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.

1. If $\overline{AB} \cong \overline{BC}$, then B is the midpoint of segment AC.	2. If Johnny goes to NCHS, then he is in Mr. Harle's math class.	3. If $\angle MNO$ and $\angle PNO$ are adjacent angles, then $\angle MNO$ and $\angle PNO$ have the same vertex.
TRUE	FALSE, science	TRUE

Write a true conditional based on the given statement.

4. Perpendicular lines form 90° angles.	5. Two angles that add up to 180° are supplementary.
If 2 lines are perpendicular, then they form 90° angles.	If 2 angles add up to 180°, then they are supplementary.

Underline the hypothesis and circle the conclusion for each of the following conditional statements.

6. If a polygon has eight sides, then it is an octagon.	7. If you promise to pay me back, then I will lend you five dollars.	8. If lines are parallel, then the lines have the same slope.

Write each of the following in if-then form.

9. Vertical angles are congruent.	10. As long as we are running on time, we will arrive to school by 7.
If 2 angles are vertical, then they are congruent.	If we are running on time, then we will arrive by 7.

Write the negation for each of the following.

11. I want to go to the OSU game this weekend.	12. I do not like pizza.	13. The hypothesis comes directly after the *then* in a conditional statement.
I do not want to go to the OSU game.	I like pizza.	The conclusion comes after the then..

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.

14. Converse	15. Inverse:	16. Contrapositive
If angles share the same vertex, then they are vertical angles. FALSE	If 2 angles are not vertical, then they do not share the same vertex. FALSE	If 2 angles do not share the same vertex, then they are not vertical TRUE

Write each sentence as a biconditional statement.

17. Supplementary angles have a sum of 180.	18. Triangles have three sides.
Two angles are supplementary, if and only if they have a sum of 180°.	A figure is a triangle, if and only if it has 3 sides.

Determine whether each conclusion is VALID or INVALID based on the given information and deductive reasoning.

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.**	20. If 2 angles are vertical, then they are congruent. Conclusion: **$\angle 1$ and $\angle 2$ are congruent.**	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.**
Invalid	Invalid	Valid

Determine a valid conclusion for each set of given information. If none can be reached, write "no conclusion."

22. If the leaves are turning, then the season is fall. It is fall.	23. If 2 angles are a linear pair, then they are supplementary. If two angles are supplementary, then their measures add to 180.	24. If I am shivering, then I am cold. I am shivering.
No conclusion	If 2 angles are a linear pair, then their measures add to 180°.	I am cold.

Complete each of the following proofs.

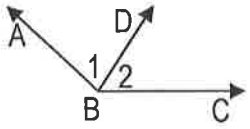
25. Given: $8m + 5 = 6m + 17$
Prove: $m = 6$

Statements	Reasons
1. $8m + 5 = 6m + 17$	**1.** Given
2. $8m = 6m + 12$	**2.** Subtraction POE
3. $2m = 12$	**3.** Subtraction POE
4. $m = 6$	**4.** Division POE

26. Given: CE = LT
Prove: CL = ET

Statements	Reasons
1. CE = LT	1. Given
2. CL + LT = CT CE + ET = CT	2. Segment Addition
3. CL + LT = CE + ET	3. Substitution Property
4. CL + CE = CE + ET	4. Substitution Property
5. CL = ET	5. Subtraction POE

27. Given: $\overrightarrow{BD}$ bisects ∠ABC
Prove: m∠ABC = 2(m∠1)



Statements	Reasons
1. $\overrightarrow{BD}$ bisects ∠ABC	1. Given
2. ∠1 ≅ ∠2	2. Def. of angle bisector
3. $m\angle ABC = m\angle 1 + m\angle 2$	3. Angle addition Property
4. m∠ABC = m∠1 + m∠1	4. Substitution
5. m∠ABC = 2(m∠1)	5. Angle addition Property