

NAME \_\_\_\_\_ SECTION \_\_\_\_\_

## GEOMETRY

### UNIT 1B: GEOMETRIC REASONING

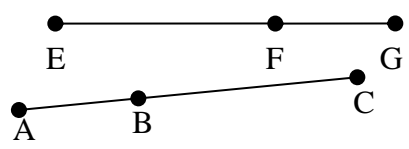
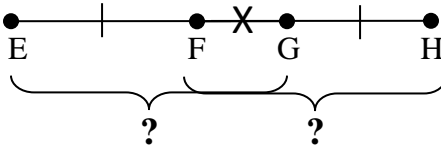
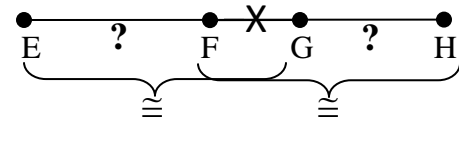
\*\*SHOW ALL WORK\*\*

BRING COLORED PENCILS TO CLASS AND USE ON YOUR HOMEWORK

LESSON	TOPIC	BOOK/ VIDEO	COMMON CORE LS	ASSIGNMENT
DAY 9	CONDITIONAL STATEMENTS, DEFINITIONS, COUNTEREXAMPLES, and AXIOMS	2-1, 2-2, 2-3, P128	ESSENTIAL SKILL	P. 77: #19 P. 85-86: #32,34,61 P.100-101: #11,15,18,23,24,25,29,33,36,40,53
DAY 10	<u>ALGEBRAIC &amp; GEOMETRIC PROOFS</u> <ul style="list-style-type: none"> <li>Advanced Segment and Angle Addition/ Subtraction</li> <li>Transitive &amp; Substitution</li> <li>Midpoint, Segment &amp; <math>\sphericalangle</math> Bisectors</li> <li>Halves of Congruent Segments/<math>\sphericalangle</math>s</li> </ul>	2-5	G-CO.9	GEOMETRIC PROOFS PACKET – DAY 1-10 R
DAY 11	<u>GEOMETRIC PROOFS</u> <ul style="list-style-type: none"> <li>Linear Pair <math>\rightarrow</math> Supplementary</li> <li><math>\cong</math> Supplements Theorem</li> <li><math>\cong</math> Complements Theorem</li> <li>Rt. <math>\sphericalangle</math> Congruence</li> <li>Congruent &amp; Supplementary Angles Theorem (<math>\rightarrow</math> Rt. <math>\sphericalangle</math>'s)</li> </ul>	2-6	G-CO.9	GEOMETRIC PROOFS PACKET – DAY 1-11 R
DAY 12	<u>FLOWCHART &amp; PARAGRAPH PROOFS</u> <ul style="list-style-type: none"> <li>Common/Overlapping Segment/Angle Theorems</li> <li>Vertical Angles Theorem</li> </ul>	2-7	G-CO.9	GEOMETRIC PROOFS PACKET – DAY 1-12 R
DAY 13	REVIEW FOR TEST			FINISH REVIEW FOR TEST PACKET
T	TEST – Units 1A & 1B			<ul style="list-style-type: none"> <li>CUMULATIVE REVIEW #1</li> <li>BRIDGE TO UNIT 2</li> </ul>

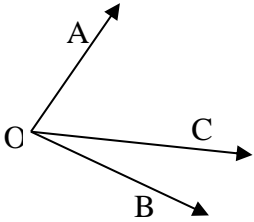
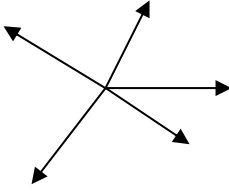
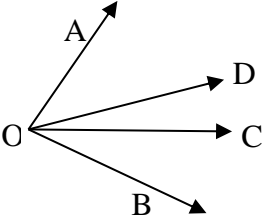
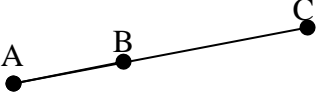
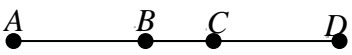
#### GEOMETRY CLASS LESSON SUMMARIES FOR UNIT 1B

