Chapter 2 Review

Name _____ Date _____ Class _____

Chapter 2 Geometric Reasoning

Circle the best answer.

1. What group of items is next in the pattern?

○●○●●○●●●○●

A ●●●●

B ●●●

2. Which conjecture is true?

A An even number plus 3 is always even.

B An even number plus 3 is always prime.

C An even number plus 3 is always odd.

D A prime number plus 3 is always even.

3. Given: Jennifer sings alto in the school choir. The choir has four voice parts. The female voice parts are soprano and alto. The male voice parts are tenor and bass. What conclusion can be drawn?

A Jennifer sings a female voice part in the choir.

B There are no basses in the choir.

4. Which conditional statement is true?

A If two angles are acute, then they are complementary.

B If an angle is acute, then its measure is less than 90°.

5. What is the converse of "If there are clouds in the sky, then it is raining"?

A If it is raining, then there are clouds in the sky.

B If it is not raining, then there are clouds in the sky.

C If it is raining, then there are no clouds in the sky.

D If it is not raining, then there are no clouds in the sky.

6. Given: Pluto is the only planet other than Earth with only one moon. A student is looking through a telescope at a planet that has only one moon. What conclusion can be drawn?

A The student is not looking at Pluto.

B The student is looking at Pluto.

7. Given: If two angles are complementary, then both angles measure less than 90°. Angles that measure less than 90° are acute. $\angle 1$ and $\angle 2$ are complementary. What conclusion can be drawn?

A Only $\angle 1$ is acute.

B Only $\angle 2$ is acute.

C Both angles are acute.

D Neither angle is acute.

8. Which completes the statement to form a true biconditional?
$x^2 = 1$ if and only if _____.

A $x = 1$

B $|x| = 1$

9. Which property is used in solving $y + 3 = 11$?

A Symm. Prop. of =

B Div. Prop. of =

C Mult. Prop. of =

D Subtr. Prop. of =

10. Which is an example of the Reflexive Property of Congruence?

A $\overline{AB} \cong \overline{EF}$

B $\overline{EF} \cong \overline{EF}$

11. Given the partially completed two-column proof, which is the reason for Step 3?

Statements	Reasons
1. $\overline{AE} \cong \overline{FB}$	1. Given
2. $\overline{FB} \cong \overline{EF}$	2. Given
3. $\overline{AE} \cong \overline{EF}$	3. ___?___

A Def. of midpoint

B Trans. Prop. of $\cong$

12. What is the next item in the pattern? $-1, 2, -4, 8, \ldots$

A -16 C 4

B -4 D 16

13. Given: All snarfs are yelbs. All yelbs are blue. Migs can be either green or pink. Some slokes are snarfs. What conclusion can be drawn?

A Some migs are snarfs.

B Some snarfs are green.

C Some slokes are yelbs.

D All slokes are migs.

14. Given the conditional statement "If it is January, then it is winter in the United States," which is true?

F the converse of the conditional

G the inverse of the conditional

H the contrapositive of the conditional

J Not here

15. What is the inverse of the conditional statement "If a number is divisible by 6, then it is divisible by 3"?

A If a number is divisible by 3, then it is divisible by 6.

B If a number is not divisible by 6, then it is not divisible by 3.

C If a number is not divisible by 3, then it is not divisible by 6.

D If a number is not divisible by 6, then it is divisible by 3.

16. Which symbolic statement represents the Law of Syllogism?

A If $p \rightarrow q$ and $q \rightarrow r$ are true statements, then $p \rightarrow r$ is a true statement.

B If $p \rightarrow q$ and $p \rightarrow r$ are true statements, then $q \rightarrow r$ is a true statement.

C If $p \rightarrow q$ and $r \rightarrow q$ are true statements, then $q \rightarrow p$ is a true statement.

D If $p \rightarrow r$ and $q \rightarrow r$ are true statements, then $p \rightarrow q$ is a true statement.

17. Which is a biconditional statement of the conditional statement "If $x^3 = -1$, then $x = -1$"?

F If $x = -1$, then $x^3 = -1$.

G $x^3 = -1$ if $x = -1$.

H $x^3 = -1$ if and only if $x = -1$.

J $x = -1 \rightarrow x^3 = -1$.

18. Which property is NOT used when solving $15 = 2x - 1$?

A Reflex. Prop. of =

B Add. Prop. of =

C Div. Prop. of =

D Sym. Prop. of =

19.

Given: $m\angle 1 = 30°$ and $m\angle 2 = 2m\angle 1$.

Prove: $\angle 1$ and $\angle 2$ are complementary.

Proof: Fill in the blanks.

