

## GEOMETRY

### UNIT 2: GEOMETRIC REASONING

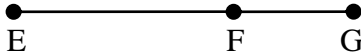
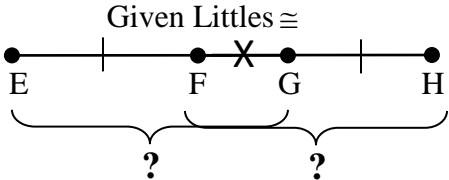
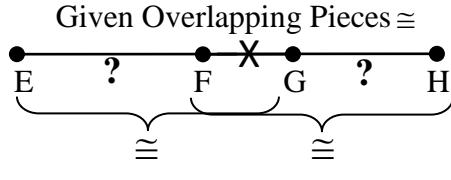
\*\*SHOW ALL WORK\*\*  
BRING COLORED PENCILS TO CLASS AND USE ON YOUR HOMEWORK

LESSON	TOPIC	BOOK/ VIDEO	COMMON CORE LS	ASSIGNMENT
DAY 1	CONDITIONAL STATEMENTS, DEFINITIONS, and AXIOMS	2-1, 2-2, 2-3, P128	ESSENTIAL SKILL	P. 77: #19 P. 85-86: #32,34 P.100-101: #11,15,18,23,24,25,29,33,36,40,53,61
DAY 2	<u>ALGEBRAIC PROOFS</u> <ul style="list-style-type: none"> <li>• Properties of Equality</li> <li>• Segment Addition/ Subtraction</li> <li>• <math>\sphericalangle</math> Addition/ Subtraction</li> </ul>	2-5	ESSENTIAL SKILL	WORKSHEET 2-2
DAY 3	<p style="text-align: center;"><i>Mini Quiz 1</i></p> <u>ALGEBRAIC &amp; GEOMETRIC PROOFS</u> <ul style="list-style-type: none"> <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 – ASSIGNED PROBLEMS
DAY 4	<p style="text-align: center;"><i>Mini Quiz 2</i></p> <u>GEOMETRIC PROOFS</u> <ul style="list-style-type: none"> <li>• Linear Pair</li> <li>• <math>\cong</math> Supplements Theorem</li> <li>• <math>\cong</math> Complements Theorem</li> <li>• Rt. <math>\sphericalangle</math> Congruence</li> </ul>	2-6	G-CO.9	GEOMETRIC PROOFS PACKET – ASSIGNED PROBLEMS
DAY 5	<p style="text-align: center;"><i>Mini Quiz 3</i></p> <u>FLOWCHART &amp; PARAGRAPH PROOFS</u> <ul style="list-style-type: none"> <li>• Common Segment Theorem</li> <li>• Common Angle Theorem</li> <li>• Vertical Angles Theorem</li> <li>• Congruent &amp; Supplementary Angles Theorem (<math>\rightarrow</math> Rt. <math>\sphericalangle</math>'s)</li> </ul>	2-7	G-CO.9	GEOMETRIC PROOFS PACKET – ASSIGNED PROBLEMS
DAY 6	REVIEW FOR TEST			FINISH REVIEW FOR TEST PACKET
T	TEST			<ul style="list-style-type: none"> <li>• CUMULATIVE REVIEW #2</li> <li>• BRIDGE TO UNIT 3</li> </ul>

GEOMETRY CLASS LESSON SUMMARIES FOR UNIT 2

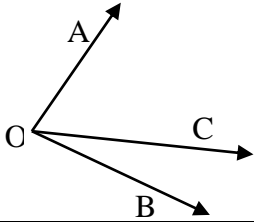
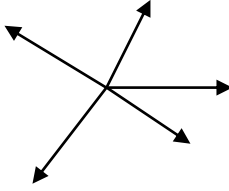
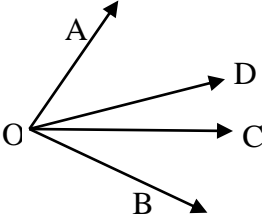
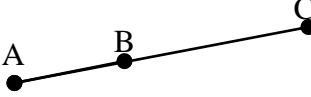
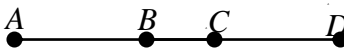
NAME: \_\_\_\_\_

