Chapter 1 Summary and Review

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VOCABULARY REVIEW

Fill in the blank.

1. __?__ are lines that lie in the same plane.
2. A(n) __?__ consists of two __?__ that have the same endpoint.
3. A(n) __?__ is an unproven statement that is based on a pattern or observation.
4. The endpoint of the rays that form an angle is called its __?__.
5. Two or more figures __?__ if they have points in common.
6. An angle that has a measure between 0° and 90° is called a(n) __?__ angle.
7. Points on the same line are __?__ points.
8. An angle that has a measure of 180° is called a(n) __?__ angle.
9. Two angles that have the same measure are called __?__ angles.
10. A(n) __?__ is an example that shows a conjecture is false.
11. An angle that has a measure between 90° and 180° is called a(n) __?__ angle.
12. Two segments that have the same length are called __?__ segments.

1.1 Finding and Describing Patterns

Examples on pp. 3–4

EXAMPLE **Describe a pattern in the numbers −7, 0, 7, 14, ... Write the next two numbers you expect in the pattern.**

Each number is 7 more than the previous number.
The next two numbers are 21 and 28.

Describe a pattern in the numbers. Write the next two numbers you expect in the pattern.

13. 5, 14, 23, 32, . . .

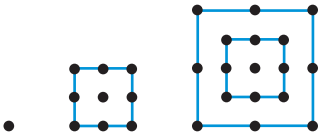
14. 6, 18, 54, 162, . . .

15. 100, 90, 80, 70, . . .

Sketch the next figure you expect in the pattern.

16.

17.



1.2 Inductive Reasoning

Examples on pp. 8–10

EXAMPLE **Complete the conjecture.**

Conjecture: The sum of the first n even positive integers is __?__.

Write several examples and look for a pattern.

	Example	Sum	Pattern
First even positive integer	2	2	**1** • 2
First **2** even positive integers	2 + 4	6	**2** • 3
First **3** even positive integers	2 + 4 + 6	12	**3** • 4
First **4** even positive integers	2 + 4 + 6 + 8	20	**4** • 5

Conjecture: The sum of the first n even positive integers is $n \cdot (n + 1)$.

18. Complete the conjecture based on the pattern you observe.

Conjecture: The product of four consecutive numbers, plus 1, is always a __?__ number.

$4 \cdot 5 \cdot 6 \cdot 7 + 1 = 29 \cdot 29$ $\qquad$ $7 \cdot 8 \cdot 9 \cdot 10 + 1 = 71 \cdot 71$

$5 \cdot 6 \cdot 7 \cdot 8 + 1 = 41 \cdot 41$ $\qquad$ $6 \cdot 7 \cdot 8 \cdot 9 + 1 = 55 \cdot 55$

19. Show the conjecture is false by finding a counterexample.

Conjecture: The cube of a number is always greater than the number.

1.3 Points, Lines, and Planes

Examples on pp. 14–16

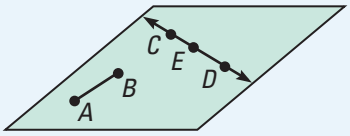
EXAMPLES **Decide whether the statement is *true* or *false*.**

a. C, E, and D are collinear. **true**

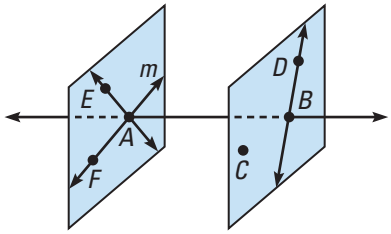
b. A, B, C, and E are coplanar. **true**

c. $\overline{AB}$ is a line. **false**

d. $\overrightarrow{EC}$ and $\overrightarrow{ED}$ are rays. **true**



In Exercises 20–22, use the diagram at the right to decide whether the statement is *true* or *false*.



20. Point A lies on line m.

21. Point E lies on line m.

22. Points B, C, and D are collinear.

23. Draw four points J, K, L, and M, no three of which are collinear. Sketch $\overline{LK}$ and add a point N on that line segment. Then sketch $\overrightarrow{NJ}$ and $\overrightarrow{NM}$.

