

My academic goal for this unit is...

Check for Understanding Key:

- Understanding at start of the unit
- | Understanding after practice
- ▲ Understanding before unit test

LEARNING TARGETS		How is my understanding?	Test Score	Retake?
1a	I can list the tools of geometry.	<div>_____</div> <div>1 2 3 4</div>		
1b	I can write a definition (what it is, and how it is different).	<div>_____</div> <div>1 2 3 4</div>		
1c	I can name the building blocks of geometry, the three things that the rest of geometry is built on (undefined terms).	<div>_____</div> <div>1 2 3 4</div>		
1d	I can define geometric terms based on the building blocks of geometry (segments, angles, congruence).	<div>_____</div> <div>1 2 3 4</div>		
1e	I can interpret geometric notation (congruence hash, parallel lines).	<div>_____</div> <div>1 2 3 4</div>		
1f	I can calculate midpoint in coordinate geometry.	<div>_____</div> <div>1 2 3 4</div>		
1e	I can name and classify angles (multiple ways of identifying: $\angle ABC$, $\angle 1$; vertical, linear pair).	<div>_____</div> <div>1 2 3 4</div>		

Where does the word “geometry” come from?

1 Just starting, Insufficient	2 Yes, but..., Minimal	3 Yes, Proficient	4 WOW, Excellent
I can't do it and am not able to explain process or key points	I can sort of do it and am able to show process, but not able to identify/explain key math points	I can do it and able to both explain process and identify/explain math points	I'm great at doing it and am able to explain key math points accurately in a variety of problems

Unit 1A Definitions

<i>Term</i>	<i>Definition</i>	<i>Diagram</i>
Reflectional Symmetry		
Bilateral Symmetry		
Rotational Symmetry		
Tools of Geometry	Straight Edge: Compass:	
Point		
Line		
Plane		
Collinear		
Coplanar		

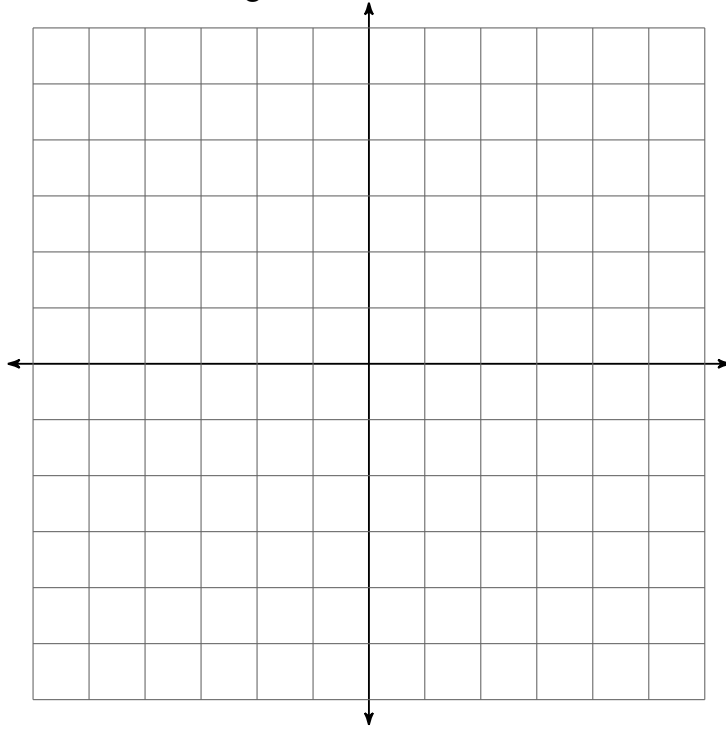
<i>Term</i>	<i>Definition</i>	<i>Diagram</i>
Line Segment		
Congruent Segments		
Midpoint		
Bisect		
Ray		
Angle		
Congruent Angles		
Perpendicular Lines		
Parallel Lines		

<i>Term</i>	<i>Definition</i>	<i>Diagram</i>
Right Angle		
Acute Angle		
Obtuse Angle		
Vertical Angles		
Linear Pair of Angles		
Complimentary Angles		
Supplementary Angles		

Line and Circle Designs

Use tools of Geometry to construct the following:

1) On the coordinate grid below to construct The Astrid.



