

Honors Geometry

Name: Key

Test Review Worksheet (Chapter 2)

For each of the following, determine if each conditional is true or false. If it is false, provide a counterexample.

<p>1. If $\overline{AB} \cong \overline{BC}$, then B is the midpoint of segment AC.</p> <p style="text-align: center;">True</p>	<p>2. If Johnny goes to NCHS, then he is in Mr. Harle's math class.</p> <p style="text-align: center;">False, Mr. Nelson's class.</p>	<p>3. If $\angle MNO$ and $\angle PNO$ are adjacent angles, then $\angle MNO$ and $\angle PNO$ have the same vertex.</p> <p style="text-align: center;">True</p>
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Write a true ~~conditional~~ conditional based on the given statement.

<p>4. Ray PQ is perpendicular to ray PR.</p> <p style="text-align: center;">If ray PQ is perpendicular to ray PR then the rays form right \angles.</p>	<p>5. $m\angle 1 + m\angle 2 = 90$</p> <p style="text-align: center;">If $m\angle 1 + m\angle 2 = 90$, then the angles are complementary.</p>
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Underline the hypothesis and circle the conclusion for each of the following conditional statements.

<p>6. If a polygon has eight sides, then <u>it is an octagon.</u></p>	<p>7. If <u>you promise to pay me back,</u> then I will lend you five dollars.</p>	<p>8. If <u>lines are parallel,</u> then <u>the lines have the same slope.</u></p>
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Write each of the following in if-then form.

<p>9. Vertical angles are congruent.</p> <p style="text-align: center;">If 2 angles are vertical, then they are congruent.</p>	<p>10. As long as we are running on time, we will arrive to school by 7.</p> <p style="text-align: center;">If I am running on time, then I will arrive to school by 7.</p>
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Write the negation for each of the following.

<p>11. I want to go to the OSU game this weekend.</p> <p style="text-align: center;">I do not want to go to the OSU game.</p>	<p>12. The hypothesis of a conditional is what immediately follows if.</p> <p style="text-align: center;">The hypothesis is what immediately follows then.</p>	<p>13. In deductive reasoning, rules of logic are used to reach a conclusion.</p> <p style="text-align: center;">In inductive reasoning, rules of logic are used to reach a conclusion.</p>
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Write the converse, inverse, and contrapositive for the following conditional. Then decide if each is true or false.

If two angles are vertical angles, then the angles share the same vertex.

<p>14. Converse</p> <p style="text-align: center;">If 2 angles share the same vertex, then they are vertical angles.</p> <p style="text-align: center;">FALSE</p>	<p>15. Inverse:</p> <p style="text-align: center;">If 2 angles are not vertical, then they do not share the same vertex.</p> <p style="text-align: center;">FALSE</p>	<p>16. Contrapositive</p> <p style="text-align: center;">If 2 angles do not share the same vertex, then they are not vertical.</p> <p style="text-align: center;">TRUE</p>
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Write each sentence as a biconditional statement.

<p>17. Supplementary angles have a sum of 180.</p> <p><i>Angles are supplementary if and only if they have a sum of 180.</i></p>	<p>18. Triangles have three sides.</p> <p><i>A figure is a triangle if and only if it has 3 sides.</i></p>
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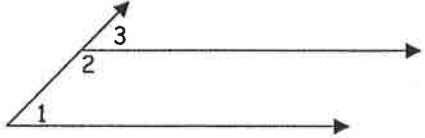
Determine whether each conclusion is VALID or INVALID based on the given information and deductive reasoning.


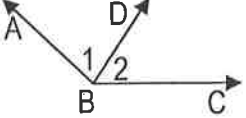
<p>19. If the sky is blue, then it is sunny. If the sky is blue, then it won't rain. Conclusion: It won't rain.</p> <p style="text-align: center;">INVALID</p>	<p>20. If 2 angles are vertical, then they are congruent. Conclusion: $\angle 1$ and $\angle 2$ are congruent.</p> <p style="text-align: center;">INVALID</p>	<p>21. If I take Geometry, then I will learn a lot. If I learn a lot, then I will love school. Conclusion: If I take Geometry, then I will love school.</p> <p style="text-align: center;">VALID</p>
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Determine a valid conclusion for each set of given information. If none can be reached, write "no conclusion."

<p>22. If the leaves are turning, then the season is fall. It is fall.</p> <p style="text-align: center;">NO CONCLUSION</p>	<p>23. If 2 angles are a linear pair, then they are supplementary. If two angles are supplementary, then their measures add to 180.</p> <p><i>If 2 angles are a linear pair, then their measures add to 180.</i></p>	<p>24. If I am shivering, then I am cold. I am shivering.</p> <p style="text-align: center;">I am cold</p>
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Complete each of the following proofs.

<p>25. Given: $\angle 1$ and $\angle 2$ are supplementary angles Prove: $\angle 1 \cong \angle 3$</p>	
<p>Statements</p> <ol style="list-style-type: none"> 1. $\angle 1$ and $\angle 2$ are Supplementary Angles 2. $\angle 1 + \angle 2 = 180^\circ$ 3. $\angle 2$ and $\angle 3$ are Supplementary Angles 4. $\angle 2 + \angle 3 = 180^\circ$ 5. $\angle 1 + \angle 2 = \angle 2 + \angle 3$ 6. $\angle 1 = \angle 3$ 7. $\angle 1 \cong \angle 3$ 	<p>Reasons</p> <ol style="list-style-type: none"> 1. Given 2. Definition of Supplementary Angles 3. Definition of Supplementary Angles 4. Def. of Supplementary Angles 5. Substitution Property 6. Subtraction POE 7. Definition of Congruent Angles

<p>26. Given: $CE = LT$ Prove: $CL = ET$</p>	
<p>Statements</p> <ol style="list-style-type: none"> $CE = LT$ $CL + LT = CT$ $CE + ET = CT$ $CL + LT = CE + ET$ $CL + LT = LT + ET$ $CL = ET$ 	<p>Reasons</p> <ol style="list-style-type: none"> Given Segment addition Substitution Property Substitution Property Subtraction PoE
<p>27. Given: \overline{BD} bisects $\angle ABC$ Prove: $m\angle ABC = 2(m\angle 1)$</p>	
<p>Statements</p> <ol style="list-style-type: none"> \overline{BD} bisects $\angle ABC$ $m\angle 1 = m\angle 2$ $m\angle ABC = m\angle 1 + m\angle 2$ $m\angle ABC = m\angle 1 + m\angle 1$ $m\angle ABC = 2(m\angle 1)$ 	<p>Reasons</p> <ol style="list-style-type: none"> Given Def. of angle bisector Angle addition Property Substitution Property Angle addition Property

