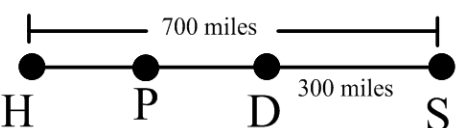
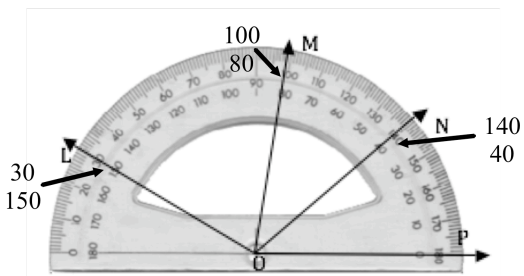
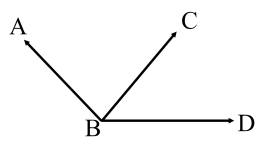
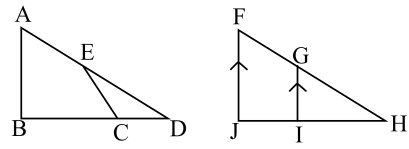
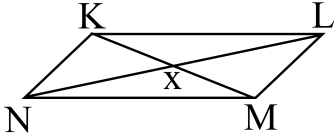
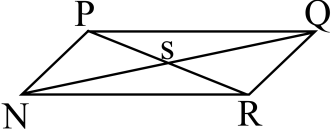
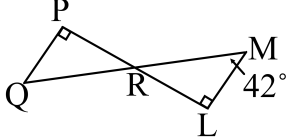
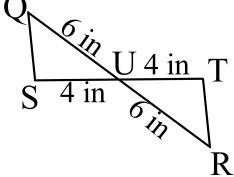
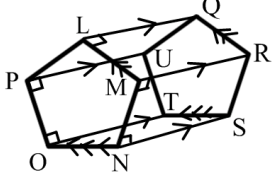
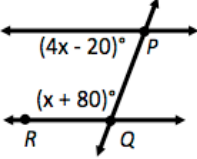
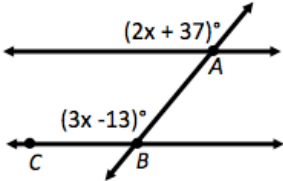
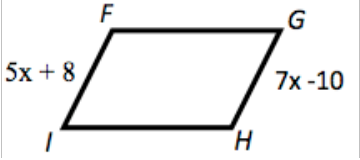
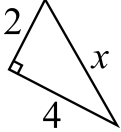
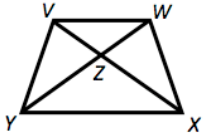
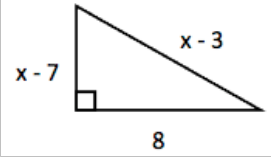
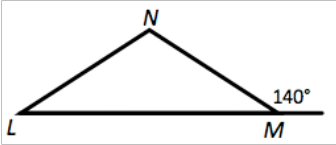
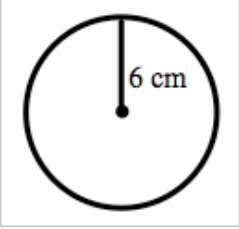
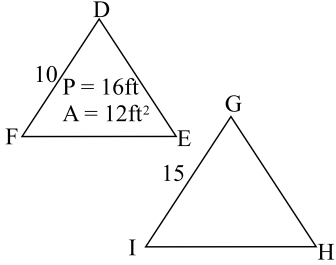
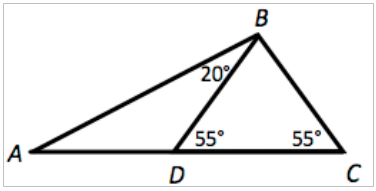
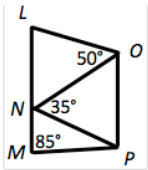
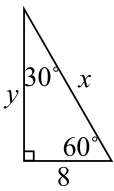
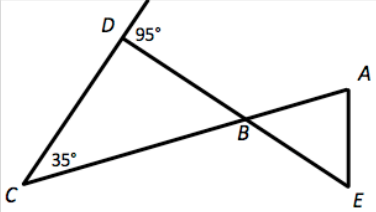

