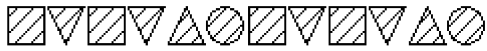


Chapters 1-3

CHAPTER 1

1. Based on the pattern, what are the next two terms of the sequence?  
 9, 13, 17, 21, ...

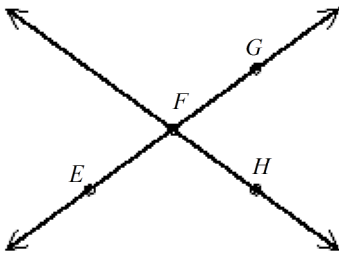
2. Based on the pattern, what is the next figure in the sequence?



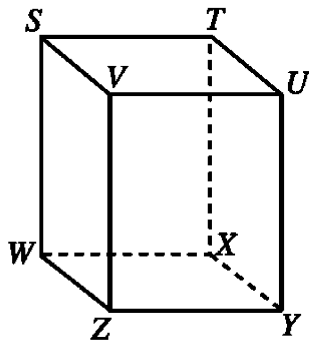
3. Find a counterexample to show that the conjecture is false.

Conjecture: Any number that is divisible by 2 is also divisible by 4.

4. Are  $G$ ,  $F$ , and  $E$  collinear? If so, name the line on which they lie.



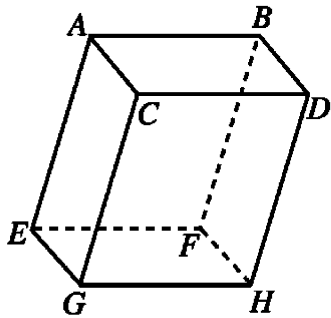
5. What is the intersection of plane  $STXW$  and plane  $TUYX$ ?



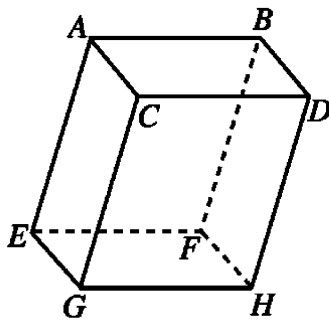
6. Name the ray in the figure.



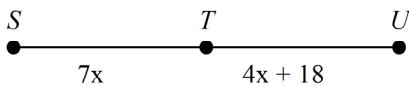
7. Name the four labeled segments that are skew to  $\overline{GC}$ .



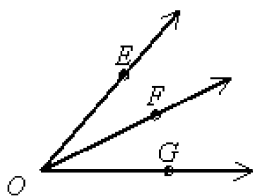
8. Which plane is parallel to plane  $CDHG$ ?



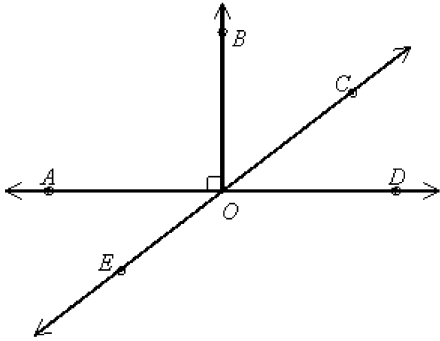
9. If  $T$  is the midpoint of  $\overline{SU}$ , find the values of  $x$  and  $ST$ . The diagram is not to scale.



10. If  $m\angle EOF = 22$  and  $m\angle FOG = 36$ , then what is the measure of  $\angle EOG$ ? The diagram is not to scale.

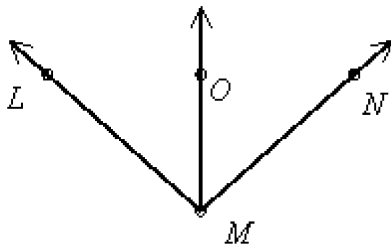


11. Name an angle supplementary to  $\angle COD$ .

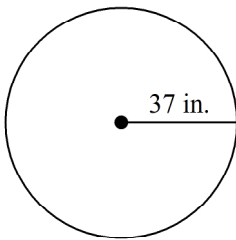


12.  $\angle 1$  and  $\angle 2$  are supplementary angles.  $m\angle 1 = x - 10$ , and  $m\angle 2 = x + 90$ . Find the measure of each angle.

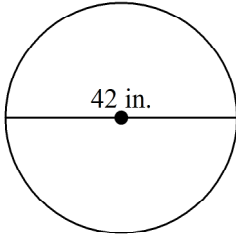
13.  $\overrightarrow{MO}$  bisects  $\angle LMN$ ,  $m\angle LMO = 8x - 20$ , and  $m\angle NMO = 2x + 34$ . Solve for  $x$  and find  $m\angle LMN$ . The diagram is not to scale.



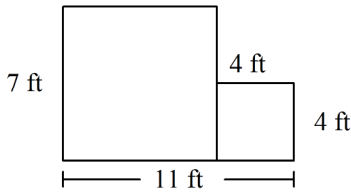
14. Find the distance between points  $P(3, 8)$  and  $Q(2, 3)$  to the nearest tenth.
15. Find the coordinates of the midpoint of the segment whose endpoints are  $H(8, 8)$  and  $K(4, 6)$ .
16. Find the circumference of the circle in terms of  $\pi$ .



