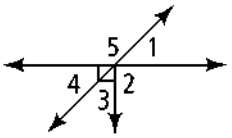
Name_____ Date_____

1.4 – Angle Pairs

Use the diagram below for #1–3. Find the measure of each angle.

Use the diagram at the right. Is each statement true? Explain.

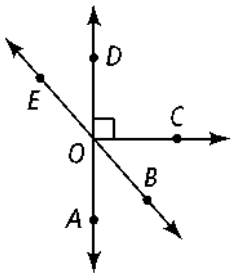


1. $\angle 2$ and $\angle 5$ are adjacent angles.

2. $\angle 1$ and $\angle 4$ are vertical angles.

3. $\angle 4$ and $\angle 5$ are complementary.

Name an angle or angles in the diagram described by each of the following.

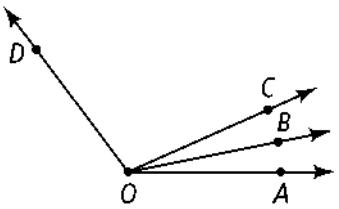


4. complementary to $\angle BOC$

5. supplementary to $\angle DOB$

6. adjacent and supplementary to $\angle AOC$

Use the diagram below for #7 and 8. Solve for x.
Find the angle measures.



7. $m\angle AOB = 4x - 1$; $m\angle BOC = 2x + 15$; $m\angle AOC = 8x + 8$

8. $m\angle COD = 8x + 13$; $m\angle BOC = 3x - 10$; $m\angle BOD = 12x - 6$

9. $\angle ABC$ and $\angle EBF$ are a pair of vertical angles; $m\angle ABC = 3x + 8$ and $m\angle EBF = 2x + 48$. What are $m\angle ABC$ and $m\angle EBF$?

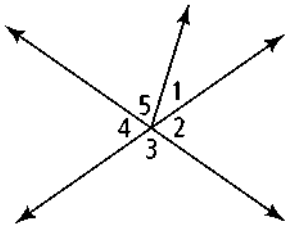
For #10-13, can you make each conclusion from the information in the diagram?

10. $\angle 3 \cong \angle 4$

11. $\angle 2 \cong \angle 4$

12. $m\angle 1 + m\angle 5 = m\angle 3$

13. $m\angle 3 = 90$



14. $\overrightarrow{KM}$ bisects $\angle JKL$. If $m\angle JKM = 86$, what is $m\angle JKL$?

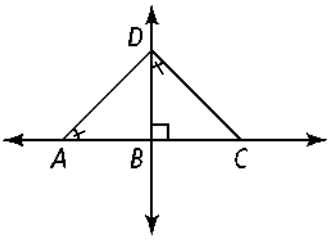
For #15–18, can you make each conclusion from the information in the diagram below?

15. $\angle DAB$ and $\angle CDB$ are congruent.

16. $\angle ADB$ and $\angle CDB$ are complementary.

17. $\angle ADB$ and $\angle CDB$ are congruent.

18. $\angle ADB$ and $\angle BCD$ are congruent.



19. $\angle MLN$ and $\angle JLK$ are complementary, $m\angle MLN = 7x - 1$, and $m\angle JLK = 4x + 3$.

a. Solve for x.

b. Find $m\angle MLN$ and $m\angle JKL$.

c. Show how you can check your answer.

20. Describe all the situations in which the following statements are true.

    a. Two vertical angles are also complementary.

    b. A linear pair is also supplementary.

State if the following are true or false. If false, sketch a counterexample.

21. For every line there is exactly one midpoint.

22. For every angle, there is exactly one angle bisector.

23. If two different lines intersect, then they intersect at one and only one point.

24. There is one and only one line perpendicular to a given line through a given point on the given line.

25. In a plane, there is exactly one line perpendicular to a given line through a given point on the given line.

26. There is exactly one line perpendicular to a given line through a given point not on the given line.

27. Through a given point not on a given line there is one and only one line that can be constructed parallel to the given line.