2) Using a straight edge and compass, construct The 8-Point Star.

3) On the backside of the worksheet, use a compass to construct The Daisy.

Daisy Design

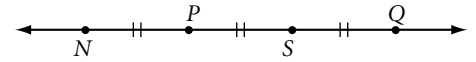
NOTES

NOTES

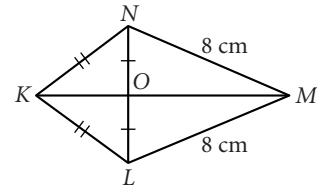
Lesson 1.1 • Building Blocks of Geometry

Name _____ Period _____ Date _____

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

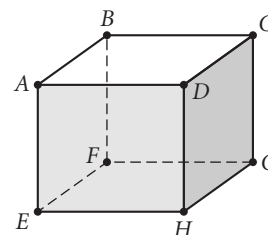


1. The midpoint of \overline{PQ} is _____.
2. $NQ =$ _____.
3. Another name for \overline{NS} is _____.
4. S is the _____ of \overrightarrow{SQ} .
5. P is the midpoint of _____.
6. $\overline{NS} \cong$ _____.
7. Another name for \overrightarrow{SN} is _____.
8. Name all pairs of congruent segments in $KL MN$. 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. \overline{AB} and \overline{CD} . C is the midpoint of \overline{AB} , with $AC = 1.5$ cm. D , not on \overline{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?

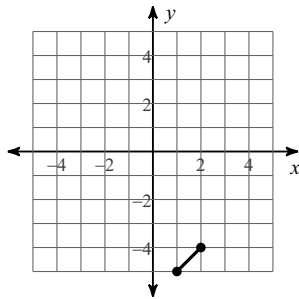


Cube

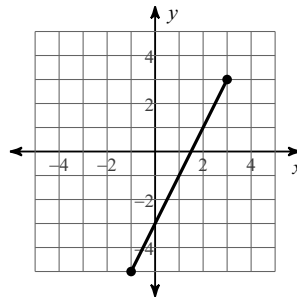
Practice: Midpoints

Find the midpoint of each line segment.

1)



2)



Find the midpoint of the line segment with the given endpoints.

3) $(0, 0)$, $(-2, 3)$

4) $(5, 8)$, $(-4, 5)$

5) $(3, 8)$, $(10, 2)$

6) $(1, 0)$, $(1, 9)$

Find the other endpoint of the line segment with the given endpoint and midpoint.

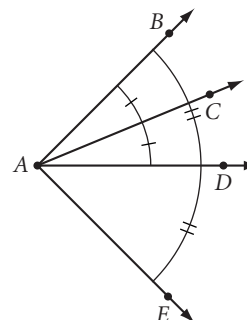
7) Endpoint: $(1, 5)$, midpoint: $(7, 5)$

8) Endpoint: $(-9, 9)$, midpoint: $(10, 4)$

Lesson 1.2 • Poolroom Math

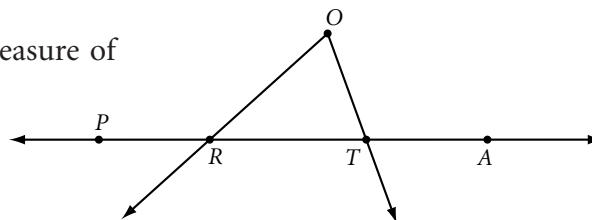
Name _____ Period _____ Date _____

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.