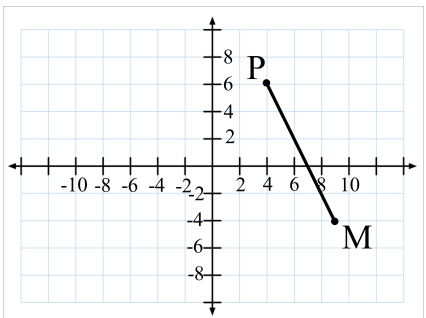
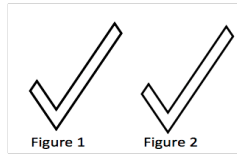
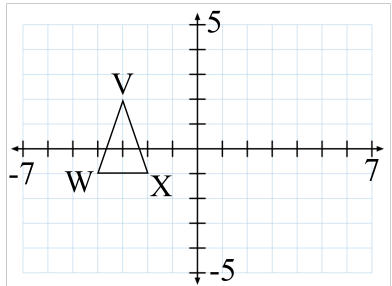
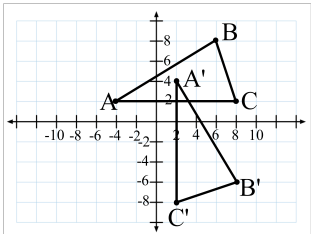


# Geometry

## 1<sup>st</sup> Semester Benchmark Exam Study Guide

1	In the diagram below, $HS = 700$ miles, $DS = 300$ miles and $P$ is the midpoint of $\overline{HD}$ . Find $PD$ .			
2	Find the measure of $\angle LON$ . Then classify the angle as acute, right, or obtuse.			
3	$m\angle ABC = 62^\circ$ and $m\angle CBD = 36^\circ$ . Find $m\angle ABD$ .		9	Show that the conjecture is false by finding a counterexample. If $x < y$ , then $x + y > y - x$ a) $x = 2, y = 5$ b) $x = 5, y = 2$ c) $x = -2, y = 5$ d) $x = 5, y = -2$
4	Identify the hypothesis and conclusion of the conditional statement. If I am hungry, then I eat	10	Write a conditional statement from the statement. A bird has wings.	
5	Write the converse, inverse, and contrapositive of the conditional statement. If James is bilingual, then he can speak two languages.	11	Write the converse, inverse, and contrapositive of the conditional statement. If a triangle is equilateral, then it has 3 congruent sides.	
6	Write the definition as a biconditional. A polygon is a decagon that has ten sides.	12	In order to prove that a quadrilateral is a parallelogram, one pair of opposite sides must be both _____ and _____.	
7	If $\triangle DEF$ and $\triangle LMN$ are two triangles such that $\frac{DE}{LM} = \frac{EF}{MN}$ , which angles have to be congruent in order to prove the triangles are similar?	13	In parallelogram PQRS, diagonals $\overline{PR}$ and $\overline{SQ}$ are drawn and intersect at point M. Which triangles, if any, MUST be congruent? Which triangles, if any, MUST be obtuse? Which triangles, if any, MUST be acute?	
8	Which of the following triangle sets are similar, and how do you know? $\triangle ADB$ and $\triangle EDC$ OR $\triangle FHJ$ and $\triangle GHI$	14	In parallelogram KLMN, $KN = 14$ , $NX = 5$ , and $m\angle NKL = 107.2^\circ$ . Find $NL$ .	
				