17. Find the area of the circle in terms of  $\pi$



18. The figure is formed from rectangles. Find the total area. The diagram is not to scale.



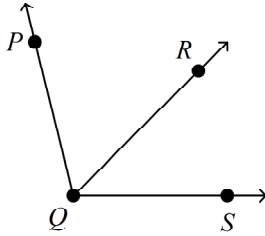
## CHAPTER 2

19. Identify the hypothesis and conclusion of this conditional statement:  
If today is Wednesday, then tomorrow is Thursday.
20. What is the converse and the truth value of the converse of the following conditional?  
If an angle is a right angle, then its measure is 90.
21. Determine whether the conditional and its converse are both true. If both are true, combine them as a biconditional. If either is false, give a counterexample.  
If two lines are parallel, they do not intersect.  
If two lines do not intersect, they are parallel.
22. Decide whether the following definition of *perpendicular* is reversible. If it is, state the definition as a true biconditional.  
Two lines that intersect at right angles are perpendicular.
23. Which statement provides a counterexample to the following faulty definition?  
A square is a figure with four congruent sides.  
A. A six-sided figure can have four sides congruent.  
B. Some triangles have all sides congruent.  
C. A square has four congruent angles.  
D. A rectangle has four sides.
24. Use the Law of Syllogism to draw a conclusion from the two given statements.  
If a number is a multiple of 64, then it is a multiple of 8.  
If a number is a multiple of 8, then it is a multiple of 2.

Fill in each missing reason.

25. Given:  $m\angle PQR = x - 9$ ,  $m\angle SQR = x + 5$ , and  $m\angle PQS = 100$ .

Find  $x$ .



Drawing not to scale

$$m\angle PQR + m\angle SQR = m\angle PQS$$

$$x - 9 + x + 5 = 100$$

$$2x - 4 = 100$$

$$2x = 104$$

$$x = 52$$

a. \_\_\_\_\_

b. Substitution Property

c. Simplify

d. \_\_\_\_\_

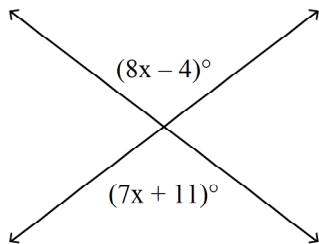
e. Division Property of Equality

Use the given property to complete the statement.

26. Transitive Property of Congruence

If  $\overline{RS} \cong \overline{UW}$  and  $\overline{UW} \cong \overline{VX}$ , then \_\_\_\_\_.

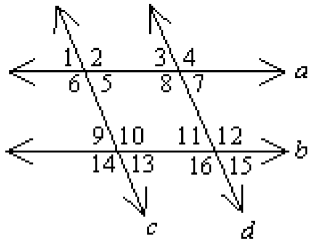
27. Find the value of  $x$ .



Drawing not to scale

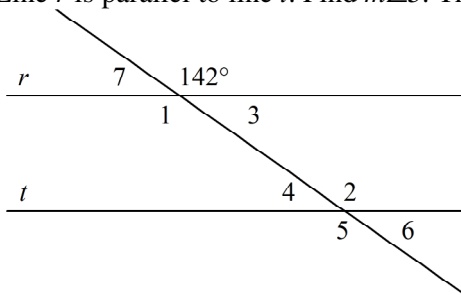
**CHAPTER 3**

28. Which angles are corresponding angles?

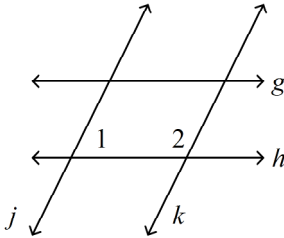


- A.  $\angle 7$  and  $\angle 15$
- B.  $\angle 8$  and  $\angle 7$
- C.  $\angle 3$  and  $\angle 7$
- D. none of these

29. Line  $r$  is parallel to line  $t$ . Find  $m\angle 5$ . The diagram is not to scale.

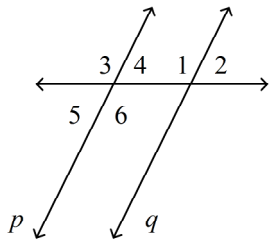


30. Which lines, if any, can you conclude are parallel given that  $m\angle 1 + m\angle 2 = 180$ ? Justify your conclusion with a theorem or postulate.

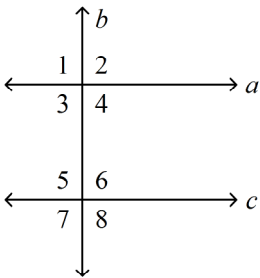


- A.  $j \parallel k$ , by the Converse of the Same-Side Interior Angles Theorem
- B.  $j \parallel k$ , by the Converse of the Alternate Interior Angles Theorem
- C.  $g \parallel h$ , by the Converse of the Alternate Interior Angles Theorem
- D.  $g \parallel h$ , by the Converse of the Same-Side Interior Angles Theorem

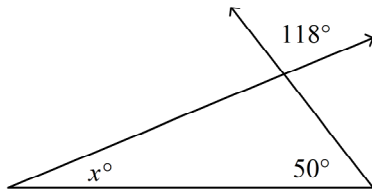
31.  $m\angle 1 = 6x$  and  $m\angle 3 = 102$ . Find the value of  $x$  for  $p$  to be parallel to  $q$ . The diagram is not to scale.