DAY	MAIN POINTS / FORMULAS TO REMEMBER	QUESTIONS AFTER HMWK
1-9	<ul style="list-style-type: none"> <li>Conditional Statement : If hypothesis <math>\rightarrow</math> _____</li> <li>Converse : _____</li> <li>Counterexample: An example that _____ a statement.</li> <li>Biconditional : Hypothesis “_____” conclusion. <math>\longleftrightarrow</math> For a biconditional to be true, both the _____ &amp; _____ statements must be true.</li> <li>_____ in geometry are biconditional statements.</li> <li>Conjunction: a statement using the word “_____”. To be true, both parts must be _____.</li> </ul>	

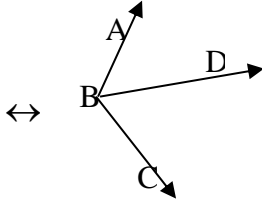
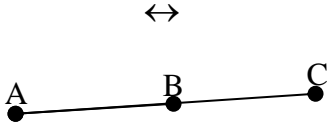

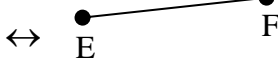
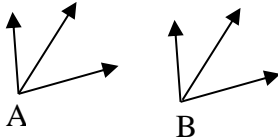
<p><b>1-10</b> <b>+ See Axioms Pages</b></p>	<p><b>Property Name</b>                  Addition Prop of Equality: If <math>x=y</math>, then <math>x+4 =</math> _____                  (Subtraction Property of Equality) If <math>x=y</math> and <math>a=b</math>, then <math>x+a =</math> _____                  Multiplication Prop of Equality: If <math>x=y</math>, then <math>4x =</math> _____                  (Division Prop of Equality) If <math>x=y</math> and <math>a=b</math>, then <math>ax =</math> _____                  Reflexive Prop of Equality: <math>AB =</math> _____                  Reflexive Prop of Congruence: <math>\overline{AB} \cong</math> _____                  Transitive Prop of Equality: If <math>AB=BC</math> and <math>BC=CD</math>, then _____                  Transitive Prop of Congruence: If <math>\sphericalangle A \cong \sphericalangle B</math> and <math>\sphericalangle B \cong \sphericalangle C</math>, then _____                  Substitution Prop of Equality: If <math>AB=BC</math> and <math>CD=BC</math>, then _____</p> <hr/> <p>• A two-column proofs has statements on the _____ side and reasons/justifications on the _____ side.                  • To write an algebraic proof, start with a _____ using _____. Then use algebraic properties to justify each statement towards the solution.                  • Advanced segment/angle addition example:                  Given <math>\overline{EF} \cong \overline{CB}</math>; <math>\overline{EG} \cong \overline{AC}</math>; Prove <math>\overline{FG} \cong \overline{AB}</math></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Statement</th> <th style="width: 50%;">Reason</th> </tr> </thead> <tbody> <tr> <td>1) <math>EF+FG=EG</math>; <math>AB+BC=AC</math></td> <td>1) _____</td> </tr> <tr> <td>2) <math>\overline{EF} \cong \overline{CB}</math>; <math>\overline{EG} \cong \overline{AC}</math></td> <td>2) _____</td> </tr> <tr> <td>3) <math>EF+FG=AB+BC</math></td> <td>3) _____</td> </tr> <tr> <td>4) <math>EF+FG=AB+EF</math></td> <td>4) _____</td> </tr> <tr> <td>5) <math>FG=AB</math></td> <td>5) _____</td> </tr> <tr> <td>6) <math>\overline{FG} \cong \overline{AB}</math></td> <td>6) _____</td> </tr> </tbody> </table> <div style="border: 1px dashed black; padding: 5px; margin-top: 10px;"> <p>A. Given                      B. Substitution                      C. Subtraction Property of Equality                      D. Segment Addition Postulate                      E. Congruent segments have equal measure</p> </div>  <p>To prove a midpoint, segment bisector, or angle bisector, prove that the little segments/angles are _____ &amp; _____ then use the _____ to state your point is a midpoint, your segment is bisected, or your angle is bisected.</p>	Statement	Reason	1) $EF+FG=EG$ ; $AB+BC=AC$	1) _____	2) $\overline{EF} \cong \overline{CB}$ ; $\overline{EG} \cong \overline{AC}$	2) _____	3) $EF+FG=AB+BC$	3) _____	4) $EF+FG=AB+EF$	4) _____	5) $FG=AB$	5) _____	6) $\overline{FG} \cong \overline{AB}$	6) _____	
Statement	Reason															
1) $EF+FG=EG$ ; $AB+BC=AC$	1) _____															
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5) $FG=AB$	5) _____															
6) $\overline{FG} \cong \overline{AB}$	6) _____															
<p><b>1-11</b></p>	<p>See Axioms</p>															
<p><b>1-12</b> <b>+ See Axioms Pages</b></p>	<p>• Common/Overlapping Segment Theorem (Similar for Common Angle Theorem)</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Given Littles <math>\cong</math></p>  </div> <div style="text-align: center;"> <p>Given Overlapping Pieces <math>\cong</math></p>  </div> </div> <p>1) _____ 1) _____                  2) _____ 2) _____                  3) _____ 3) _____</p> <p>• Paragraph proofs consist of matches statements and their reasons in _____ often using “since _____, then _____”.                  • Flowchart proofs place statements in _____ with reasons underneath. Boxes are connected by _____ going left to right or top to bottom.</p>															
<p><b>Review</b></p>																