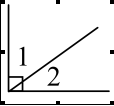
15	<p>If <math>\triangle PQR \cong \triangle RNP</math>, then <math>\angle PQR \cong ?</math> <math>\angle RNP \cong ?</math></p> 	22	<p>Given that <math>\triangle PQR \cong \triangle LMR</math> and <math>m\angle M = 42^\circ</math>, find <math>m\angle PRQ</math>.</p> 
16	<p>Given the lengths marked on the figure and that <math>\angle QUS</math> and <math>\angle RUT</math> are vertical angles, what postulate or theorem, if any, can be used to prove that <math>\triangle QSU \cong \triangle RTU</math>? (SSS, SAS, AAS, ASA, HL, or none)</p> 	23	<p>Identify one pair of each of the following:</p> <ol style="list-style-type: none"> <li>Parallel Segments</li> <li>Perpendicular Segments</li> <li>Skew Segments</li> </ol> 
17	<p>Find <math>m\angle PQR</math>.</p> 	24	<p>Find <math>m\angle ABC</math>.</p> 
18	<p><math>FGHI</math> is a parallelogram. Find <math>GH</math>.</p> 	25	<p>Identify the property that justifies each statement.</p> <ol style="list-style-type: none"> <li><math>x = 3</math>. So <math>4x = 4(3)</math></li> <li><math>GH = GH</math></li> <li><math>\angle ABC \cong \angle DEF</math> and <math>\angle DEF \cong \angle GHI</math>. So <math>\angle ABC \cong \angle GHI</math></li> <li><math>17 = AB</math>, so <math>AB = 17</math></li> </ol>
19	<p>Find the value of <math>x</math>. Express your answer in simplest radical form.</p> 	26	<p>Given isosceles trapezoid <math>VWXY</math> with <math>\overline{VY} \cong \overline{WX}</math>, <math>VZ = 3.6</math>, and <math>WY = 7.4</math>. Find <math>ZX</math>.</p> 
20	<p>Find the area of the figure.</p> 	27	<p><math>\triangle LMN</math> is an isosceles triangle with vertex <math>\angle N</math>. <math>m\angle L = ?</math></p> 
21	<p>Find the circumference of the circle. Use 3.14 for <math>\pi</math>, and round your answer to the nearest tenth.</p> 	28	<p>Given <math>\triangle DEF \sim \triangle GHI</math>, find the area of <math>\triangle GHI</math>.</p> 

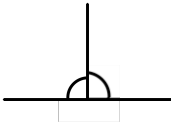
29	<p>Classify <math>\triangle ABC</math> by its angle measures, given <math>m\angle ACB = 55^\circ</math>, <math>m\angle BCD = 55^\circ</math>, and <math>m\angle ABD = 20^\circ</math>.</p> 	35	<p>Laura folded a triangular sheet of paper into the shape shown. Find <math>m\angle NLO</math>, given <math>m\angle LON = 50^\circ</math>, <math>m\angle ONP = 35^\circ</math>, and <math>m\angle NMP = 85^\circ</math>.</p> 
30	<p>Find the values of <math>x</math> and <math>y</math>. Express your answers in simplest radical form.</p> 	36	<p>What is <math>m\angle ABE</math>?</p> 
31	<p>The rectangular tiles on the floor are 5 in. wide and 6 in. long. If there are 50 tiles on the floor, what is the area of the quilt?</p>	37	<p>Find the measure of each exterior angle of a regular octagon.</p>
32	<p>Tell whether the figure is a polygon. If it is a polygon, name it by the number of its sides.</p> 	38	<p>What type of triangle is formed by the points <math>A(3, 2)</math>, <math>B(4, 1)</math>, and <math>C(-5, 4)</math>? (right, equilateral, isosceles, or scalene)?</p>
33	<p>Find the coordinates of the midpoint of <math>\overline{PM}</math> with endpoints <math>P(4, 6)</math> and <math>M(9, -4)</math>.</p> 	39	<p>Identify the transformation from figure 1 to figure 2. For each INCORRECT response, draw or describe what figure 2 would look like.</p>  <p>a) The transformation is a <math>90^\circ</math> rotation.          b) The transformation is a reflection.          c) The transformation is a translation.</p>
34	<p>Draw the image of <math>\triangle VWX</math> after the translation <math>(x, y) \rightarrow (x + 2, y - 3)</math>.</p> 	40	<p>A figure has vertices at <math>A(-4, 2)</math>, <math>B(6, 8)</math>, &amp; <math>C(8, 2)</math>. After a transformation, the image of the figure has vertices at <math>A'(2, 4)</math>, <math>B'(8, -6)</math>, &amp; <math>C'(2, -8)</math>. Identify the transformation.</p>  <p>a) The transformation is a <math>90^\circ</math> rotation.          b) The transformation is a <math>180^\circ</math> rotation.          c) The transformation is a reflection.          d) The transformation is a translation.</p>

41	The lengths of two sides of a triangle are 5 inches and 11 inches. Find the range of possible lengths for the third side, $s$ .	44	What makes a triangle <i>similar</i> ? Are all obtuse triangles <i>similar</i> ? Are all acute triangles <i>similar</i> ? Are all isosceles triangles <i>similar</i> ?
42	The diagonal of a square is 8 inches. How long is one side?	45	Find the length of the line segment with endpoints $(-2, 5)$ and $(1, 11)$ . Write your answer in the simplest radical form.
43	The sum of the exterior angles of a polygon is two times the sum of the interior angles. What type of polygon is it? a) Triangle b) Quadrilateral c) Pentagon d) Hexagon e) Decagon	46	A sewing club is making a quilt consisting of 25 squares with each side of the square measuring 30 centimeters. If the quilt has 5 rows and 5 columns, what is the perimeter of the quilt?

