

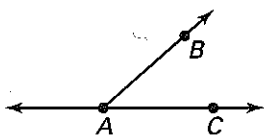
Key Skills & Exercises

LESSON 1.1

Key Skills

Identify and name geometric figures.

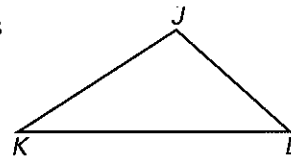
In the figure below, A , B , and C are points, \overleftrightarrow{AC} is a line, \overline{AB} and \overline{AC} are segments, \overrightarrow{AB} , \overrightarrow{AC} , and \overrightarrow{CA} are rays, and $\angle BAC$ is an angle.



Exercises

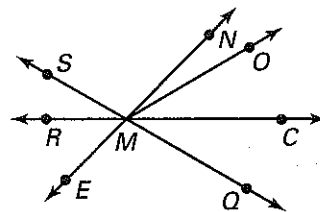
Refer to the figure below.

1. Name all segments in the figure.
2. Name all angles in the figure.



Refer to the figure below.

3. Name all lines in the figure.
4. Name all rays in the figure.

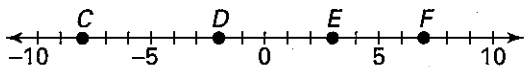


LESSON 1.2

Key Skills

Determine the length of a given segment.

In the figure below, find the lengths of \overline{CD} , \overline{DE} , and \overline{EF} .



$$CD = |-8 - (-2)| = 6$$

$$DE = |-2 - 3| = 5$$

$$EF = |3 - 7| = 4$$

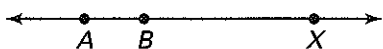
Determine whether segments are congruent.

In the figure above, are \overline{CD} , \overline{DE} , and \overline{EF} congruent segments?

None of the segments are congruent.

Add the lengths of segments.

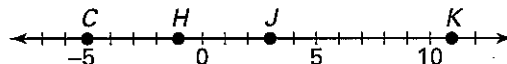
In the figure below, $AB = 7$ and $BX = 15$. Find AX .



$$AX = AB + BX = 7 + 15 = 22$$

Exercises

Refer to the figure below.



5. Find the length of every segment in the figure.
6. Name all congruent segments in the figure.

In Exercises 7 and 8, point A is between points R and P on a line. Sketch a figure for each exercise and find the missing measure.

7. $RA = 25$, $AP = 13$, $RP = ?$

8. $RA = ?$, $AP = 7$, $RP = 13$

LESSON 1.3

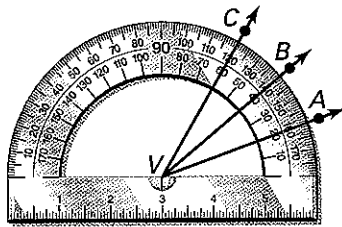
Key Skills

Determine the measure of a given angle.

For the figure below, find the measure of $\angle AVB$ and $\angle BVC$.

$$m\angle AVB = |40^\circ - 20^\circ| = 20^\circ$$

$$m\angle BVC = |60^\circ - 40^\circ| = 20^\circ$$



Add measures of angles.

For the figure above, find $m\angle AVC$.

$$m\angle AVC = m\angle AVB + m\angle BVC = 20^\circ + 20^\circ = 40^\circ.$$

Determine whether angles are congruent.

In the figure above, are $\angle AVB$ and $\angle BVC$ congruent angles?

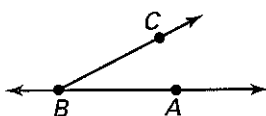
Yes; $\angle AVB \cong \angle BVC$ because they have the same measure.

LESSON 1.4

Key Skills

Use paper folding to construct geometric figures.

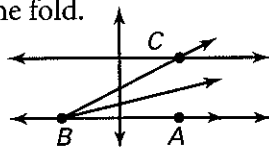
For the figure below, construct the perpendicular bisector of \overline{AB} , the angle bisector of $\angle ABC$, and a line parallel to \overrightarrow{AB} that passes through C.



To construct the perpendicular bisector of \overline{AB} , fold the paper so that A matches up with B.

To construct the angle bisector of $\angle ABC$, fold the paper so that \overrightarrow{BA} matches up with \overrightarrow{BC} .

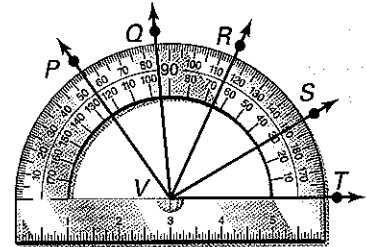
To construct a line parallel to \overrightarrow{AB} through C, fold the perpendicular bisector of \overline{AB} onto itself so that C is on the fold.



Exercises

Refer to the figure below.

- Find the measure of every angle in the figure.
- Name all congruent angles in the figure.

