

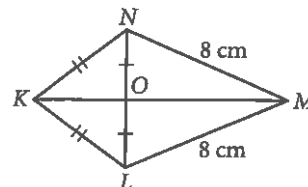
# Lesson 1.1 • Building Blocks of Geometry

Name \_\_\_\_\_ Period \_\_\_\_\_ Date \_\_\_\_\_

For Exercises 1–7, complete each statement.  $\overline{PS} = 3$  cm.

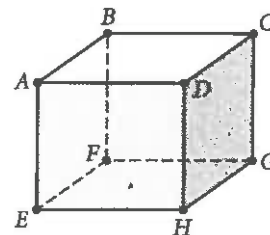


1. The midpoint of  $\overline{PQ}$  is \_\_\_\_\_.
2.  $NQ =$  \_\_\_\_\_.
3. Another name for  $\overline{NS}$  is \_\_\_\_\_.
4.  $S$  is the \_\_\_\_\_ of  $\overline{SQ}$ .
5.  $P$  is the midpoint of \_\_\_\_\_.
6.  $\overline{NS} \cong$  \_\_\_\_\_.
7. Another name for  $\overline{SN}$  is \_\_\_\_\_.
8. Name all pairs of congruent segments in  $KLMN$ . Use the congruence symbol to write your answer.



For Exercises 9 and 10, use a ruler to draw each figure. Label the figure and mark the congruent parts.

9.  $\overline{AB}$  and  $\overline{CD}$  with  $M$  as the midpoint of both  $\overline{AB}$  and  $\overline{CD}$ .  $AB = 6.4$  cm and  $CD = 4.0$  cm.  $A$ ,  $B$ , and  $C$  are not collinear.
10.  $\overline{AB}$  and  $\overline{CD}$ .  $C$  is the midpoint of  $\overline{AB}$  with  $AC = 2.5$  cm.  $D$ , not on  $\overline{AB}$ , is the midpoint of  $\overline{AE}$ , with  $AD = 2BC$ .
11.  $M(-4, 8)$  is the midpoint of  $\overline{DE}$ .  $D$  has coordinates  $(6, 1)$ . Find the coordinates of  $E$ .
12. Sketch six points  $A$ ,  $B$ ,  $C$ ,  $D$ ,  $E$ , and  $F$ , no three of which are collinear. Name the lines defined by these points. How many lines are there?
13. Sketch six points  $U$ ,  $V$ ,  $W$ ,  $X$ ,  $Y$ , and  $Z$ , on four lines such that each line contains three points. How many lines are concurrent at each point?
14. In the figure at right,  $\{B, C, H, E\}$  is a set of four coplanar points. Name two other sets of four coplanar points. How many sets of four coplanar points are there?

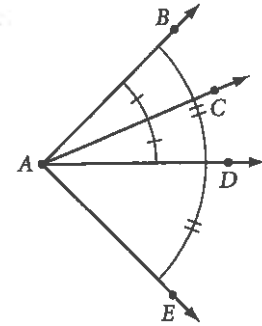


Cube

# Lesson 1.2 • Poolroom Math

Name \_\_\_\_\_ Period \_\_\_\_\_ Date \_\_\_\_\_

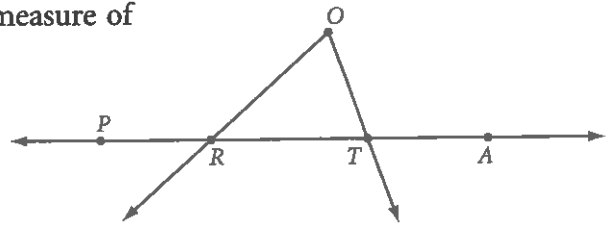
For Exercises 1–5, use the figure at right to complete each statement.



1. A is \_\_\_\_\_ of  $\angle BAE$ .
2.  $\overrightarrow{AD}$  is \_\_\_\_\_ of  $\angle BAE$ .
3.  $\overrightarrow{AD}$  is \_\_\_\_\_ of  $\angle DAE$ .
4. If  $m\angle BAC = 42^\circ$ , then  $m\angle CAE =$  \_\_\_\_\_.
5.  $\angle DAB \cong$  \_\_\_\_\_.

