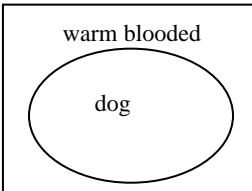
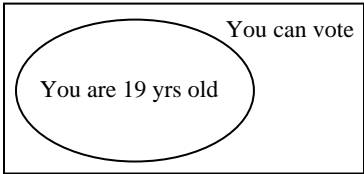
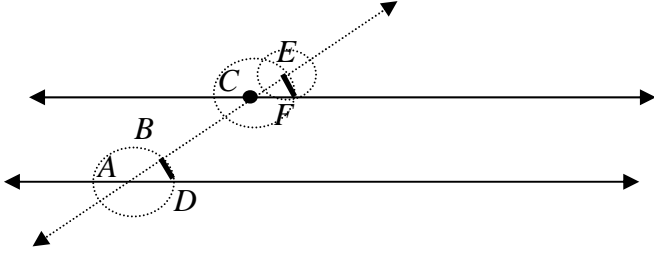
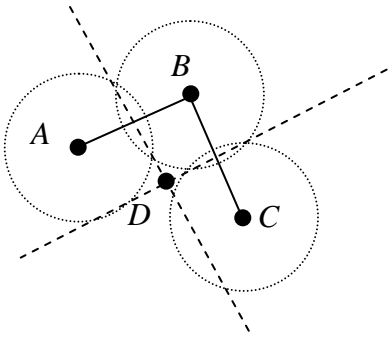


1.	B
2.	D
3.	B
4.	\overline{AB}
5.	30
6.	8
7.	20
8.	130
9a.	$\overline{EG} \cong \overline{FH}$
9b.	43
10.	-3 and 13
11a.	5
11b.	30°
12.	$x = 20, y = 80$
13.	B
14.	D
15a.	$F(x, y) = (x, -y)$
15b.	$F(x, y) = (-x, y)$
15c.	$F(x, y) = (y, x)$
15d.	$F(x, y) = (-x, -y)$
15e.	$F(x, y) = (x + 5, y - 3)$
16a.	
16b.	If an animal is warm-blooded, then the animal is a dog.
16c.	If an animal is not a dog, then the animal is not warm-blooded.
16d.	If an animal is not warm-blooded, then the animal is not a dog.
17.	C
18.	If it is sunny outside today, I will go to the store; If I go to the store, I will buy candy; If I buy candy, I will not eat my dinner.
19.	If Chris earns \$10, then he will bring Jane.
20a.	
20b.	If X represents a voter, then the X is inside the box. It may or may not be in the oval, so the statement is not necessarily true.

21a.	Triangle ABC is equiangular.
21b.	Sally does not study for the test.
22.	A
23a.	indirect
23b.	C
24a.	parallelogram
24b.	rhombus
24c.	rectangle
24d.	none of the figures
25a.	<div style="text-align: center;"> </div> <p>Justification: Congruent circles were constructed with centers at points A and B. Since radii of congruent circles are congruent, $\overline{AC} \cong \overline{BC} \cong \overline{AD} \cong \overline{BD}$; therefore $ACBD$ is a rhombus. In the rhombus, the diagonals are perpendicular, therefore $\overline{AB} \perp \overline{CD}$. Since $ACBD$ is a parallelogram the diagonals bisect each other. Therefore $\overline{AE} \cong \overline{EB}$, so \overline{CD} is the perpendicular bisector of \overline{AB}.</p>
25b.	<div style="text-align: center;"> </div> <p>Justification: $\overline{AB} \cong \overline{BC}$ since they are the radii of the same circle. $\overline{AD} \cong \overline{DC}$ since they are constructed using the same compass setting. $\overline{BD} \cong \overline{BD}$ by the reflexive property of congruence. Therefore $\triangle ABD \cong \triangle CBD$ by SSS. $\angle ABD \cong \angle CBD$ by CPCTC, and by the definition of angle bisector \overline{BD} bisects $\angle ABC$.</p>

<p>25c.</p>	 <p>Justification: $\overline{AB} \cong \overline{CE}$, $\overline{AD} \cong \overline{CF}$ since they were drawn by the same compass setting. $\overline{BD} \cong \overline{EF}$ since they were drawn with the same compass setting. Therefore $\triangle BAD \cong \triangle ECF$ by SSS. Therefore $\angle BAD \cong \angle ECF$ by CPCTC. Finally by the converse of the corresponding angles postulate, $\overline{CF} \parallel \overline{AD}$.</p>
<p>25d.</p>	 <p>Justification. I drew segments between A and B and B and C. I constructed the perpendicular bisector of \overline{AB}. Every point on that line is equidistant from points A and B. I constructed the perpendicular bisector of \overline{BC}. Every point on that line is equidistant from points B and C. Therefore, point D, the intersection of those two perpendicular bisectors, is equidistant from points A, B, and C.</p>
<p>26.</p>	<p>540 degrees</p>
<p>27.</p>	<p>156 degrees</p>
<p>28.</p>	<p>40 degrees</p>
<p>29.</p>	<p>8 sides</p>
<p>30.</p>	<p>6 sides</p>
<p>31.</p>	<p>Charlie is correct. The basic rotational symmetry is 360 degrees divided by the number of sides. $360 \div 6 = 60$, so any multiple of 60 degrees will work.</p>

