Geometry – Chapter 1 Review

Name the object(s) in the diagram.

1. Three points that are collinear.
   \( M, J, N \) or \( K, J, L \) or \( Q, J, P \)

2. The intersection of plane S and plane R.
   \( MN \) or \( SN \) or \( MS \)

3. A point that is not coplanar with point K.
   \( Q \) or \( P \)

4. Another name for plane S.
   \( 3 \) of the following: \( \text{NOT } MJSN \) or \( QSP \)

5. Three rays with endpoint J.
   \( \overrightarrow{JM}, \overrightarrow{JN}, \overrightarrow{JK}, \overrightarrow{JL}, \overrightarrow{JQ}, \overrightarrow{JP} \)

For questions 6-8, find the indicated measure. SHOW ALL OF YOUR WORK!!

Find BC.

\[
\begin{align*}
A & \quad 3x & B & \quad 6x-5 & C \\
\hline
& \hline
31 & \hline
\end{align*}
\]

\[
3x + (6x-5) = 31 \\
9x = 36 \\
x = 4
\]

\[
BC = 6(4) - 5 \\
BC = 19
\]

7. Find \( m\angle GEF \).

\[
\begin{align*}
8x + 2x &= 90 \\
10x &= 90 \\
x &= 9
\end{align*}
\]

\[
m\angle GEF = 2(9) \\
m\angle GEF = 18
\]
8. Find VM.

\[ 5x + 3 = 4x + 9 \]
\[ x = 6 \]

\[ VM = 5(6) + 3 \]
\[ VM = 33 \]

Determine if the following segments are congruent. SHOW ALL OF YOUR WORK!!

9. S(3,-9) and T(2,1)
   A(-5,2) and B(4,6)

\[ ST = \sqrt{(3-2)^2 + (-9-1)^2} = \sqrt{1^2 + (-10)^2} = \sqrt{101} \]

\[ AB = \sqrt{(-5-4)^2 + (2-6)^2} = \sqrt{(-9)^2 + (-4)^2} = \sqrt{97} \]

\[ ST \neq AB \]

Find the midpoint of the segment with the following endpoints. SHOW ALL OF YOUR WORK!!

10. S(2,-7) and T(3,9)

\[ \left( \frac{2+3}{2}, \frac{-7+9}{2} \right) = \left( \frac{5}{2}, 1 \right) \]

Using the diagram, tell whether the angle appears to be acute, obtuse, right, or straight.

11. \( \angle LKJ \)  
    **Obtuse**

12. \( \angle KJL \)  
    **Acute**

13. \( \angle LMK \)  
    **Acute**

14. \( \angle LMJ \)  
    **Straight**
15. Given $BD$ bisects $\angle ABC$, find $m \angle ABC$. **SHOW ALL OF YOUR WORK!!**

\[
\begin{align*}
18 - x &= 24 - 3x \\
2x &= 6 \\
x &= 4 \\
m \angle ABC &= (18 - x) + (24 - 3x) \\
&= 44 - 4x \\
&= 44 - 4(4) \\
m \angle ABC &= 28
\end{align*}
\]

For question 16-19, find the measure of the following angles.

16. $m \angle 2$
   - $70^\circ$

17. $m \angle 5$
   - $40^\circ$

18. $m \angle 7$
   - $85^\circ$

19. $m \angle 8$
   - $95^\circ$

For questions 20-21, determine if each figure is a polygon. If so, classify the polygon by the number of sides and determine whether it is convex or concave.

20. Quadrilateral - Convex

21. Not a polygon
For questions 22-25, classify the given angles as vertical angles, a linear pair, or neither.

22. \( \angle 1 \) and \( \angle 3 \)
   - Vertical Angles
23. \( \angle 8 \) and \( \angle 7 \)
   - Linear Pair
24. \( \angle 5 \) and \( \angle 1 \)
   - Neither
25. \( \angle 3 \) and \( \angle 4 \)
   - Linear Pair

For questions 26-28,
   a) Classify the given angle as acute, obtuse, right, or straight.
   b) Find the complement of the given angle.
   c) Find the supplement of the given angle.

26. \( 46^\circ \)
   a) Acute
   b) \( 44^\circ \)
   c) \( 134^\circ \)
27. \( 103^\circ \)
   a) Obtuse
   b) None
   c) \( 77^\circ \)
28. \( 76^\circ \)
   a) Acute
   b) \( 14^\circ \)
   c) \( 104^\circ \)

29. The frame of a mirror is a regular pentagon made from pieces of bamboo. Use the diagram to find how many feet of bamboo are used in the frame. SHOW ALL OF YOUR WORK!!

\[
(2x+8) \text{ in} \\
(6x-4) \text{ in}
\]

\[
2x+8 = 6x-4 \\
12 = 4x \\
x = 3
\]

\[
\text{side: } 2(3)+8 = 14 \\
P = 5(14) = 70 \text{ in}
\]

\[
\frac{70 \text{ in}}{12 \text{ in}} = 5.83 \text{ ft}
\]