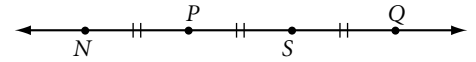


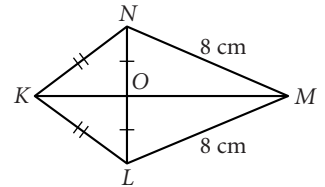
Lesson 1.1 • Building Blocks of Geometry

Name _____ Period _____ Date _____

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

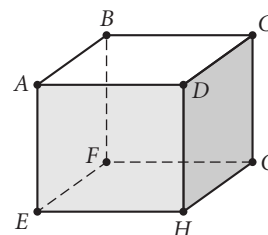


1. The midpoint of $\overline{PQ}$ is _____.
2. $NQ =$ _____.
3. Another name for $\overline{NS}$ is _____.
4. S is the _____ of $\overrightarrow{SQ}$.
5. P is the midpoint of _____.
6. $\overline{NS} \cong$ _____.
7. Another name for $\overrightarrow{SN}$ is _____.
8. Name all pairs of congruent segments in $KL MN$. Use the congruence symbol to write your answer.
9. $M(-4, 8)$ is the midpoint of $\overline{DE}$. D has coordinates $(6, 1)$. Find the coordinates of E .



For Exercises 10 and 11, use a ruler to draw each figure. Label the figure and mark the congruent parts.

10. $\overline{AB}$ 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.
11. $\overrightarrow{AB}$ and $\overline{CD}$. C is the midpoint of $\overline{AB}$, with $AC = 1.5$ cm. D , not on $\overrightarrow{AB}$, is the midpoint of $\overline{AE}$, with $AD = 2BC$.
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. In the figure below, $\{B, C, H, E\}$ 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

Coordinate Geometry 1 • The Midpoint

Name _____ Period _____ Date _____

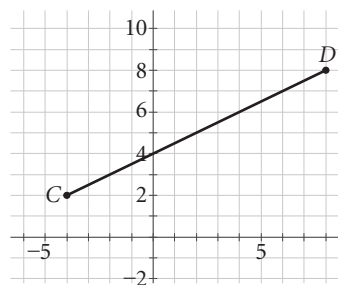
For Exercises 1–3, find the coordinates of the midpoint of the segment with each pair of endpoints.

1. $(10, -3)$ and $(-2, -1)$ 2. $(-4, -5)$ and $(2, -11)$ 3. $(0, 3)$ and $(5, -1)$

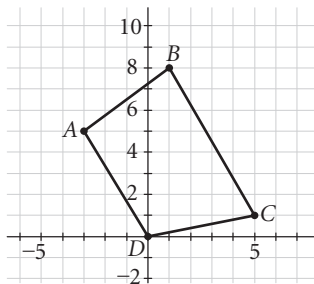
4. The midpoint of $\overline{XY}$ is $(3, -5)$. The coordinates of point X are $(1, 5)$.
What are the coordinates of point Y ?

For Exercises 5 and 6, use $\overline{CD}$ from the coordinate grid at right.

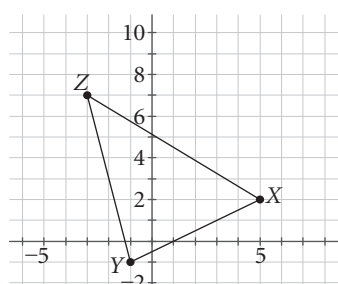
5. Find the midpoint of $\overline{CD}$.
6. Find the points on $\overline{CD}$ that divide the segment into three congruent parts. Graph your solution and explain your method.



7. Find the midpoint of diagonal $\overline{AC}$ of $ABCD$.



8. Find the midpoint of the base $\overline{XY}$ in $\triangle XYZ$.

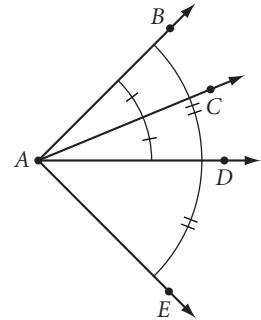


9. How many midpoints does a segment have? Explain your reasoning.
10. How many segments have the midpoint $(2, -3)$? Explain your reasoning.

Lesson 1.2 • Finding Angles

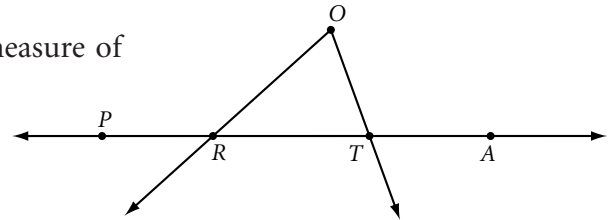
Name _____ Period _____ Date _____

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



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

For Exercises 6–9, use your protractor to find the measure of each angle to the nearest degree.



