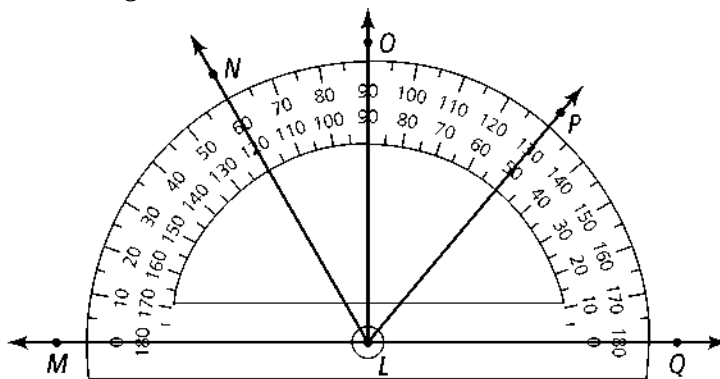


1.3 – Angles and Measurement

Use the diagram below for #1–8. Find the measure of each angle.

1. $\angle MLN$
2. $\angle NLP$
3. $\angle NLQ$
4. $\angle OLP$
5. $\angle MLQ$

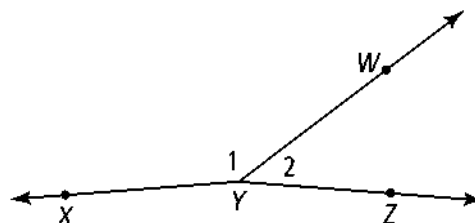


Classify each angle as *acute*, *right*, *obtuse*, or *straight*.

6. $\angle OLP$
7. $\angle OLQ$
8. $\angle MLQ$

Use the figure at the right for #9 and 10.

9. What is another name for $\angle XYW$?



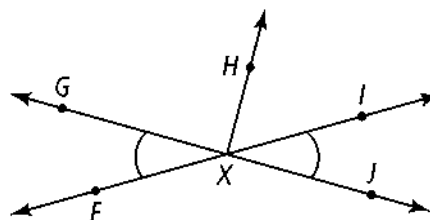
10. What is another name for $\angle WYZ$?

11. $\angle JKL$ and $\angle CDE$ are congruent. If $m\angle JKL = 137$, what is $m\angle CDE$?

Use the figure at the right for #12–15 $m\angle FXH = 130$ and $m\angle FXG = 49$.

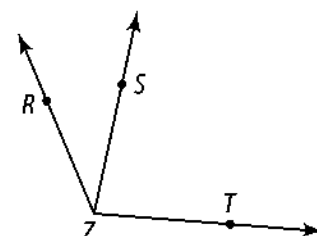
12. $\angle FXG \cong \square$
15. $\angle IXJ \cong \square$

13. $m\angle GXH = \square$

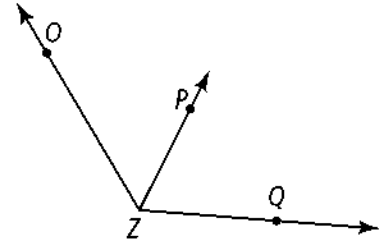


14. Name a straight angle in the figure.

16. If $m\angle RZT = 110$, $m\angle RZS = 3s$, and $m\angle TZS = 8s$, what are $m\angle RZS$ and $m\angle TZS$?



17. Algebra $m\angle OZP = 4r + 2$, $m\angle PZQ = 5r - 12$, and $m\angle OZQ = 125$. What are $m\angle OZP$ and $m\angle PZQ$?



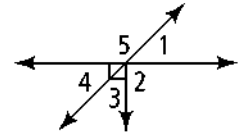
18. Reasoning Elsa draws an angle that measures 56. Tristan draws a congruent angle. Tristan says his angle is obtuse. Is he correct? Why or why not?
19. Lisa makes a cherry pie and an apple pie. She cuts the cherry pie into six equal wedges and she cuts the apple pie into eight equal wedges. How many degrees greater is the measure of a cherry pie wedge than the measure of an apple pie wedge?
20. Reasoning $\angle JNR$ and $\angle RNX$ are congruent. If the sum of the measures of the two angles is 180, what type of angle are they?
21. A new pizza place in town cuts their circular pizzas into 12 equal slices. What is the measure of the angle of each slice?

1.4 – Angle Pairs

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

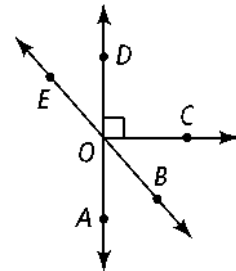
Use the diagram at the right. Is each statement true? Explain.

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.



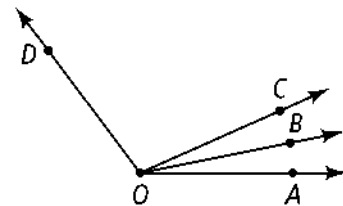
Name an angle or angles in the diagram described by each of the following.

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 $m\angle EBF$?

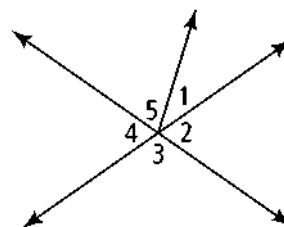
For #10-13, can you make each conclusion from the information in the diagram?

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

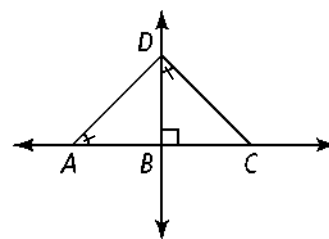
For #15-18, can you make each conclusion from the information in the diagram below?

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.