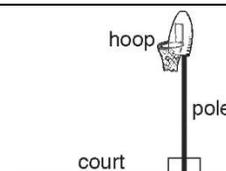
b. _____

c. If _____ then supplementary

d. If ss int. angles R Supp $\rightarrow \parallel$

e. _____

Use the drawing of a basketball goal. In each question, justify Esperanza's conclusion. Write the number a, b, or c in each blank to tell which theorem you used.



(a) If two lines are perpendicular to the same line, then they are parallel.

(b) If two lines form a linear pair and the angles are congruent, then the lines are perpendicular.

(c) If two lines are parallel and one of those parallel lines is perpendicular to the transversal, the other parallel line is perpendicular to the transversal.

_____ 15. Esperanza knows that the basketball pole intersects the court to form a linear pair of angles that are congruent. She concludes that the pole and the court are perpendicular.

_____ 16. Esperanza knows that the hoop and the court are both perpendicular to the pole. She concludes that the hoop and the court are parallel to each other.

_____ 17. Esperanza knows that the hoop and the court are parallel to each other. She also knows that the hoop is perpendicular to the pole. Esperanza concludes that the pole and the court are perpendicular.