Geometry – Chapter 4 Review

You will have 10 matching questions over vocabulary words from the chapter.

Classify the following triangles by its sides/angles based on what is marked in the diagram.

11) Isosceles
    Obtuse

12) Equilateral
    Equiangular

13) Equilateral
    Equiangular

14) Isosceles

15) Scalene
    Right

16) Scalene

Find the measure of the following angles.

17) \( m\angle 1 = 50 \)

18) \( m\angle 2 = 130 \)

19) \( m\angle 3 = 50 \)

20) \( m\angle 4 = 130 \)

21) \( m\angle 5 = 40 \)

22) \( m\angle 6 = 30 \)
Find the value of $x$.

23)
\[
\begin{align*}
(4x+2)° & \\
(3x+2)° & \\
(2x+1)° & 
\end{align*}
\]

\[4x + 2 + 2x + 1 + 3x + 2 = 180\]
\[X = \frac{175}{9} = 19.4\]

24)
\[
\begin{align*}
x & \\
93° & \\
122° & 
\end{align*}
\]

\[X + 93 = 122\]
\[X = 29\]

25)
\[
\begin{align*}
x° & \\
115° & \\
55° & 
\end{align*}
\]

\[X + 55 = 115\]
\[X = 60\]

26)
\[
\begin{align*}
31° & \\
(x - 15)° & \\
31 + x - 15 + x = 180 & 
\end{align*}
\]

\[X = 82\]

If possible, write a congruence statement for the following figures.

27)
\[\triangle DEF \cong \triangle GHF\]
\[\triangle EFD \cong \triangle HFG\]
\[\triangle FED \cong \triangle FHG\]

28)
\[\triangle ABD \cong \triangle CDB\]
\[\triangle BAD \cong \triangle BCD\]
\[\triangle DAB \cong \triangle DCB\]
Use the following coordinates to complete the following questions. A(1,1)  B(1,4)  C(5,4)

29) Classify \( \triangle ABC \) by its sides. Justify your answer.

\[
AB = \sqrt{(1-1)^2 + (4-1)^2} = \sqrt{3}
\]

\[
BC = \sqrt{(5-1)^2 + (4-4)^2} = \sqrt{16} = 4
\]

\[
AC = \sqrt{(5-1)^2 + (4-1)^2} = \sqrt{14}
\]

Scalene

30) Is \( \triangle ABC \) a right triangle? Justify your answer.

\[
m_{AB} = \frac{4-1}{1-1} = \frac{3}{0} = \text{undefined}
\]

\[
m_{BC} = \frac{4-4}{5-1} = \frac{0}{4} = 0
\]

\[
m_{AC} = \frac{4-1}{5-1} = \frac{3}{4}
\]

\[AB \perp BC \text{ so } \triangle ABC \text{ is a right triangle}\]

If possible, determine which method can be used to prove the triangles are congruent.

31) \( \triangle \) with labels and marks, ASA

32) \( \triangle \) and parallelogram, not enough info

33) \( \triangle \) with labels and marks, ASA

34) \( \triangle \) with labels and marks, AAS

35) \( \triangle \) with labels and marks, ASA
State the third congruence that is needed to prove that $\triangle GHJ \cong \triangle DEF$ using the given postulate or theorem.

36) $\overline{DE} \cong \overline{GH}, \angle D \cong \angle G; \text{AAS}$ \hspace{1cm} $\angle F \cong \angle J$

37) $\overline{DF} \cong \overline{JG}, \angle J \cong \angle F; \text{SAS}$ \hspace{1cm} $\overline{EF} \cong \overline{HJ}$

38) $\angle F \cong \angle J, \overline{DF} \cong \overline{GJ}; \text{ASA}$ \hspace{1cm} $\angle D \cong \angle G$

Find the perimeter of the following triangles.

39)

40)

\[ 4x + 3 = 8x - 15 \]
\[ x = \frac{6}{4} = 4.5 \]

\[ P = 21 + 21 + \frac{60}{2} = \frac{145}{2} = 72.5 \text{ m} \]

\[ 5x - 8 = 2x + 13 \]
\[ x = 7 \]

\[ P = 27 + 27 + 27 = 81 \]

The exam will also have 3 proofs over proving triangles are congruent. One proof will have the same format as Chapters 2 and 3. The other two proofs you will need to create on your own. Any postulates, theorems, definitions, and concepts that we have learned so far may be included on these proofs.