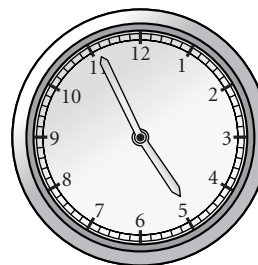
6. $m\angle PRO$
7. $m\angle ORT$
8. $m\angle O$
9. $m\angle RTO$

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. $m\angle z = 160^\circ$

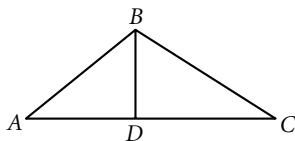
For Exercises 13–15, find the measure of the angle formed by the hands at each time.

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

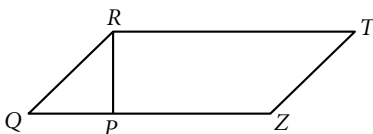


For Exercises 16 and 17, mark each figure with all the given information.

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



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

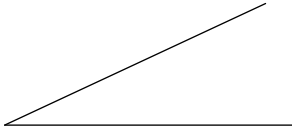


Practice: Angles Basics

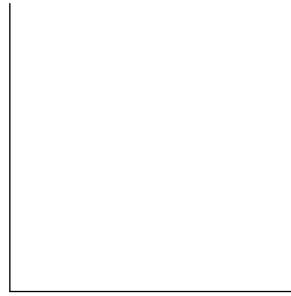
Date: _____ Period: _____

Find the measure of each angle to the nearest degree.

1)

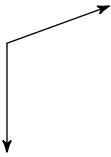


2)

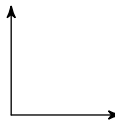


Classify each angle as acute, obtuse, right, or straight.

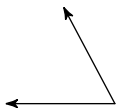
3)



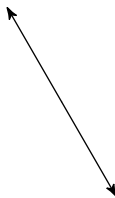
4)



5)



6)



7) 67°

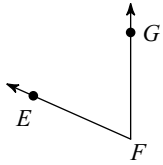
8) 98°

9) 90°

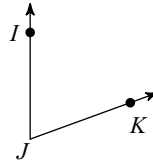
10) 180°

Name the vertex and sides of each angle.

11)

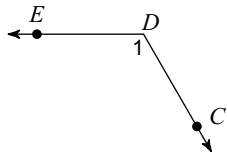


12)

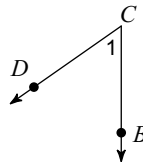


Name each angle in four ways.

13)

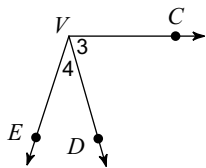


14)

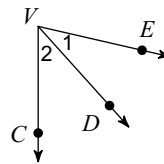


Name all the angles that have V as a vertex.

15)

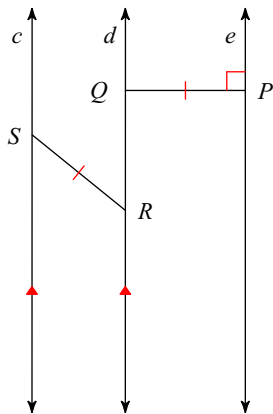


16)

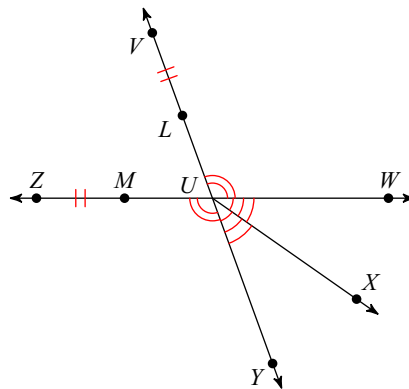


List all information given by the marks on the diagram.