## AXIOMS (Theorems, Corollaries, Postulates, Definitions)

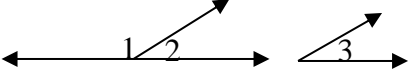
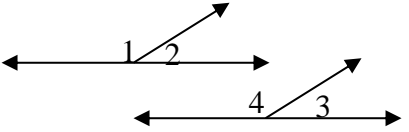
### Sum of Parts

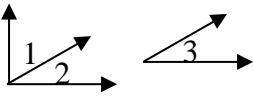
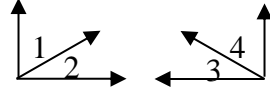
Conditional Statement	Diagram / Example	Stated as a Reason in a Proof
If point C is in the interior of $\angle AOB$ , then _____		
Given a sequence of $n$ consecutive adjacent angles whose interiors are all disjoint such that the angle formed by the first $n - 1$ angles and the last angle are a linear pair, then the angle measures _____	( $\angle$ 's on a line )	Consecutive adjacent angles on a line sum to $180^\circ$
If the sum of the measures of all angles formed by three or more rays with the same vertex and whose interiors do not overlap, then the angle measures _____		Angles at a point sum to $360^\circ$
If points C and D are in the interior of $\angle AOB$ AND $\angle AOD \cong \angle BOC$ , then _____  <i>See lesson summaries for 3 step process (can also go <math>\cong</math> bigs <math>\rightarrow</math> <math>\cong</math> littles)</i>		Common Angle Theorem Or Overlapping Angles Theorem
If A, B, and C are collinear, then _____		
If points A, B, C, AND D are collinear and $\overline{AB} \cong \overline{CD}$ , then _____  <i>See lesson summaries for 3 step process (can also go <math>\cong</math> bigs <math>\rightarrow</math> <math>\cong</math> littles)</i>		Common Segment Thm Or Overlapping Segments Thm

# Bisectors

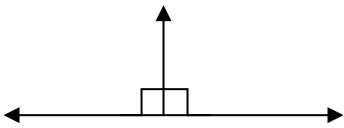
Conditional Statement	Diagram / Example	Stated as a Reason in a Proof
<p>If <math>\overline{BD}</math> bisects <math>\angle ABC</math>, then</p> <hr/>		<p>Definition of Angle Bisector</p>
<p>If <math>\angle ABD \cong \angle CBD</math> and they are adjacent, then</p> <hr/> <p><i>Note conjunction!</i></p>		<p>Or</p> <p>Angle Bisector <math>\leftrightarrow</math> two congruent adjacent angles</p>
<p>If B is the midpoint of <math>\overline{AC}</math>, then</p> <hr/>		<p>Definition of a Midpoint</p>
<p>If <math>\overline{AB} \cong \overline{BC}</math> and A, B, and C are collinear, then</p> <hr/> <p><i>Note conjunction!</i></p>		<p>or</p> <p>Midpoint <math>\leftrightarrow</math> two congruent collinear segments</p>
<p><math>\overline{CD}</math> bisects <math>\overline{EF}</math> at G and <math>\overline{EFG} \leftrightarrow G</math> is the midpoint.</p>		
<p><math>\overline{CD}</math> bisects <math>\overline{EF}</math> at G and <math>\overline{EFG} \leftrightarrow \overline{EG} \cong \overline{GF}</math>.</p>		<p>Segment bisector <math>\leftrightarrow</math> 2 <math>\cong</math> collinear segments.</p> <p>Or</p> <p>Definition of a Segment Bisector</p>
<p>If 2 <math>\cong</math> angles are bisected, then their</p> <hr/>		<p>Halves of Congruent Angles are Congruent.</p>
<p>If 2 <math>\cong</math> segments are bisected, then their</p> <hr/>		