1.4 Sketching Intersections

Examples on pp. 22–24

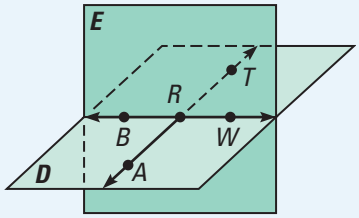
EXAMPLES **Use the diagram at the right.**

a. Name the intersection of lines $\overleftrightarrow{AT}$ and $\overleftrightarrow{BW}$.

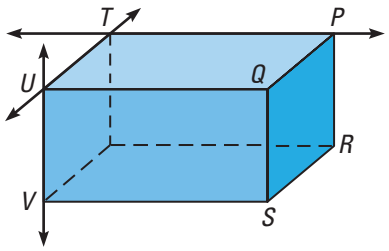
Lines $\overleftrightarrow{AT}$ and $\overleftrightarrow{BW}$ intersect at point R.

b. Name the intersection of planes D and E.

Planes D and E intersect at $\overleftrightarrow{BW}$.



In Exercises 24–27, use the figure to fill in the blank.



24. $\overleftrightarrow{TU}$ and $\overleftrightarrow{VU}$ intersect at __?__.

25. Plane PQR and plane UVS intersect at __?__.

26. Plane RSV and plane QUV intersect at __?__.

27. Plane QSV and plane TUV intersect at __?__.

Visualize It! **Sketch the figure described.**

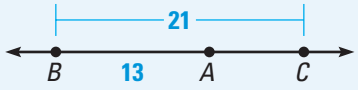
28. Two lines that are not coplanar and do not intersect

29. A plane and two lines that intersect the plane at one point

1.5 Segments and Their Measures

Examples on pp. 28–30

EXAMPLE **Use the diagram to find *AC*.**



$BC = BA + AC$ Segment Addition Postulate

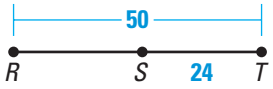
$21 = 13 + AC$ Substitute 21 for *BC* and 13 for *BA*.

$8 = AC$ Subtract 13 from each side.

Find the length.

30. Find *AC*.

31. Find *RS*.



Plot the points. Decide whether $\overline{PQ}$ and $\overline{QR}$ are congruent.

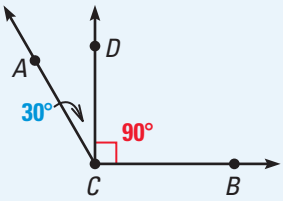
32. $P(2, 3)$, $Q(2, -5)$, $R(9, -5)$

33. $P(-5, 4)$, $Q(1, 4)$, $R(1, -2)$

1.6 Angles and Their Measures

Examples on pp. 35–37

EXAMPLE **Find $m\angle ACB$. Classify the angle.**



$m\angle ACB = m\angle ACD + m\angle DCB$

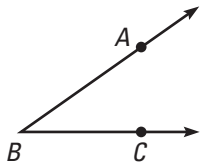
$= 30° + 90°$

$= 120°$

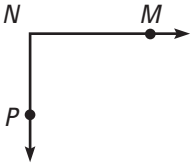
The measure of $\angle ACB$ is 120°, so the angle is obtuse.

Copy the angle, extend its sides, and use a protractor to measure it to the nearest degree. Then classify it as *acute*, *right*, *obtuse*, or *straight*.

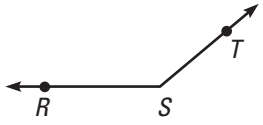
34.



35.

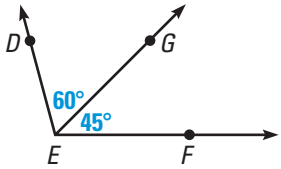


36.

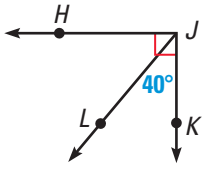


Find the measure of the angle.

37. $m\angle DEF =$?



38. $m\angle HJL =$?



39. $m\angle QNM =$?