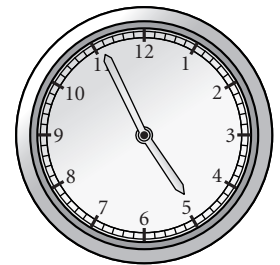
6. $m\angle PRO$
7. $m\angle ORT$
8. $m\angle O$
9. $m\angle RTO$

For Exercises 10–12, use your protractor to draw and then label each angle with the given measure.

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

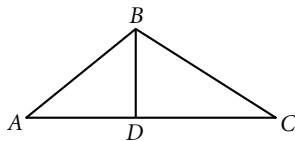
For Exercises 13–15, find the measure of the angle formed by the hands at each time.

13. 3:00
14. 4:00
15. 3:30

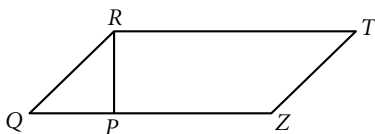


For Exercises 16 and 17, mark each figure with all the given information.

16. $m\angle ADB = 90^\circ$, $AD = BD$, $\angle DAB \cong \angle DBA$



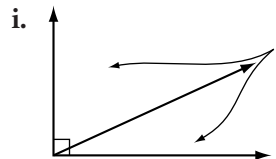
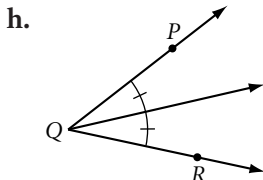
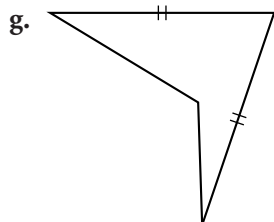
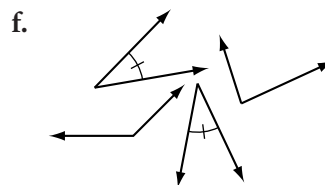
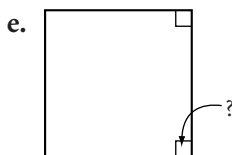
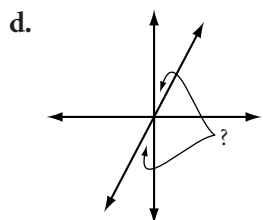
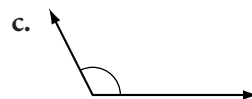
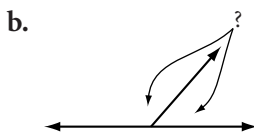
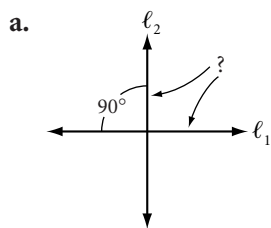
17. $m\angle RPQ = 90^\circ$, $QR = TZ$, $RT = QZ$, $\angle Q \cong \angle T$



Lesson 1.3 • Creating Definitions

Name _____ Period _____ Date _____

For Exercises 1–9, match each term with one of the items (a to i) below.



1. _____ Vertical angles
2. _____ Obtuse angle
3. _____ Right angle
4. _____ Complementary angles
5. _____ Congruent angles
6. _____ Linear pair of angles
7. _____ Bisected angle
8. _____ Perpendicular lines
9. _____ Congruent segments
10. 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 11–13, sketch, label, and mark a figure showing each property.

11. $\ell_1 \parallel \ell_2$, $\ell_2 \perp \ell_3$

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

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

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	

For Exercises 9 and 10, 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 $\angle Q \cong \angle U$.

For Exercises 11–14, sketch and use hexagon *ABCDEF*.

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

For Exercises 15–18, use the figures at right.

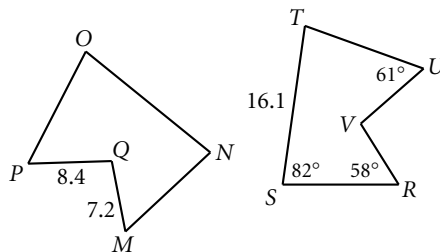
$MNOPQ \cong RSTUV$

15. $m\angle N =$ _____

16. $VR =$ _____

17. $m\angle P =$ _____

18. $ON =$ _____



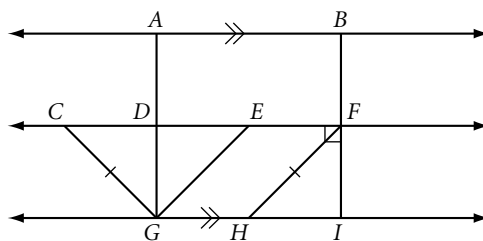
19. The perimeter of a regular pentagon is 31 cm. Find the length of each side.