The Properties You Need to Know for the Final

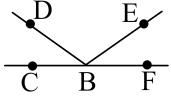
Angle Addition Postulate	Definition of Supplementary Angles	Reflexive Property of Equality
Corresponding Angles Postulate	Linear Pair Theorem	Subtraction Property of Equality
Definition of Complementary Angles	Perpendicular Transversal Theorem	Transitive Property of Equality
Definition of Congruence	Segment Addition Postulate	Vertical Angles Theorem
	Substitution Property of Equality	

47	Fill in the blank to complete the two-column proof. <b>Given:</b> $\angle 1$ and $\angle 2$ are complementary. $m\angle 2 = 42^\circ$												
													
	<b>Prove:</b> $m\angle 1 = 48^\circ$												
	<b>Proof:</b>												
	<table border="1" style="width: 100%;"> <thead> <tr> <th style="text-align: center;">Statements</th> <th style="text-align: center;">Reasons</th> </tr> </thead> <tbody> <tr> <td>1. <math>\angle 1</math> and <math>\angle 2</math> are complementary.</td> <td>1. Given</td> </tr> <tr> <td>2. <math>m\angle 2 = 42^\circ</math></td> <td>2. Given</td> </tr> <tr> <td>3. <math>m\angle 1 + m\angle 2 = 90^\circ</math></td> <td>3. [?]</td> </tr> <tr> <td>4. <math>42^\circ + m\angle 2 = 90^\circ</math></td> <td>4. Substitution Property</td> </tr> <tr> <td>5. <math>m\angle 2 = 48^\circ</math></td> <td>5. Subtraction Property of Equality.</td> </tr> </tbody> </table>	Statements	Reasons	1. $\angle 1$ and $\angle 2$ are complementary.	1. Given	2. $m\angle 2 = 42^\circ$	2. Given	3. $m\angle 1 + m\angle 2 = 90^\circ$	3. [?]	4. $42^\circ + m\angle 2 = 90^\circ$	4. Substitution Property	5. $m\angle 2 = 48^\circ$	5. Subtraction Property of Equality.
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4. $42^\circ + m\angle 2 = 90^\circ$	4. Substitution Property												
5. $m\angle 2 = 48^\circ$	5. Subtraction Property of Equality.												

48	<p>a) Explain and draw an example of the Perpendicular Transversal Theorem</p> <p>b) If 2 intersecting lines form a linear pair of congruent angles, then how many degrees must those two angles be?</p>
	

49 Complete the proof by supplying the missing reason.

Given that  $m\angle CBE = m\angle FBD$ , prove  $m\angle CBD = m\angle FBE$ .

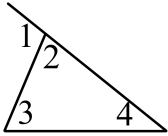


$m\angle CBE = m\angle FBD$	Given information
$m\angle CBE = m\angle CBD + m\angle EBD$	Angle Addition Postulate
$m\angle FBD = m\angle FBE + m\angle EBD$	[?]
$m\angle CBD + m\angle EBD = m\angle FBE + m\angle EBD$	Substitution Property of Equality
$m\angle CBD = m\angle FBE$	Subtraction Property of Equality.

50 Complete the following proof.

**Given:**  $m\angle 2 + m\angle 3 + m\angle 4 = 180^\circ$

**Prove:**  $m\angle 1 = m\angle 3 + m\angle 4$



Complete the proof.

**Proof:**

Statements	Reasons
1. $m\angle 2 + m\angle 3 + m\angle 4 = 180^\circ$	1. Given
2. $m\angle 3 + m\angle 4 = 180^\circ - m\angle 2$	2. Subtraction Property of Equality
3. $m\angle 1 + m\angle 2 = 180^\circ$	3. [?]
4. $m\angle 1 = 180^\circ - m\angle 2$	4. Subtraction Property of Equality
5. $m\angle 1 = m\angle 3 + m\angle 4$	5. Substitution