17)



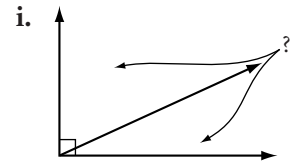
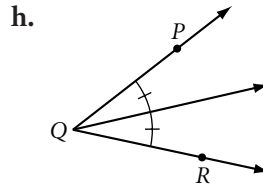
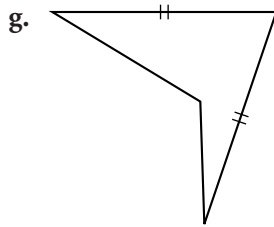
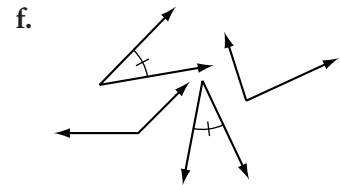
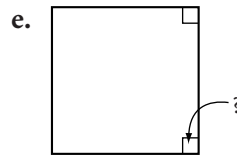
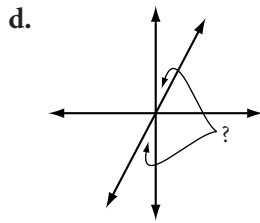
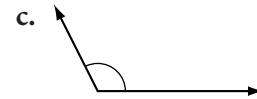
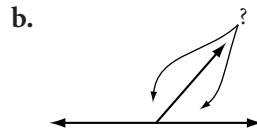
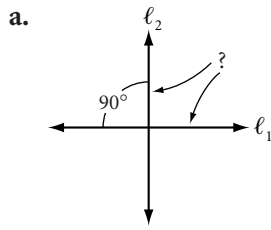
18)



Lesson 1.3 • What's a Widget?

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

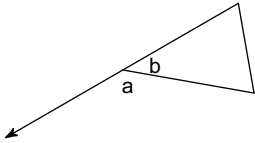
12. $\overline{PQ} \perp \overline{PR}$

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

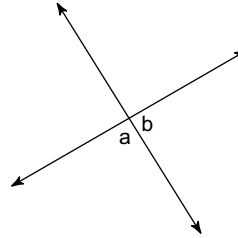
Practice: Angle Relationships

Name the relationship: complementary, linear pair, or vertical.

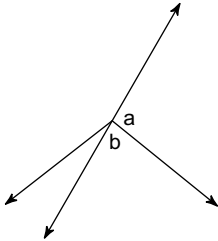
1)



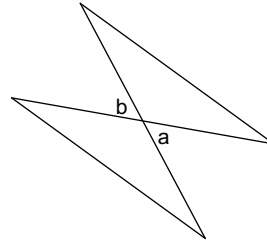
2)



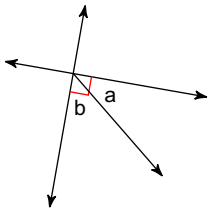
3)



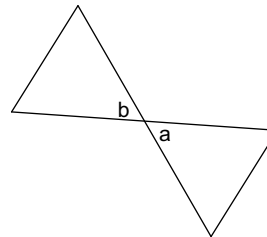
4)



5)

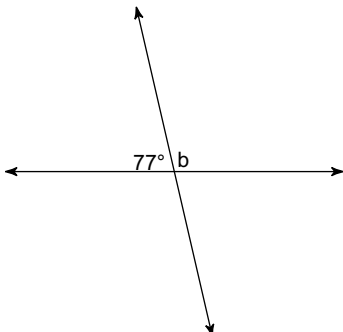


6)

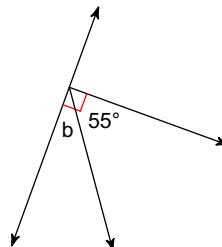


Find the measure of angle b.

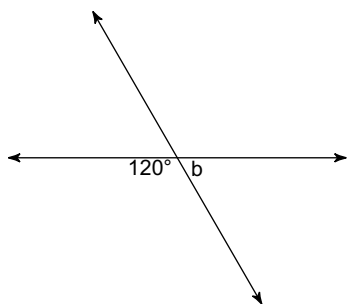
7)



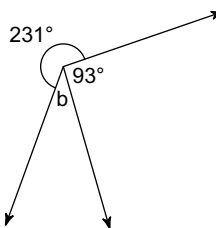
8)