<p>32a. 32b.</p>	
<p>32c.</p>	<ul style="list-style-type: none"> $C'(3, 2), C''(3, -2)$
<p>32d.</p>	<ul style="list-style-type: none"> $P''(x, y) = (-x, y - 4)$ The reflection across the y-axis makes the x-coordinate the opposite, while the translation downward subtracts 4 from the y-coordinate.
<p>33.</p>	<p>$108^\circ - 72^\circ = 36^\circ$</p>
<p>34.</p>	<p>C</p>
<p>35a.</p>	<p>12</p>
<p>35b.</p>	<p>10</p>
<p>35c.</p>	<p>25</p>
<p>35d.</p>	<p>25</p>
<p>36a.</p>	<p>$x = 20$</p>
<p>36b.</p>	<p>$x = 30$</p>
<p>36c.</p>	<p>$y = 110$</p>
<p>36d.</p>	<p>$x = 20, y = 110$</p>
<p>37.</p>	<p>C</p>
<p>38.</p>	<p>4,5,6,7,8,9,10,11,12,13,14</p>
<p>39a.</p>	<p>SAS</p>
<p>39b.</p>	<p>cannot be proven congruent</p>
<p>39c.</p>	<p>ASA</p>
<p>39d.</p>	<p>SSS</p>
<p>39e.</p>	<p>cannot be proven congruent</p>
<p>39f.</p>	<p>AAS</p>

40.	A two-column proof is given. A paragraph or flowchart proof is also acceptable.																
	<table border="1"> <thead> <tr> <th>Statements</th> <th>Reasons</th> </tr> </thead> <tbody> <tr> <td>1. \overline{BD} is the perp. bisector of \overline{AC}</td> <td>1. Given</td> </tr> <tr> <td>2. $\angle BEA$ and $\angle BEC$ are right angles</td> <td>2. Definition of perpendicular</td> </tr> <tr> <td>3. $\angle BEA \cong \angle BEC$</td> <td>3. All right angles are congruent</td> </tr> <tr> <td>4. $\overline{AE} \cong \overline{EC}$</td> <td>4. Definition of bisector</td> </tr> <tr> <td>5. $\overline{BE} \cong \overline{BE}$</td> <td>5. Reflexive Property of Congruence</td> </tr> <tr> <td>6. $\triangle BEA \cong \triangle BEC$</td> <td>6. SAS</td> </tr> <tr> <td>7. $\angle BAC \cong \angle BCA$</td> <td>7. CPCTC</td> </tr> </tbody> </table>	Statements	Reasons	1. \overline{BD} is the perp. bisector of \overline{AC}	1. Given	2. $\angle BEA$ and $\angle BEC$ are right angles	2. Definition of perpendicular	3. $\angle BEA \cong \angle BEC$	3. All right angles are congruent	4. $\overline{AE} \cong \overline{EC}$	4. Definition of bisector	5. $\overline{BE} \cong \overline{BE}$	5. Reflexive Property of Congruence	6. $\triangle BEA \cong \triangle BEC$	6. SAS	7. $\angle BAC \cong \angle BCA$	7. CPCTC
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41.	Corresponding parts of congruent figures are congruent.																
42.	Point, Line, and Plane																
43a.	Inductive reasoning																
43b.	Inductive reasoning																
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43d.	Deductive reasoning																
43e.	Inductive reasoning																
44.	<p>The diagram shows a coordinate plane with a grid. The x-axis and y-axis are labeled. A quadrilateral ABCD is plotted with vertices at A(1, 2), B(-1, 1), C(1, -1), and D(2, 1). The quadrilateral is a parallelogram.</p> <ul style="list-style-type: none"> The quadrilateral is a parallelogram. The slopes of \overline{AB} & \overline{CD} equal 2, so $\overline{AB} \parallel \overline{CD}$. The slopes of \overline{AD} & \overline{BC} equal -3, so $\overline{AD} \parallel \overline{BC}$. The quadrilateral is not a rectangle or a square, since the slopes of \overline{AD} & \overline{CD} are not opposite reciprocals (do not have a product of -1). The quadrilateral is not a rhombus since the slopes of the diagonals are not opposite reciprocals. $m_{\overline{BD}} = \frac{1}{3}, m_{\overline{AC}} = 7$. 																
45a.	3 parallelograms																
45b.	$(-1, -1)$, $(3, 3)$, and $(-5, -1)$																