For Exercises 6–10, use your protractor to find the measure of each angle to the nearest degree.

6.  $m\angle PRO$
7.  $m\angle ORT$
8.  $m\angle O$
9.  $m\angle RTO$
10.  $m\angle ATO$

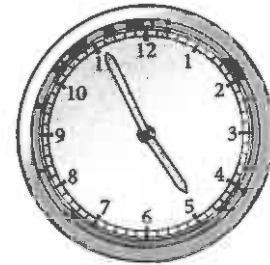


For Exercises 11–13, use your protractor to draw and then label each angle with the given measure.

11.  $m\angle MNO = 15^\circ$
12.  $m\angle RIG = 90^\circ$
13.  $m\angle z = 160^\circ$

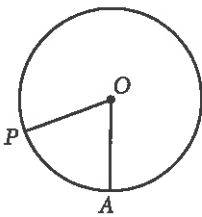
For Exercises 14–16, find the measure of the angle formed by the hands at each time.

14. 3:00
15. 4:00
16. 3:30



→ 17. What's wrong with this statement? " $\overrightarrow{PQ}$  is the angle bisector of  $\angle APB$  and  $m\angle APQ = 107^\circ$ ."

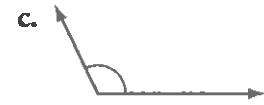
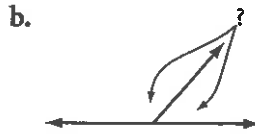
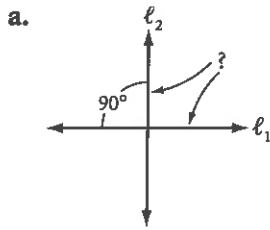
18. As P revolves once clockwise around circle O, describe how  $m\angle AOP$  changes.



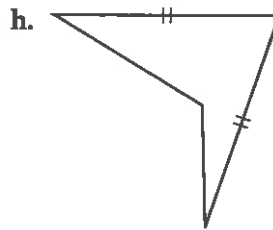
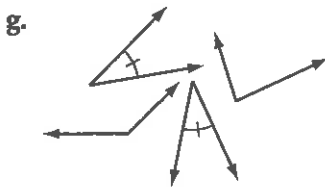
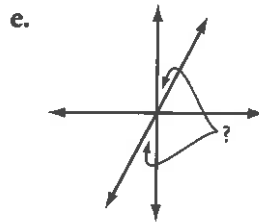
# Lesson 1.3 • What's a Widget?

Name \_\_\_\_\_ Period \_\_\_\_\_ Date \_\_\_\_\_

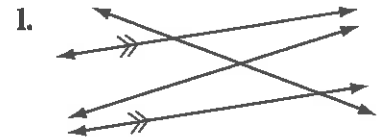
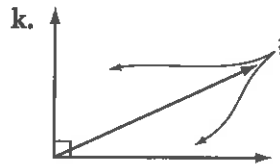
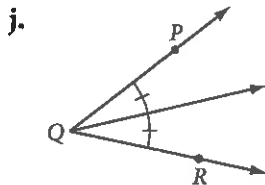
For Exercises 1–12, match each term with one of the items (a to l) below.



d.  $m\angle P = 68^\circ$   
 $m\angle XYZ = 114^\circ$   
 $m\angle Y = 112^\circ$   
 $m\angle STP = 58^\circ$



i.  $m\angle A = 87^\circ$   
 $m\angle X = 96^\circ$   
 $m\angle Y = 90^\circ$



- |                                   |                                       |
|-----------------------------------|---------------------------------------|
| 1. _____ Pair of vertical angles  | 2. _____ Pair of supplementary angles |
| 3. _____ Right angle              | 4. _____ Obtuse angle                 |
| 5. _____ Pair of congruent angles | 6. _____ Pair of complementary angles |
| 7. _____ Linear pair of angles    | 8. _____ Acute angle                  |
| 9. _____ Bisected angle           | 10. _____ Parallel lines              |
| 11. _____ Congruent segments      | 12. _____ Perpendicular lines         |
13. Give two examples of parallel lines in real-world situations.

