GEO031004 Chapter Two Test Name: _____

1. $\angle 1$ and $\angle 2$ are supplementary angles. $\angle 1$ and $\angle 3$ are vertical angles. If $m\angle 2 = 72°$, then find $m\angle 3$.

   [A] 18° [B] 28° [C] 108° [D] 72°

2. Rewrite the postulate as a biconditional statement.
   If two planes intersect, then their intersection is a line.

3. Name the property which justifies the following conclusion:
   Given: $w + x - y = z$ and $z = m$
   Conclusion: $w + x - y = m$

4. Determine if the statement is a good definition. If it is not, state a counterexample.
   A triangle is a figure with sharp corners.

5. Identify the property of congruence.
   $\angle A \cong \angle A$.

   [A] Substitution Property [B] Symmetric Property of Congruence

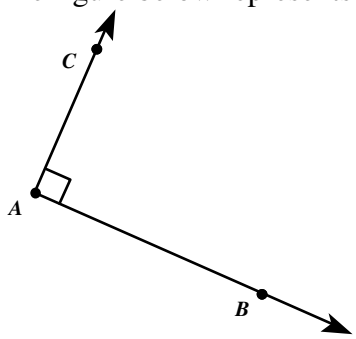
   [C] Reflexive Property of Congruence [D] Transitive Property of Congruence

From the given true statements, make a valid conclusion:

6. If the dogs get out of the yard, the catcher will take them to the pound.
   The dogs got out of the yard.

7. If there is no more milk, Rita will go to the store.
   There is no more milk.

8. The figure below represents which of the following statements?



[A] Two lines that are perpendicular [B] $AB = AC$

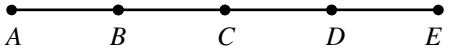
[C] A straight angle [D] Two rays that are perpendicular

9. If $PQ = 3$ and $PQ + RS = 5$, then $3 + RS = 5$ is an example of the _____.

[A] Multiplication Property of Equality [B] Transitive Property of Equality

[C] Reflexive Property of Equality [D] Substitution Property of Equality

10. Provide the reasons for the following proof.
Given: $AB = DE$
Prove: $AD = BE$



Statements	Reasons
$AB = DE$	
$AB + BD = DE + BD$	
$AB + BD = AD,\ DE + BD = BE$	
$AD = BE$	

11. Write the contrapositive: $p \rightarrow q$

12. Decide which one of the following statements is false.

[A] Through any two distinct points there exists exactly one line.

[B] Any three points lie on a distinct line.

[C] Three noncollinear points determine a plane.

[D] A line contains at least two points.

13. Identify the property of congruence.
If $\angle S \cong \angle T$, then $\angle T \cong \angle S$.

14. Given: $RQ = 5$ and $2(PQ) + 3(RQ) = 27$. Use the Substitution Property of Equality to find the value of PQ.

15. "If an obtuse angle is bisected, then two acute angles are obtained." Decide whether the statement and its converse are true. If false, explain.

16. "If an acute angle is bisected, then two acute angles are obtained." Decide whether the statement and its converse are true. If false, explain.

17. Decide which one of the following statements is false.

[A] Three noncollinear points determine a plane.

[B] A line contains at least two points. [C] Any three points lie on a distinct line.

[D] Through any two distinct points there exists exactly one line.

18. Consider the conditional statement, "If $x^2 = 25$, then $x = -5$." All of the following are true statements except _____.

[A] the converse is false [B] the converse is true

[C] the statement is false [D] $(-5)^2 = 25$

19. Write the symbolic statement in conditional or biconditional form and determine whether it is true or false. Then write the converse in symbolic form and determine whether it is true or false:
$p \rightarrow q$
$p =$ a quadrilateral has four right angles
$q =$ the quadrilateral is a square

20. State a counterexample to the following definition:
A square is a figure with four right angles.

[A] Rectangles also have four right angles. [B] Octagons are figures.

[C] A line connects two points. [D] A triangle has three angles.

21. State a counterexample to the following definition:
A hot air balloon is a device that floats in the air.

[A] Hot air balloons are red.
[B] Hot air is also warm.
[C] Helium balloons also float.
[D] A car is also a device.

22. Give the reason for the step taken from a proof.

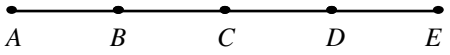
$\angle 1$ and $\angle 2$ are a linear pair	Given
$m\angle 1 + m\angle 2 = 180°$	?

[A] Congruent Complements Theorem
[B] Vertical Angles Theorem
[C] Congruent Supplements Theorem
[D] Linear Pair Postulate

23. Determine if the statement is a good definition. If it is not, state a counterexample.
A square is a figure with four right angles and four congruent sides.

24. Rewrite the postulate in if-then form.
"A line contains at least two points."

25. Provide the reasons for the following proof.
Given: $BC = CD,\ AB = DE$
Prove: $AC = CE$



Statements	Reasons
$BC = CD,\ AB = DE$	
$BC + AB = CD + AB$	
$BC + AB = CD + DE$	
$BC + AB = AC,\ CD + DE = CE$	
$AC = CE$	

26. In the following proof, give the reason for the last step.

$\angle 1$ and $\angle 2$ are a linear pair.	Given
$\angle 1$ and $\angle 2$ are supplementary.	Linear Pair Postulate
$m\angle 1 + m\angle 2 = 180°$	?