32. If  $c \perp b$  and  $a \parallel c$ , what is  $m\angle 3$ ?

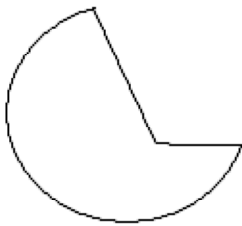


33. Find the value of the variable. The diagram is not to scale.



34. Which figure is a convex polygon?

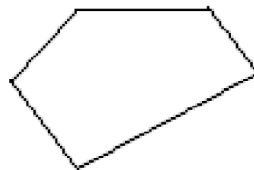
A.



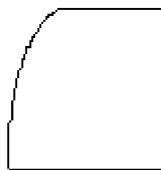
B.



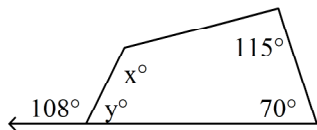
C.



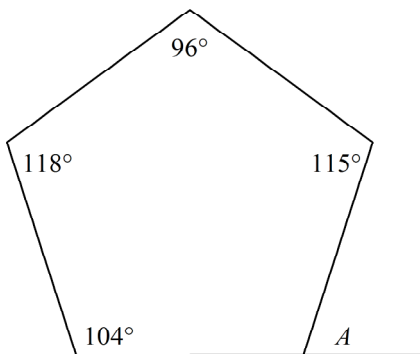
D.



35. How many sides does a regular polygon have if each exterior angle measures  $40^\circ$ ?
36. Find the missing angle measures. The diagram is not to scale.



37. Find  $m\angle A$ . The diagram is not to scale.




38. Write an equation in point-slope form of the line through point  $J(-5, 10)$  with slope  $-7$ .
- A.  $y + 10 = -7(x - 5)$                       C.  $y - 10 = 7(x + 5)$   
 B.  $y - 10 = -7(x + 5)$                       D.  $y - 10 = -7(x - 5)$
39. Which two lines are parallel?
- I.  $3y = -2x - 3$   
 II.  $3y = 5 - 2x$   
 III.  $4y - 3x = -1$
- A. I and II    C. II and III  
 B. I and III    D. No two of the lines are parallel.

## Chapters 1-3 Answer Section

1. ANS:  
25, 29

OBJ: 1-1.1 Using Inductive Reasoning

2. ANS:  


OBJ: 1-1.1 Using Inductive Reasoning

3. ANS:  
18

OBJ: 1-1.1 Using Inductive Reasoning

4. ANS:  
Yes, they lie on the line  $EG$ .

OBJ: 1-3.1 Basic Terms of Geometry

5. ANS:  
 $\overleftrightarrow{TX}$

OBJ: 1-3.2 Basic Postulates of Geometry

6. ANS:  
 $\overrightarrow{NM}$

OBJ: 1-4.1 Identifying Segments and Rays

7. ANS:  
 $\overline{BD}$ ,  $\overline{AB}$ ,  $\overline{EF}$ ,  $\overline{FH}$

OBJ: 1-4.2 Recognizing Parallel Figures

8. ANS:  
plane  $ABFE$

OBJ: 1-4.2 Recognizing Parallel Figures

9. ANS:  
 $x = 6$ ,  $ST = 42$

OBJ: 1-5.1 Finding Segment Lengths

10. ANS:  
58

OBJ: 1-6.1 Finding Angle Measures

11. ANS:  
 $\angle DOE$

OBJ: 1-6.2 Identifying Angle Pairs

12. ANS:  
 $\angle 1 = 40, \angle 2 = 140$

OBJ: 1-6.2 Identifying Angle Pairs

13. ANS:  
 $x = 9, m\angle LMN = 104$

OBJ: 1-7.2 Constructing Bisectors

14. ANS:  
5.1

OBJ: 1-8.1 Finding Distance on the Coordinate Plane

15. ANS:  
(6, 7)

OBJ: 1-8.2 Finding the Midpoint of a Segment

16. ANS:  
 $74\pi$  in.

OBJ: 1-9.1 Finding Perimeter and Circumference

17. ANS:  
 $441\pi$  in.<sup>2</sup>

OBJ: 1-9.2 Finding Area

18. ANS:  
 $65$  ft<sup>2</sup>

OBJ: 1-9.2 Finding Area

19. ANS:  
Hypothesis: Today is Wednesday. Conclusion: Tomorrow is Thursday.

OBJ: 2-1.1 Conditional Statements

20. ANS:  
If an angle has measure 90, then it is a right angle.  
True

OBJ: 2-1.2 Converses

21. ANS:  
One statement is false. If two lines do not intersect, they could be skew..

OBJ: 2-2.1 Writing Biconditionals