14. If  $m\angle P = 13^\circ$ ,  $m\angle Q = 77^\circ$ , and  $\angle Q$  and  $\angle R$  are complementary, what can you conclude about  $\angle P$  and  $\angle R$ ? Explain your reasoning.

For Exercises 15–17, sketch, label, and mark a figure showing each property.

15.  $l_1 \parallel l_2, l_2 \perp l_3$

16.  $\overline{PQ} \perp \overline{PR}$

17.  $\angle BAC \cong \angle XAY, CX = BC$

# Lesson 1.4 • Polygons

Name \_\_\_\_\_ Period \_\_\_\_\_ Date \_\_\_\_\_

For Exercises 1–8, complete the table.

Polygon name	Number of sides	Number of diagonals
1. Triangle		
2.		2
3.	5	
4. Hexagon		
5. Heptagon		
6.	8	
7.		35
8.	12	

*find the equation*

For Exercises 9–11, sketch and label each figure. Mark the congruences.

- 9. Concave pentagon *PENTA*, with external diagonal  $\overline{ET}$ , and  $\overline{TA} \cong \overline{PE}$ .
- 10. Equilateral quadrilateral *QUAD*, with  $\angle Q \neq \angle U$ .
- 11. Regular octagon *ABCDEFGH*.

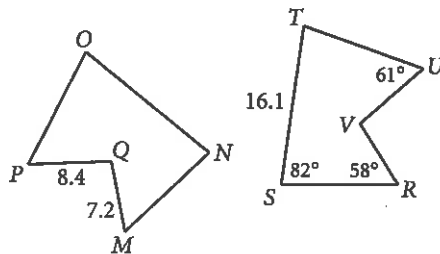
For Exercises 12–15, sketch and use hexagon *ABCDEF*.

- 12. Name the diagonals from *A*.
- 13. Name a pair of consecutive sides.
- 14. Name a pair of consecutive angles.
- 15. Name a pair of non-intersecting diagonals.

For Exercises 16–19, use these figures at right.

$MNOPQ \cong RSTUV$

- 16.  $m\angle N =$  \_\_\_\_\_
- 17.  $VR =$  \_\_\_\_\_
- 18.  $m\angle P =$  \_\_\_\_\_
- 19.  $ON =$  \_\_\_\_\_



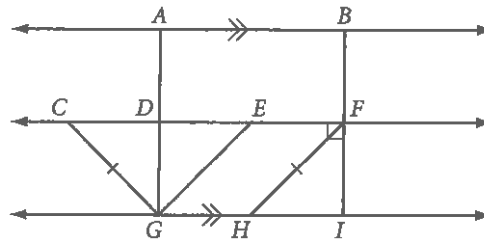
- 20. How many different (noncongruent) convex quadrilaterals can you make on a 3-by-3 dot grid, using the dots as vertices?

# Lesson 1.5 • Triangles and Special Quadrilaterals

Name \_\_\_\_\_ Period \_\_\_\_\_ Date \_\_\_\_\_

For Exercises 1–7, use the figure at right. Name a pair of

1. Parallel segments
2. Perpendicular segments
3. Congruent segments
4. Complementary angles
5. Supplementary angles
6. Linear angles
7. Vertical angles

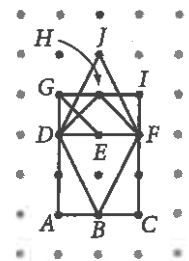


For Exercises 8–12, sketch, label, and mark each figure.

8. Isosceles obtuse triangle  $TRI$  with vertex angle  $T$ .
9. Rhombus  $RHOM$  with acute  $\angle H$  and the shorter diagonal.
10. Scalene right triangle  $SCA$  with midpoints  $L$ ,  $M$ , and  $N$  on  $\overline{SC}$ ,  $\overline{CA}$ , and  $\overline{SA}$ , respectively.
11. Trapezoid  $TRAP$  with  $\overline{TR} \parallel \overline{AP}$ ,  $\overline{RE} \perp \overline{PA}$ , and  $P$ ,  $E$ , and  $A$  collinear.
12. Kite  $KITE$  with  $EK = EI$  and obtuse  $\angle K$ .