Lesson 1.5 • Triangles

Name _____ Period _____ Date _____

For Exercises 1–5, use the figure at right. Name a pair of

1. Parallel segments
2. Perpendicular segments
3. Congruent segments
4. Supplementary angles
5. Linear angles



For Exercises 6 and 7, sketch, label, and mark each figure.

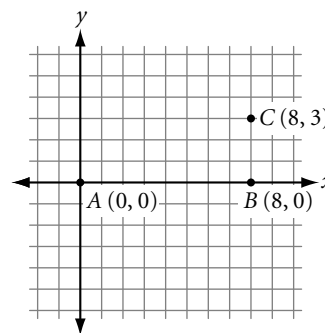
6. Isosceles obtuse triangle TRI with vertex angle T .
7. Scalene right triangle SCA with midpoints L , M , and N on $\overline{SC}$, $\overline{CA}$, and $\overline{SA}$, respectively.

For Exercises 8 and 9, use your geometry tools to draw each figure.

8. Acute isosceles triangle ACD with vertex angle A measuring 40° .
9. Scalene right triangle RGH .

For Exercises 10–12, use the graph at right.

10. Locate F so that $\triangle ABF$ is a right triangle.
11. Locate D so that $\triangle ABD$ is an isosceles triangle.
12. Locate G so that $\triangle ABG$ is scalene and not a right triangle.



Lesson 1.6 • Special Quadrilaterals

Name _____ Period _____ Date _____

For Exercises 1–6, sketch, label, and mark each figure.

1. Parallelogram $PGRA$

2. Square $SQRE$

3. Rhombus $RHOM$ with acute $\angle H$.

4. Trapezoid $TRAP$ with $\overline{TR} \parallel \overline{AP}$, $\overline{RE} \perp \overline{PA}$, and P , E , and A collinear.

5. Kite $KITE$ with $EK = KI$ and obtuse $\angle K$.

6. Rectangle $RANG$ with perimeter $2a + 4b$

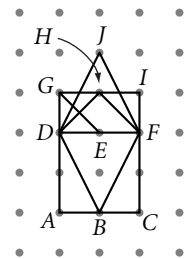
For Exercises 7–10, name each polygon in the figure. Assume that the grid is square.

7. Square

8. Parallelogram

9. Rhombus

10. Kite

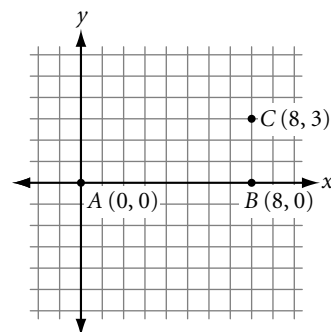


For Exercises 11–13, use the graph at right.

11. Locate D so that $ABCD$ is a rectangle.

12. Locate E so that $ABCE$ is a trapezoid.

13. Locate G so that points A , B , C , and G determine a parallelogram that is not a rectangle.

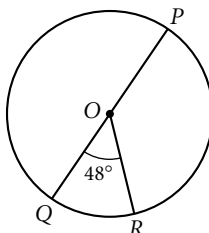


Lesson 1.7 • Circles

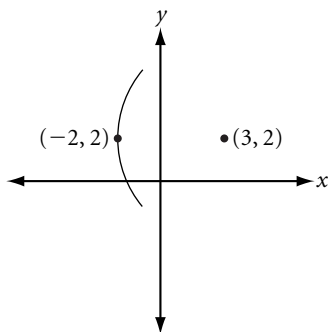
Name _____ Period _____ Date _____

For Exercises 1–4, use the figure at right.

1. $m\widehat{QR} = \underline{\hspace{2cm}}$
2. $m\widehat{PR} = \underline{\hspace{2cm}}$
3. $m\widehat{PQR} = \underline{\hspace{2cm}}$
4. $m\widehat{QPR} = \underline{\hspace{2cm}}$



5. Sketch a circle with an inscribed pentagon.
6. Sketch a circle with a circumscribed quadrilateral.
7. A circle with center $(3, 2)$ goes through $(-2, 2)$. Give the coordinates of three other points on the circle.
8. 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 .



9. 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?
10. Use your compass and protractor to make an arc with measure 50° , an arc with measure 180° , and an arc with measure 290° . Label each arc with its measure.
11. 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?