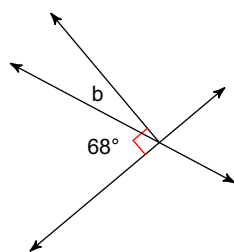
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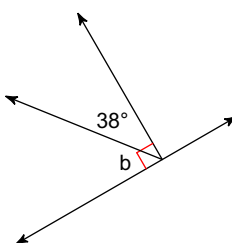
10)



11)

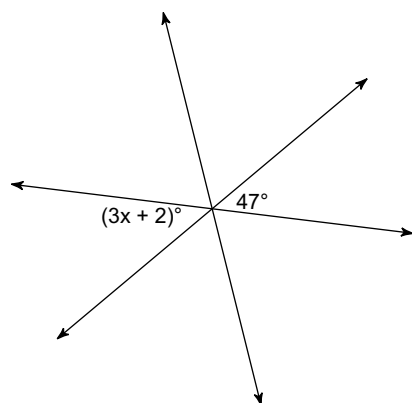


12)

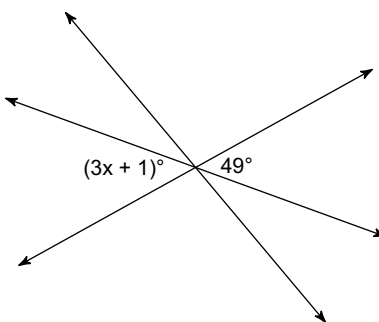


Find the value of x.

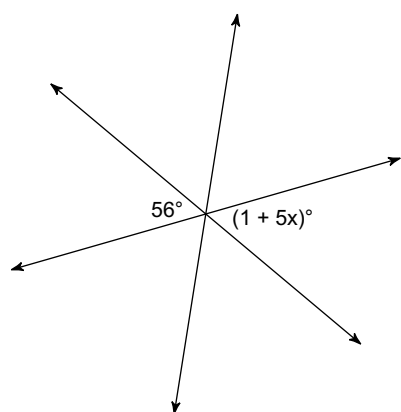
13)



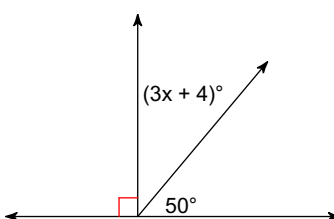
14)



15)



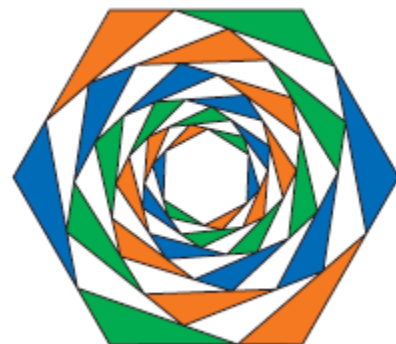
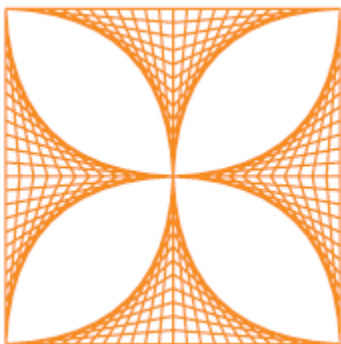
16)



Unit 1A Challenge Problems

1. (*Target 1a*)

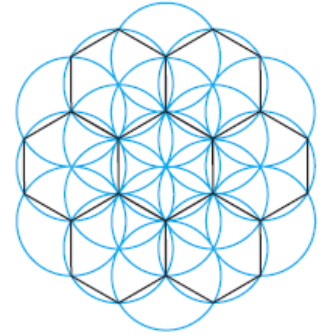
Each of these line designs uses straight lines only. Select one design and re-create it in the space below.



Unit 1A Challenge Problems

2. (*Target 1a*)

Using a 1-inch setting for your compass, construct a central regular hexagon and six regular hexagons that each share one side with the original hexagon. Your hexagon design should look similar to, but larger than, the figure at right. This design is called a tessellation, or tiling, of regular hexagons.