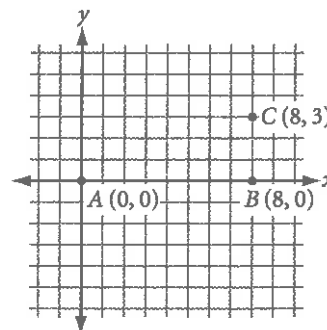
For Exercises 13–22, name each polygon in the figure. Assume that the grid is square.

- |                           |                        |
|---------------------------|------------------------|
| 13. Square                | 14. Rectangle          |
| 15. Parallelogram         | 16. Trapezoid          |
| 17. Rhombus               | 18. Kite               |
| 19. Concave quadrilateral | 20. Isosceles triangle |
| 21. Scalene triangle      | 22. Right triangle     |



For Exercises 23–26, use the graph at right.

23. Locate  $D$  so that  $ABCD$  is a rectangle.
24. Locate  $E$  so that  $ABCE$  is a trapezoid.
25. Locate  $F$  so that  $ABF$  is a right triangle.
26. Locate  $G$  so that  $A$ ,  $B$ ,  $C$ , and  $G$  determine a parallelogram that is not a rectangle.



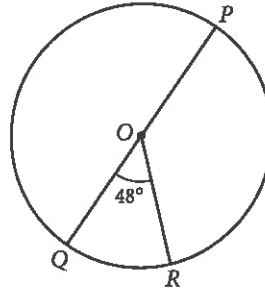
# Lesson 1.6 • Circles

Name \_\_\_\_\_ Period \_\_\_\_\_ Date \_\_\_\_\_

- Use a compass, protractor, and straightedge to draw circle  $O$  with diameter  $\overline{AB}$ ; radius  $\overline{OC}$  with  $\overline{OC} \perp \overline{AB}$ ;  $\overline{OD}$ , the angle bisector of  $\angle AOC$ , with  $D$  on the circle; chords  $\overline{AC}$  and  $\overline{BC}$ ; and a tangent at  $D$ .

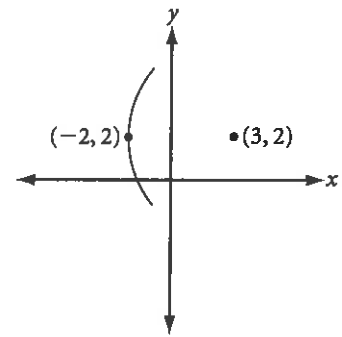
For Exercises 2–5, use the figure at right.

- $m\overline{QR} = \underline{\hspace{2cm}}$
- $m\overline{PR} = \underline{\hspace{2cm}}$
- $m\overline{PQR} = \underline{\hspace{2cm}}$
- $m\overline{QPR} = \underline{\hspace{2cm}}$



For Exercises 6–8, give the measure of the central angle formed by the hands of a clock at each time.

- 1:00
- 2:30
- 6:45
- Use a compass to construct a circle. Label the center  $P$ . Sketch two parallel tangents. Connect the points of tangency. What do you notice about the chord?
- Sketch a circle with an inscribed pentagon.
- Sketch a circle with a circumscribed quadrilateral.
- A circle with center at  $(3, 2)$  goes through the point  $(-2, 2)$ . Give the coordinates of three other points on the circle.
- Use your compass and protractor to make an arc with measure  $50^\circ$ , an arc with measure  $180^\circ$ , and an arc with measure  $290^\circ$ . Label each arc with its measure.
- Use your compass to construct two circles with different radii that intersect in two points. Label the centers  $P$  and  $Q$  and the points of intersection  $A$  and  $B$ . Construct quadrilateral  $PAQB$ . What type of quadrilateral is it?
- Use your compass and straightedge to construct a circle with an inscribed equilateral triangle. (Hint: Remember the daisy designs from Chapter 0.)