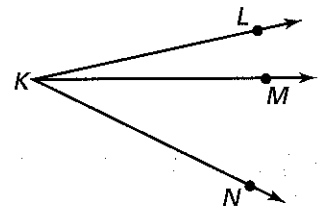


In Exercises 11 and 12, find the missing measures.

11. $m\angle LKM = 12^\circ$

$m\angle MKN = 26^\circ$

$m\angle LKN = ?$



12. $m\angle LKM = ?$

$m\angle MKN = 75^\circ$

$m\angle LKN = 90^\circ$

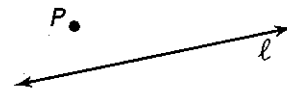
Exercises

Trace each figure onto folding paper and construct the given figure.

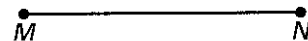
13. a line parallel to \overleftrightarrow{XY}



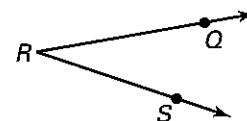
14. a line through P perpendicular to ℓ



15. the perpendicular bisector of \overline{MN}



16. the angle bisector of $\angle QRS$

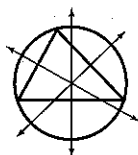


LESSON 1.5

Key Skills

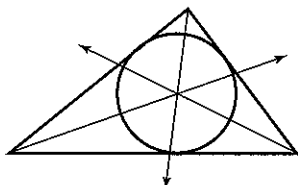
Construct the circumscribed circle of a triangle.

The center of the circumscribed circle of a triangle is the intersection of the perpendicular bisectors of the triangle.



Construct the inscribed circle of a triangle.

The center of the inscribed circle of a triangle is the intersection of the angle bisectors of the triangle.



Exercises

Use geometry software or folding paper and a compass to construct the following:

17. the angle bisectors of an acute triangle
18. the perpendicular bisectors of an obtuse triangle
19. a right triangle circumscribed by a circle
20. a triangle with two congruent sides and its inscribed circle

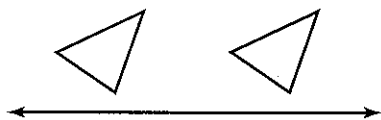
LESSON 1.6

Key Skills

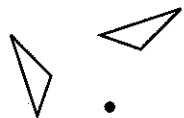
Identify translations, rotations, and reflections.



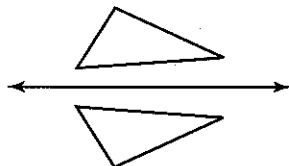
Translate a figure along a line.



Rotate a figure about a point.

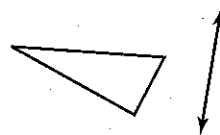


Reflect a figure across a line.

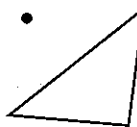


Exercises

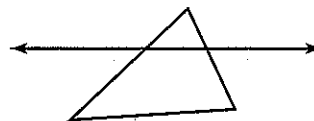
21. Identify the following as being best represented by a translation, rotation, or reflection.
 - a. geometry $\nu\tau\theta\mu\sigma\theta\gamma$
 - b. a child on a slide
 - c. a Ferris wheel
22. Translate the figure along the line.



23. Rotate the figure about the point.



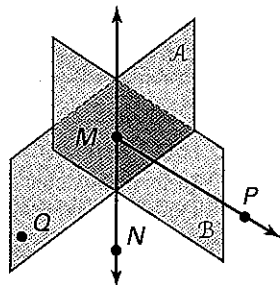
24. Reflect the figure across the line.



1

Chapter Test

Refer to the figure below.

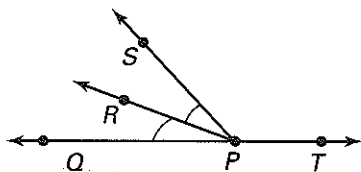


1. Name the intersection of planes A and B.
2. Name three coplanar points in the figure.
3. **NAVIGATION** The towns of Limon, Rocky Ford, and Timpas are located along a straight road. Rocky Ford is between Limon and Timpas. The distance from Limon to Rocky Ford is 13 miles more than 5 times the distance from Rocky Ford to Timpas. The distance from Limon to Timpas is 103 miles. Find the distance from Limon to Rocky Ford and from Rocky Ford to Timpas.

Point C is between points B and F on \overline{BF} . Sketch each figure and find the missing measure.

4. $BC = 42$ $CF = ?$ $BF = 60$
5. $BC = ?$ $CF = 23$ $BF = 51$

In the figure below, $m\angle RPS = 32^\circ$ and $\angle QPS$ and $\angle SPT$ form a linear pair. Find the measure of each angle.



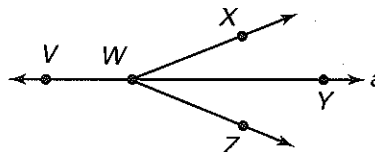
6. $m\angle QPR$
7. $m\angle SPT$
8. $m\angle RPT$

Use a separate piece of paper to fold each figure below. Do not use a ruler or protractor. Trace over each figure and label all relevant parts.