Unit 1A Challenge Problems

3. (*Target 1a*)

Currently the tallest twin towers in the world are the Petronas Twin Towers in Kuala Lumpur, Malaysia. Notice that the floor plans of the towers have the shape of Islamic designs. Use your compass and straightedge to re-create the design of the base of the Petronas Twin Towers, shown at right.



4. (*Targets 1a; 1d; 1e*)

Connect three segments end-to-end to form a closed shape with two congruent sides and two congruent angles. Then draw a ray passing through the midpoint of the noncongruent side. Mark your drawing to indicate all the congruent segments and angles.

Unit 1A Challenge Problems

5. (Target 1b)
In Lesson 1.3, you wrote definitions for terms based on sets of examples and nonexamples. Make up your own term and write a clear, precise definition for it. Your term can describe a geometric object or a “creature” such as a Widget. Provide at least three examples and three good non-examples for your term. By looking at your examples and non-examples, a person should be able to write an accurate definition for your term. (Hint: A good non-example will share some characteristic(s) with the examples—that is, it will satisfy some part(s) of your definition.)

TERM:
DEFINITION:

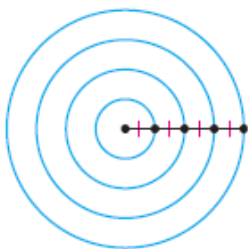
3 Examples

- 1.
- 2.
- 3.

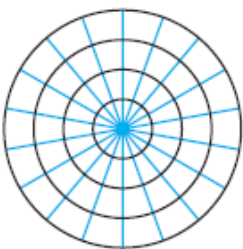
3 Non-Examples

- 1.
- 2.
- 3.

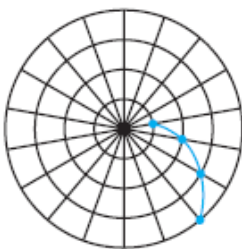
6. (Target 1a)
The circle design shown below is used in a variety of cultures to create mosaic decorations. The spiral design may have been inspired by patterns in nature. Notice that the seeds on the sunflower also spiral out from the center. Create and decorate your own spiral design. Here are the steps to make the spirals. The more circles and radii you draw, the more detailed your design will be.



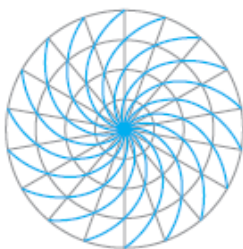
Step 1



Step 2



Step 3



Step 4

Unit 1A Challenge Problems

7. (*Target 1f*)

Draw and mark a figure in which M is the midpoint of \overline{ST} , $SP = PT$, and T is the midpoint of \overline{PQ} .

8. (*Target 1a; 1g*)

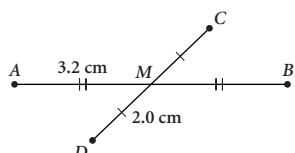
Show how it is possible for two triangles to intersect in one point, two points, three points, four points, five points, or six points, but not seven points. Show how they can intersect in infinitely many points.

ANSWERS

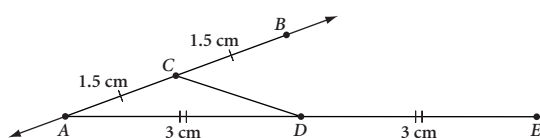
LESSON 1.1 • Building Blocks of Geometry

1. S 2. 9 cm 3. \overline{SN} 4. endpoint
 5. \overline{NS} 6. \overline{PQ} 7. \overline{SP}
 8. $\overline{KN} \cong \overline{KL}$, $\overline{NM} \cong \overline{LM}$, $\overline{NO} \cong \overline{LO}$
 9. $E(-14, 15)$

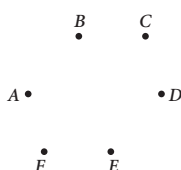
10.