46.	The triangle is a right triangle. $m\overline{AB} = \frac{2}{7}, m\overline{AC} = -\frac{7}{2}$. So $\overline{AB} \perp \overline{AC}$.														
47a.	55														
47b.	30														
47c.	110														
48.	5														
49.	(3.5,13)														
50.	85														
51.	<p>A 2-column proof is given. A paragraph or flowchart proof is also acceptable.</p> <table border="1" style="margin-left: 40px;"> <thead> <tr> <th>Statements</th> <th>Reasons</th> </tr> </thead> <tbody> <tr> <td>1. $\overline{BD} \parallel \overline{EG}$</td> <td>1. Given</td> </tr> <tr> <td>2. $\angle BCF \cong \angle CFG$</td> <td>2. If 2 \parallel lines are cut by a transversal, alternate interior angles are congruent.</td> </tr> <tr> <td>3. $\overline{BC} \cong \overline{FG}$</td> <td>3. Given</td> </tr> <tr> <td>4. $\overline{CF} \cong \overline{CF}$</td> <td>4. Reflexive property of congruence</td> </tr> <tr> <td>5. $\triangle BCF \cong \triangle GFC$</td> <td>5. SAS</td> </tr> <tr> <td>6. $\angle CBF \cong \angle CGF$</td> <td>6. CPCTC</td> </tr> </tbody> </table> <p>Alternative proof: Given that $\overline{BD} \parallel \overline{EG}$ and $\overline{BC} \cong \overline{FG}$, then one pair of opposite sides of quadrilateral $BCFG$ is parallel and congruent. Therefore $BCFG$ is a parallelogram. Since opposite angles of a parallelogram are congruent, then $\angle CBF \cong \angle CGF$.</p>	Statements	Reasons	1. $\overline{BD} \parallel \overline{EG}$	1. Given	2. $\angle BCF \cong \angle CFG$	2. If 2 \parallel lines are cut by a transversal, alternate interior angles are congruent.	3. $\overline{BC} \cong \overline{FG}$	3. Given	4. $\overline{CF} \cong \overline{CF}$	4. Reflexive property of congruence	5. $\triangle BCF \cong \triangle GFC$	5. SAS	6. $\angle CBF \cong \angle CGF$	6. CPCTC
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52a.	lines n and p . Corresponding angles are congruent.														
52b.	lines l and m . Alternate interior angles are congruent.														
52c.	lines l and m . Adjacent interior angles are supplementary.														
53a.	4														
53b.	8														
53c.	an infinite number														

54.

Property	Parallelogram	Rectangle	Square	Rhombus	Trapezoid
1. Opposite sides congruent	x	x	x	x	
2. Only one pair of opposite sides parallel					x
3. Opposite angles congruent	x	x	x	x	
4. Each diagonal forms 2 congruent triangles	x	x	x	x	
5. Diagonals bisect each other	x	x	x	x	
6. Diagonals congruent		x	x		
7. Diagonals perpendicular			x	x	
8. A diagonal bisects two angles			x	x	
9. All angles are right angles		x	x		
10. All sides are congruent			x	x	

The remaining problems are for HONORS Geometry Students only.

55.	<table border="1"> <thead> <tr> <th>P</th> <th>Q</th> <th>$\sim P$</th> <th>$P \rightarrow Q$</th> <th>$P \wedge Q$</th> <th>$P \vee Q$</th> </tr> </thead> <tbody> <tr> <td>T</td> <td>T</td> <td>F</td> <td>T</td> <td>T</td> <td>T</td> </tr> <tr> <td>T</td> <td>F</td> <td>F</td> <td>F</td> <td>F</td> <td>T</td> </tr> <tr> <td>F</td> <td>T</td> <td>T</td> <td>T</td> <td>F</td> <td>T</td> </tr> <tr> <td>F</td> <td>F</td> <td>T</td> <td>T</td> <td>F</td> <td>F</td> </tr> </tbody> </table>	P	Q	$\sim P$	$P \rightarrow Q$	$P \wedge Q$	$P \vee Q$	T	T	F	T	T	T	T	F	F	F	F	T	F	T	T	T	F	T	F	F	T	T	F	F
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57.	$F(x, y) = (6 - x, y)$																														
58.	the far-right columns have identical truth-values																														
59.	c, a, b, e, d																														
60a.	q, r Chris buys gas. Chris drives to Rockville																														
60b.	r Chris drives to Rockville																														
60c.	no conclusion																														
60d.	$\sim p$ Chris does not earn \$20																														
60e.	no conclusion																														

61.	Statement	Reasons
	1. $\angle EBC \cong \angle ECB$	1. Given
	2. $\overline{EB} \cong \overline{EC}$	2. In a triangle, if two angles are congruent, the corresponding sides opposite those angles are also congruent.
	3. $\overline{AB} \perp \overline{BE}$	3. Given
	4. $\angle ABE$ is a right angle	4. Definition of perpendicular
	5. $\overline{DC} \perp \overline{CE}$	5. Given
	6. $\angle DCE$ is a right angle	6. Definition of perpendicular
	7. $\angle ABE \cong \angle DCE$	7. All right angles are congruent
	8. $\overline{AB} \cong \overline{CD}$	8. Given
	9. $\triangle ABE \cong \triangle DCE$	9. SAS
	10. $\overline{AE} \cong \overline{DE}$	10. CPCTC
62a.	always	
62b.	always	
62c.	sometimes	
62d.	always	
63.	I did not earn \$20 this week.	