DAY	MAIN POINTS / FORMULAS TO REMEMBER	QUESTIONS AFTER HMWK
2-1	<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>\leftrightarrow</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>	

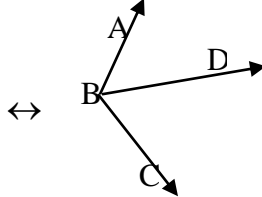
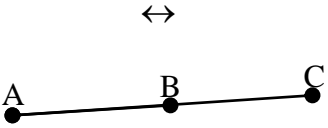

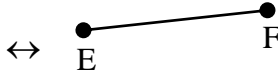
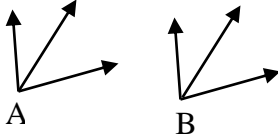
<p><b>2-2</b> <b>+ See Axioms Pages</b></p>	<table border="0"> <thead> <tr> <th style="text-align: left;"><u>Property Name</u></th> <th style="text-align: left;"><u>Example</u></th> </tr> </thead> <tbody> <tr> <td>Addition Prop of Equality:</td> <td>If <math>x=y</math>, then <math>x+4 = \underline{\hspace{2cm}}</math></td> </tr> <tr> <td>(Subtraction Property of Equality)</td> <td>If <math>x=y</math> and <math>a=b</math>, then <math>x+a = \underline{\hspace{2cm}}</math></td> </tr> <tr> <td>Multiplication Prop of Equality:</td> <td>If <math>x=y</math>, then <math>4x = \underline{\hspace{2cm}}</math></td> </tr> <tr> <td>(Division Prop of Equality)</td> <td>If <math>x=y</math> and <math>a=b</math>, then <math>ax = \underline{\hspace{2cm}}</math></td> </tr> <tr> <td>Reflexive Prop of Equality:</td> <td><math>\overline{AB} = \underline{\hspace{2cm}}</math></td> </tr> <tr> <td>Reflexive Prop of Congruence:</td> <td><math>\overline{AB} \cong \underline{\hspace{2cm}}</math></td> </tr> <tr> <td>Transitive Prop of Equality:</td> <td>If <math>AB=BC</math> and <math>BC=CD</math>, then <math>\underline{\hspace{2cm}}</math></td> </tr> <tr> <td>Transitive Prop of Congruence:</td> <td>If <math>\sphericalangle A \cong \sphericalangle B</math> and <math>\sphericalangle B \cong \sphericalangle C</math>, then <math>\underline{\hspace{2cm}}</math></td> </tr> <tr> <td>Substitution Prop of Equality:</td> <td>If <math>AB=BC</math> and <math>CD=BC</math>, then <math>\underline{\hspace{2cm}}</math></td> </tr> </tbody> </table> <hr/> <ul style="list-style-type: none"> <li>• A two-column proofs has statements on the <math>\underline{\hspace{2cm}}</math> side and reasons/justifications on the <math>\underline{\hspace{2cm}}</math> side.</li> <li>• To write an algebraic proof, start with a <math>\underline{\hspace{2cm}}</math> using <math>\underline{\hspace{2cm}}</math>. Then use algebraic properties to justify each statement towards the solution.</li> </ul> <p>Ex: </p> <ol style="list-style-type: none"> <li>1) Statement #1 is <math>\underline{\hspace{2cm}}</math> Reason: <math>\underline{\hspace{2cm}}</math></li> <li>2) Statement #2 uses <math>\underline{\hspace{2cm}}</math></li> <li>3) Statement #3 uses <math>\underline{\hspace{2cm}}</math></li> </ol>	<u>Property Name</u>	<u>Example</u>	Addition Prop of Equality:	If $x=y$ , then $x+4 = \underline{\hspace{2cm}}$	(Subtraction Property of Equality)	If $x=y$ and $a=b$ , then $x+a = \underline{\hspace{2cm}}$	Multiplication Prop of Equality:	If $x=y$ , then $4x = \underline{\hspace{2cm}}$	(Division Prop of Equality)	If $x=y$ and $a=b$ , then $ax = \underline{\hspace{2cm}}$	Reflexive Prop of Equality:	$\overline{AB} = \underline{\hspace{2cm}}$	Reflexive Prop of Congruence:	$\overline{AB} \cong \underline{\hspace{2cm}}$	Transitive Prop of Equality:	If $AB=BC$ and $BC=CD$ , then $\underline{\hspace{2cm}}$	Transitive Prop of Congruence:	If $\sphericalangle A \cong \sphericalangle B$ and $\sphericalangle B \cong \sphericalangle C$ , then $\underline{\hspace{2cm}}$	Substitution Prop of Equality:	If $AB=BC$ and $CD=BC$ , then $\underline{\hspace{2cm}}$	
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<p><b>2-3 + Axioms Pages</b></p>	<p>To prove a midpoint, segment bisector, or angle bisector, prove that the little segments/angles are <math>\underline{\hspace{2cm}}</math> then use the <math>\underline{\hspace{2cm}}</math> to state your point is a midpoint, your segment is bisected, or your angle is bisected.</p>																					
<p><b>2-4</b></p>	<p>See Axioms</p>																					
<p><b>2-5</b> <b>+ See Axioms Pages</b></p>	<ul style="list-style-type: none"> <li>• Common Segment Theorem (Similar for Common Angle Theorem)</li> </ul> <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> <ol style="list-style-type: none"> <li>1)</li> <li>2)</li> <li>3)</li> </ol> <ul style="list-style-type: none"> <li>• Paragraph proofs consist of matches statements and their reasons in <math>\underline{\hspace{2cm}}</math> often using “since <math>\underline{\hspace{2cm}}</math>, then <math>\underline{\hspace{2cm}}</math>”.</li> <li>• Flowchart proofs place statements in <math>\underline{\hspace{2cm}}</math> with reasons underneath. Boxes are connected by <math>\underline{\hspace{2cm}}</math> going left to right or top to bottom.</li> </ul>																					
<p><b>Review</b></p>																						