### Angle Pairs

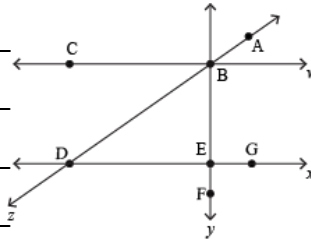
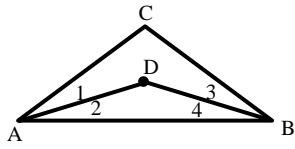
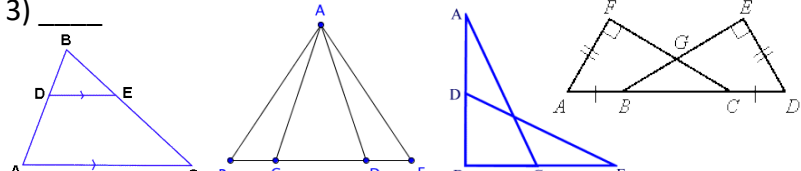
Conditional Statement	Diagram / Example	Stated as a Reason in a Proof
The sum of two angles = $90^\circ$ if and only if the angles are _____ _____		
The sum of two angles = $180^\circ$ if and only if the angles are _____ _____		
If two angles are adjacent and their noncommon sides form opposite rays, then the angles are a _____ _____		Defn. of a Linear Pair
If two $\sphericalangle$ 's form a linear pair, then they are _____ _____		Linear pairs of $\sphericalangle$ 's are supplementary. Linear Pair $\rightarrow$ Supp $\sphericalangle$ 's
If 2 non-adjacent $\sphericalangle$ 's are formed by intersecting lines then they are _____ _____		Defn of Vertical Angles
If angles are vertical $\sphericalangle$ 's , then the angles are _____ _____		Vertical $\sphericalangle$ pairs are equal in measure Vertical $\sphericalangle$ pairs are $\cong$
If 2 angles are supplementary to the same angle, then they are _____ _____		Congruent Supplements Theorem Or Supplements of the same angle are congruent
If 2 angles are supplementary to congruent angles, then they are _____ _____		Congruent Supplements Theorem Or Supplements of congruent angles are congruent

<p>If 2 angles are complementary to the same angle, then they are _____</p>		<p>Congruent Supplements Theorem <i>Or</i> Supplements of the same angle are congruent</p>
<p>If 2 angles are complementary to congruent angles, then they are _____</p>		<p>Congruent Supplements Theorem <i>Or</i> Supplements of congruent angles are congruent</p>

**Right Angles**

<p>The measure of an angle is <math>90^\circ</math> if and only if the angle is a _____ angle</p>		
<p>If 2 <math>\sphericalangle</math>'s are right <math>\sphericalangle</math>'s, then _____</p>		<p>Right <math>\sphericalangle</math>'s are <math>\cong</math> .</p>
<p>If 2 <math>\cong</math> <math>\sphericalangle</math>'s are supplementary, then _____</p> <p><i>Note conjunction!</i></p>		<p>Congruent &amp; supplementary angles are right <math>\sphericalangle</math>'s</p>

**Warm Up Quizzes**

<p><b>G</b> 1) _____</p> <p>2) _____</p>	<p><b>H</b></p>  <p>1) _____</p> <p>2) _____</p> <p>3) _____</p> <p>4) _____</p>
<p><b>I</b> Reasons:</p> <p>1) _____</p> <p>2) _____</p> <p>3) _____</p> <p>4) _____</p> 	<p><b>J</b></p>  <p>1) _____</p> <p>2) _____</p> <p>3) _____</p>