9. two parallel lines
10. a right triangle
11. Use folding paper to construct the angle bisectors of a right triangle.

Refer to the figure below for Exercises 12–13.

Suppose that a is the bisector of $\angle XWZ$ and that $m\angle YWZ = 18^\circ$. Find the measure of each angle.

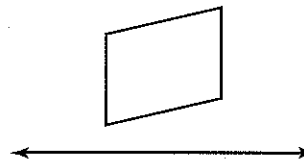


12. $m\angle XWY$
13. $m\angle XWZ$
14. **ART** A potter wants to reconstruct a broken ceramic base. He needs to find the original size of the base. Trace the part of the base shown below and construct the complete circle.

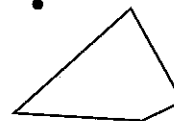


Trace each figure below onto folding paper.

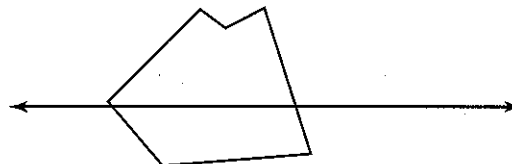
15. Translate the figure along the line.



16. Rotate the figure about the point.



17. Reflect the figure across the line.



Plot the points $(5, 1)$, $(7, -1)$, and $(3, -3)$, and connect them to form a triangle.

18. Transform the triangle by using the rule $T(x, y) = (x - 2, y + 3)$.
19. What rule would you use to translate the triangle 4 units to the right?

1

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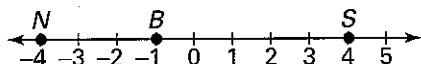
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MULTIPLE-CHOICE For Questions 1–3, write the letter that indicates the best answer.

1. Find NB on the line below. (LESSON 1.2)

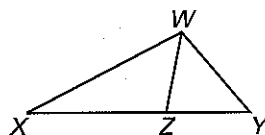


- a. 5
- b. 3
- c. 4
- d. 2

2. Which expression states that \overline{EF} is congruent to \overline{HG} ? (LESSON 1.2)

- a. $\overline{EF} \cong \overline{HG}$
- b. $\overline{EF} = \overline{HG}$
- c. $\overline{EF} \equiv \overline{HG}$
- d. $\overline{EF} = \overline{HG}$

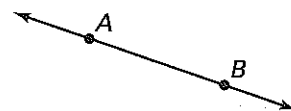
3. Refer to the figure below. If \overline{WZ} bisects $\angle XWY$, which of the following statements is true? (LESSON 1.3)



- a. $m\angle XWZ > m\angle YWZ$
- b. $m\angle XWZ < m\angle YWZ$
- c. $m\angle XWZ = m\angle YWZ$
- d. $m\angle XWZ \neq m\angle YWZ$

Name each figure. (LESSON 1.1)

4.



5.



6.

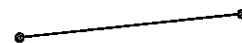


7.

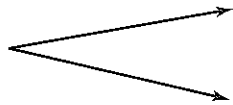


For Items 8–11, trace each diagram onto folding paper and construct the given figure. (LESSONS 1.4 AND 1.5)

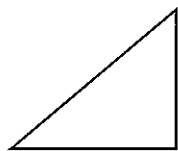
8. the perpendicular bisector



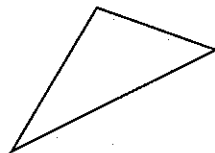
9. the angle bisector



10. the circumcenter
(Draw the circumscribed circle.)



11. the incenter
(Draw the inscribed circle.)



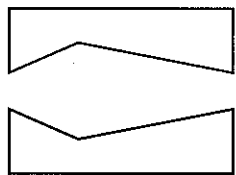
For Items 12–16, identify each transformation as a translation, rotation, or reflection.

(LESSONS 1.6 AND 1.7)

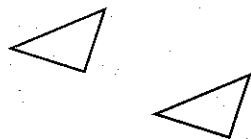
12.



13.



14.



15. $S(x, y) = (x - 1, y)$

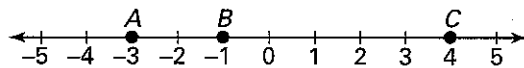
16. $T(x, y) = (x, -y)$

FREE-RESPONSE GRID

Items 17–20 may be answered by using a free-response grid such as that commonly used by standardized-test services.

	/	/	
.	.	.	.
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

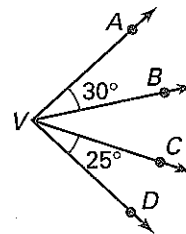
For Items 17 and 18, refer to the figure below.
(LESSON 1.2)



17. $AB = \underline{\quad ? \quad}$

18. $AC = \underline{\quad ? \quad}$

19. Refer to the figure below. If $m\angle AVD = 85^\circ$, what is $m\angle AVC$? (LESSON 1.3)



20. Refer to the figure below. What is $m\angle MON$?
(LESSON 1.5)