Lesson 1.8 • Space Geometry

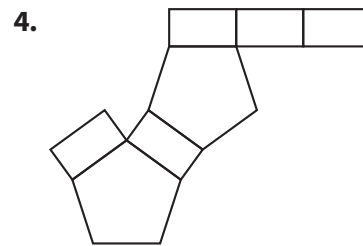
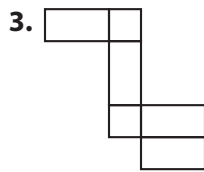
Name _____ Period _____ Date _____

For Exercises 1 and 2, draw each figure.

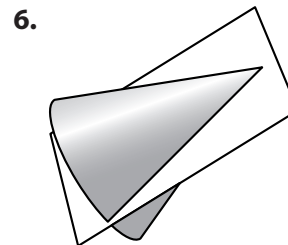
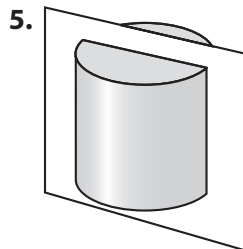
1. A prism with a rectangular base.

2. A cylinder with base diameter greater than height.

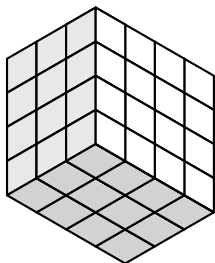
For Exercises 3 and 4, sketch the three-dimensional figure formed by folding each net into a solid. Name the solid.



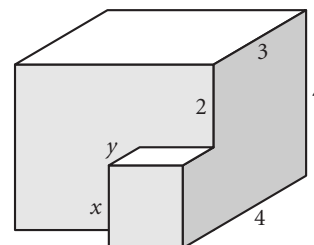
For Exercises 5 and 6, sketch the section formed when each solid is sliced by the plane as shown.



7. The prism below is built with 1-cm cubes. How many cubes are completely hidden from sight, as seen from this angle?



8. Find the lengths of x and y .

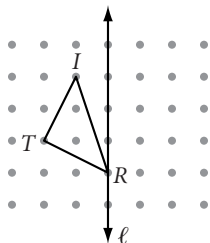


Lesson 1.9 • Transformations

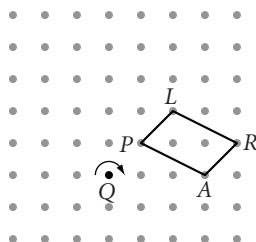
Name _____ Period _____ Date _____

In Exercises 1–3, perform each transformation.

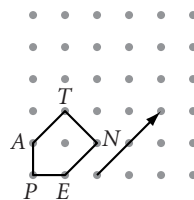
1. Reflect $\triangle TRI$ across line ℓ .



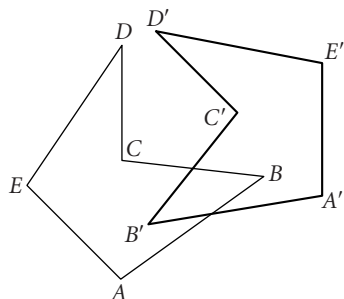
2. Rotate $PARL$ 270° clockwise about Q .



3. Translate $PENTA$ by the given vector.

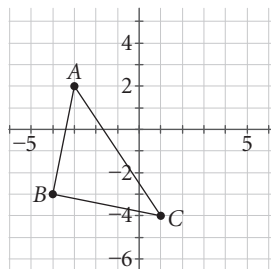


4. $ABCDE$ and its reflected image, $A'B'C'D'E'$, are shown below. Use construction tools to locate the line of reflection, ℓ . Explain your method.

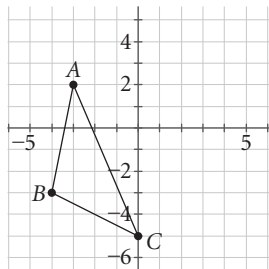


5. Given $\triangle ABC$ on the coordinate plane, complete the following transformations.

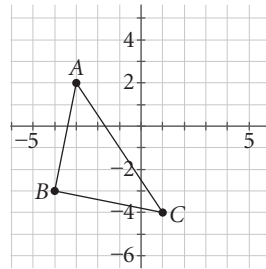
- a. Translate 4 units right and 3 units up.



- b. Rotate 90° counterclockwise about the origin.



- c. Reflect across the y -axis.



6. For exercise 5a above, which of the following statements are true?

- $\overline{AB} \cong \overline{A'B'}$
- $\angle CAB \cong \angle C'A'B'$
- $\angle A \cong \angle C$