2

Chapter 2 Test, Form 2C

Determine if each conjecture is true or false based on the given information. Explain your answer and give a counterexample for any false conjecture.

1. **Given:** $\angle XYZ$ and $\angle ZYW$ are adjacent angles.
   Conjecture: $\angle XYW$ is a right angle.

   1._____

2. **Given:** Points M, N, and P are noncollinear.
   Conjecture: Points M, N, and P all lie in the same plane.

   2._____

Write each conditional statement in if-then form. Identify the hypothesis and conclusion.

3. Two planes intersect in exactly one line.

   3._____

4. The product of two even integers is even.

5. Acute angles have measures greater than 0 but less than 90.

   4._____

Write the converse of each conditional. Determine if the converse is true or false. If it is false, give a counterexample.
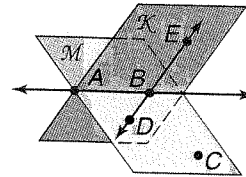
   5._____

6. If $\angle 1$ and $\angle 2$ are vertical angles, then $\angle 1 \cong \angle 2$.

7. An odd integer is not divisible by 2.

   6._____

8. If two lines are perpendicular, then they form four right angles.

   7._____

In the figure at the right, A and B are collinear. Points E, B, and D lie in plane $\mathcal{K}$. Points B and C lie in plane $\mathcal{M}$. Determine whether each statement is true or false.

   8._____

9. Plane $\mathcal{M}$ and plane $\mathcal{K}$ intersect in $\overleftrightarrow{AB}$.

   9._____

10. D, E, and C lie in plane $\mathcal{M}$.

   10._____

Determine if a valid conclusion can be reached from the two true statements. If it can, state it and the law of logic that is used. If a valid conclusion does not follow, write no conclusion.

11. (1) If you can drive a car, then you have a driver's license. (2) Fran can drive a car.

   11._____

12. (1) If $AB = CD$, then $\overline{AB} \cong \overline{CD}$.
    (2) If $\overline{AB} \cong \overline{CD}$, then $\overline{CD} \cong \overline{AB}$.

   12._____

13. (1) All vertical angles are congruent.
    (2) $\angle 1$ and $\angle 2$ are congruent.

   13._____

Geometry

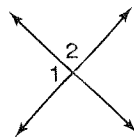14. If $p \rightarrow q$ is true and p is false, what must be true about q? 14. _____

Name the property of equality that justifies each statement.

15. If $AC = AB + BC$ and $AC = BD$, then $BD = AB + BC$. 15. _____

16. If $JL = JK + KL$ and $JK + KL = MN + NP$, then $JL = MN + NP$. 16. _____

17. If $m\angle ABC + m\angle ABC = m\angle DEF + m\angle ABC$, then $m\angle ABC = m\angle DEF$. 17. _____

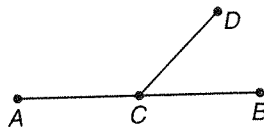18. Find the measures of $\angle 1$ and $\angle 2$ if $m\angle 1 = 6x - 10$ and $m\angle 2 = 4x + 20$. 18. _____

Write a two-column proof.

19. Given: C is the midpoint of $\overline{AB}$.
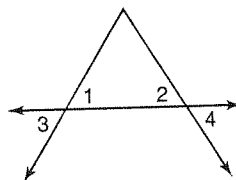 $\overline{DC} \cong \overline{CB}$
    Prove: $AC = DC$ 19. _____

20. Given: $\angle 3 \cong \angle 4$
    Prove: $\angle 1 \cong \angle 2$ 20. _____

Bonus

The contrapositive of a conditional $p \rightarrow q$ is *not* $q \rightarrow$ *not* p.
What is the converse of the contrapositive of $p \rightarrow q$? Bonus _____