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

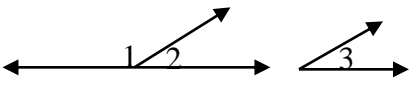
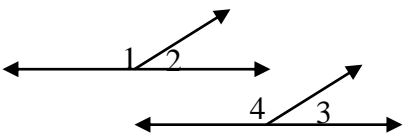
### Sum of Parts

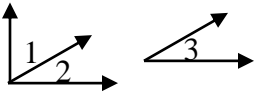
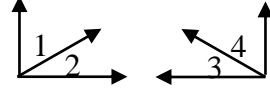
Conditional Statement	Diagram / Example	Stated as a Reason in a Proof
If point C is in the interior of $\sphericalangle AOB$ , then _____		
Given a sequence of $n$ consecutive adjacent angles whose interiors are all disjoint such that the angle formed by the first $n - 1$ angles and the last angle are a linear pair, then the angle measures _____	( $\sphericalangle$ '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 $\sphericalangle AOB$ AND $\sphericalangle AOD \cong \sphericalangle BOC$ , 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

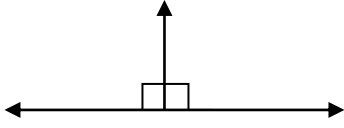
Conditional Statement	Diagram / Example	Stated as a Reason in a Proof
<p>If <math>\overline{BD}</math> bisects <math>\angle ABC</math>, then</p> <hr/>		<p>Definition of Angle Bisector</p> <p style="text-align: center;"><i>Or</i></p>
<p>If <math>\angle ABD \cong \angle CBD</math> and they are adjacent, then</p> <hr/> <p><i>Note conjunction!</i></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 style="text-align: center;"><i>or</i></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>Midpoint <math>\leftrightarrow</math> two congruent collinear segments</p>
<p><math>\overline{CD}</math> bisects <math>\overline{EF}</math> at <math>G</math> and <math>\overline{EFG} \leftrightarrow G</math> is the midpoint.</p>		
<p><math>\overline{CD}</math> bisects <math>\overline{EF}</math> at <math>G</math> 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 style="text-align: center;"><i>Or</i></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

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**Right Angles**

<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>