Statements	Reasons
1. $m\angle 1 = 30°$, $m\angle 2 = 2m\angle 1$	1. Given
2. ___?___	2. ___?___
3. ___?___	3. ___?___
4. ___?___	4. ___?___
5. ___?___	5. Simplify.
6. $\angle 1$ and $\angle 2$ are complementary.	6. Def. of comp. $\angle$s

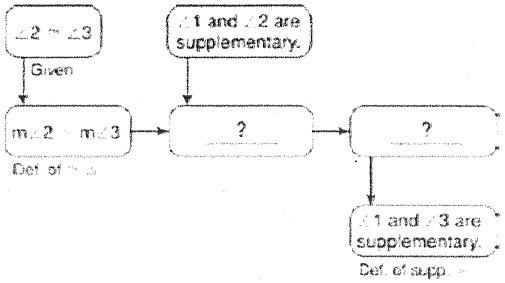
20. Given: $\angle 2 \cong \angle 3$, and $\angle 1$ and $\angle 2$ are adjacent angles whose noncommon sides form a straight line.

Prove: $\angle 1$ and $\angle 3$ are supplementary.

Two-Column Proof: Complete the proof.

Statements	Reasons
1. $\angle 2 \cong \angle 3$	1. Given
2. $m\angle 2 = m\angle 3$	2. Def. of $\cong \measuredangle$
3. $\angle 1$ and $\angle 2$ are supplementary.	3. ___?___
4. $m\angle 1 + m\angle 2 = 180°$	4. Def. of supp. $\measuredangle$
5. $m\angle 1 + m\angle 3 = 180°$	5. ___?___
6. $\angle 1$ and $\angle 3$ are supplementary.	6. Def. of supp. $\measuredangle$

Flowchart Proof:



21. In the flowchart proof, which belongs in the last blank box?

A $m\angle 1 + m\angle 2 = 180°$

B Def. of supp. $\measuredangle$

C $m\angle 1 + m\angle 3 = 180°$

D Subst.

22. In the flowchart proof, which theorem justifies the statement "$\angle 1$ and $\angle 2$ are supplementary"?

F Linear Pair Theorem

G Congruent Supplements Theorem

H Right Angle Congruence Theorem

J Congruent Complements Theorem

23. Identify the property that justifies the statement "If $\angle B \cong \angle A$, then $\angle A \cong \angle B$."

F Sym. Prop. of =

G Reflex. Prop. of =

H Trans. Prop. of $\cong$

J Sym. Prop. of $\cong$

24. Which could NOT be used to justify $\angle 1 \cong \angle 2$?

F Trans. Prop. of $\cong$

G Reflex. Prop. of $\cong$

H Sym. Prop. of $\cong$

J Def. of $\cong$

25. Given: X is in the interior of $\angle ABC$, $\angle ABC$ is a right angle, and $m\angle XBC = 45°$.

Prove: $\overline{BX}$ bisects $\angle ABC$.

Proof: Complete the blanks!

Statements	Reasons
1. X is in the interior of $\angle ABC$.	1. Given
2. ___?___	2. ___?___
3. $\angle ABC$ is a right angle.	3. Given
4. ___?___	4. ___?___
5. $m\angle XBC = 45°$	5. Given
6. ___?___	6. Subst.
7. $m\angle ABX = 45°$	7. ___?___
8. ___?___	8. ___?___
9. $\overline{BX}$ bisects $\angle ABC$.	9. Def. of $\angle$ bisector

26. Use the Symmetric Property of Congruence to complete the statement "If $\angle ABC \cong \angle XYZ$, then $\angle XYZ \cong$ _____."

27. Given the two-column proof, write a paragraph proof.

Given: $\angle 1 \cong \angle 2$ and $\angle 2 \cong \angle 3$.

Prove: $\angle 1 \cong \angle 3$

Proof:

Statements	Reasons
1. $\angle 1 \cong \angle 2$ and $\angle 2 \cong \angle 3$.	1. Given
2. $m\angle 1 = m\angle 2$ and $m\angle 2 = m\angle 3$.	2. Def. of $\cong \measuredangle$
3. $m\angle 1 = m\angle 3$	3. Trans. Prop. of =
4. $\angle 1 \cong \angle 3$	4. Def. of $\cong \measuredangle$

28. Write a two-column proof.

Given: $\angle 1$ and $\angle 2$ are supplementary and $\angle 1 \cong \angle 3$.

Prove: $\angle 2$ and $\angle 3$ are supplementary.

Statements	Reasons

29. Write a two-column proof.

Given: $m\angle A = 30°$ and $m\angle B = 2m\angle A$.

Prove: $\angle A$ and $\angle B$ are complementary.

Statements	Reasons