11.



12. \overline{AB} , \overline{AC} , \overline{AD} , \overline{AE} , \overline{AF} , \overline{BC} , \overline{BD} ,
 \overline{BE} , \overline{BF} , \overline{CD} , \overline{CE} , \overline{CF} , \overline{DE} , \overline{DF} ,
 \overline{EF} (15 lines)

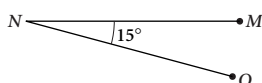


13. Possible coplanar set: $\{C, D, H, G\}$; 12 different sets

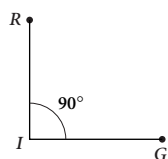
LESSON 1.2 • Poolroom Math

1. vertex 2. bisector 3. side
 4. 126° 5. $\angle DAE$ 6. 133°
 7. 47° 8. 63° 9. 70°

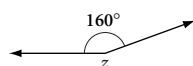
10.



11.



12.

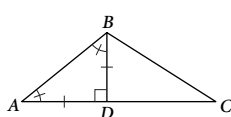


13. 90°

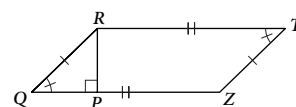
14. 120°

15. 75°

16.



17.

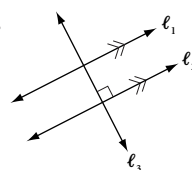


LESSON 1.3 • What's a Widget?

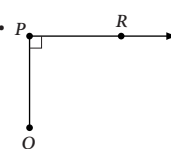
1. d 2. c 3. e 4. i
 5. f 6. b 7. h 8. a
 9. g

10. They have the same measure, 13° . Because $m\angle Q = 77^\circ$, its complement has measure 13° . So $m\angle R = 13^\circ$, which is the same as $m\angle P$.

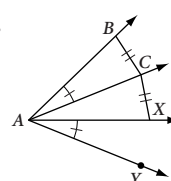
11.



12.



13.



Answers to Practice: Midpoints

- | | | | |
|---|-----------------------------------|------------------------------------|---|
| 1) $\left(1\frac{1}{2}, -4\frac{1}{2}\right)$ | 2) $(1, -1)$ | 3) $\left(-1, 1\frac{1}{2}\right)$ | 4) $\left(\frac{1}{2}, 6\frac{1}{2}\right)$ |
| 5) $\left(6\frac{1}{2}, 5\right)$ | 6) $\left(1, 4\frac{1}{2}\right)$ | 7) $(13, 5)$ | 8) $(29, -1)$ |

Answers to Practice: Angles Basics

- | | | | |
|--|--|--|--|
| 1) 25° | 2) 90° | 3) obtuse | 4) right |
| 5) acute | 6) straight | 7) acute | 8) obtuse |
| 9) right | 10) straight | 11) F, \overrightarrow{FE} and \overrightarrow{FG} | 12) J, \overrightarrow{JI} and \overrightarrow{JK} |
| 13) $\angle D, \angle I, \angle CDE, \angle EDC$ | 14) $\angle C, \angle I, \angle BCD, \angle DCB$ | 15) $\angle 3, \angle 4, \angle CVE$ | |
| 16) $\angle I, \angle 2, \angle EVC$ | 17) $d \parallel c$ | 18) $\angle VUW \cong \angle ZUY$ | |
| | $e \perp \overline{PQ}$ | $\angle WUX \cong \angle XUY$ | |
| | $\overline{PQ} \cong \overline{RS}$ | $\overline{VL} \cong \overline{ZM}$ | |

Answers to Practice: Angle Relationships

- | | | | |
|------------------|----------------|----------------|----------------|
| 1) linear pair | 2) linear pair | 3) linear pair | 4) vertical |
| 5) complementary | 6) vertical | 7) 103° | 8) 35° |
| 9) 60° | 10) 36° | 11) 22° | 12) 52° |
| 13) 15 | 14) 16 | 15) 11 | 16) 12 |