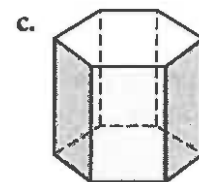
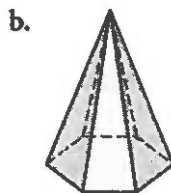
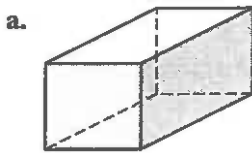
## Lesson 1.7 • A Picture Is Worth a Thousand Words

Name \_\_\_\_\_ Period \_\_\_\_\_ Date \_\_\_\_\_

Read and reread each problem carefully, determining what information you are given and what it is that you trying to find.

1. A pair of parallel interstate gas and power lines run 10 meters apart and are equally distant from relay station A. The power company needs to locate a gas-monitoring point on one of the lines exactly 12 meters from relay station A. Draw a diagram showing the locus of possible locations.
2. Motion-efficiency expert Martha G. Rigsby needs to locate a supply point equally distant from two major work-inspection stations in an electronics assembly plant. The workstations are 30 meters apart and are each positioned halfway between a pair of parallel heat-sensitive walls. The walls are 24 meters apart. The supply point must be at least 4, and at most 20, meters from either wall. Draw a diagram of the locus of possible locations.
3. The six members of the Seneca High School 10th-grade math club are to have a group photo taken for the yearbook. The photographer has asked each group to submit the height of each member so that he can quickly arrange them in order. The math club sent him the following information. Anica is 4 inches taller than Bruce. Charles is the same height as Ellen but an inch taller than Anica. Fred is midway between Bruce and Dora. Dora is 2 inches taller than Anica. Help out the photographer and arrange the club members in order from tallest to shortest.

- ★ 4. Sketch a possible net for each solid.



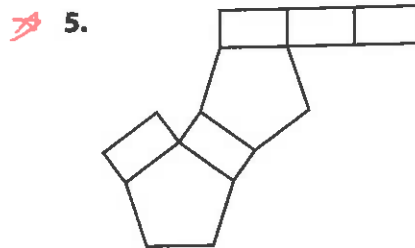
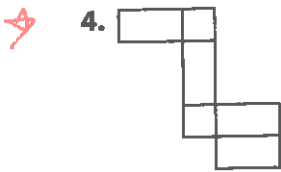
# Lesson 1.8 • Space Geometry

Name \_\_\_\_\_ Period \_\_\_\_\_ Date \_\_\_\_\_

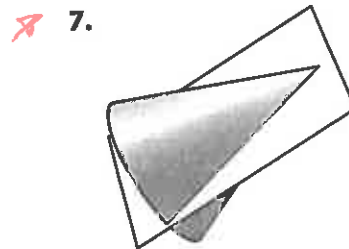
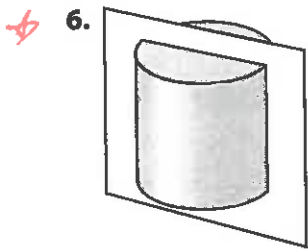
For Exercises 1–3, draw each figure.

1. A prism with a rectangular base.
2. A cylinder with base diameter greater than height.
3. A cone on a sphere, like a hat on a head.

For Exercises 4 and 5, sketch the three-dimensional figure formed by folding each net into a solid. Name the solid.

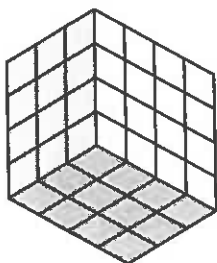


For Exercises 6 and 7, sketch the section formed when each solid is sliced by the plane as shown.



For Exercises 8 and 9, sketch a 2-by-3-by-4 rectangular prism showing the 1-by-1 building cubes.

8. Sketch the prism looking straight at a vertical edge from a point slightly above the prism.
9. Sketch the prism looking straight at a face from a point slightly to the right and slightly above the prism.
10. The prism below is built with 1-cm cubes. How many cubes are completely hidden from sight?



11. Find the lengths of  $x$  and  $y$ .

