For problems 1–10, answer true or false.

1. Side-side-angle (SSA), angle-angle-angle (AAA), and angle-angle-side (AAS) are three conditions that are not valid reasons for proving congruent triangles.

2. The sum of the interior angles of a decagon (10 sides) is 1440°.

3. If a triangle has exactly two angles that are congruent, the triangle must be isosceles.

4. Using basic construction methods, a 20° angle can be constructed by trisecting a 60° angle.

5. It is possible to draw a triangle with sides that measure 11, 17, and 7 units.

6. In a parallelogram, the diagonals are perpendicular.

7. A kite is a quadrilateral.

8. A square is a parallelogram.

9. If one interior angle of an isosceles trapezoid is known, the other three angles can be found.

10. The diagonal of a rhombus separates it into two equilateral triangles.

11. In isosceles triangle ABC (not shown) m∠A = 38°. List all possible measures of ∠B.

12. Given: kite RSTV

   m∠RVT = 62°
   m∠RST = 86°

   Find: m∠VRS

13. Given: kite RSTV

   RM ≅ MS

   RT = 12 in., VS = 18 in.

   Find: The perimeter of RSTV

   (rounded to nearest tenth)

14. In the pentagon shown, m∠R = m∠V = m∠T, and m∠Q = m∠S = 96°. Find m∠R.
15. In the figure shown, it is given that $\overline{AB} \cong \overline{DC}$ and $\overline{AD} \cong \overline{BC}$. What two statements lead to $\triangle DAB \cong \triangle CDB$?

16. **Given:** parallelogram ABCD  
   $m\angle 1 = 40^\circ$  
   $m\angle 2 = (5 - x)^\circ$  
   $m\angle C = (15 - 5x)^\circ$  

   **Find:** $m\angle ADC$  

17. **Given:** in $\triangle ABC$, $\overline{CA} \cong \overline{CB}$  
   E & D are midpoints of $\overline{CA} & \overline{CB}$ respectively  
   $CA = 2x - 4$  
   $AB = 2x - 5y$  
   $CB = 3y + 8$  
   $ED = 2y$  

   **Find:** $x$ and $y$  

18. Given $\triangle ABC \cong \triangle XYZ$ (not shown).

   (a) What reason should be given to justify $\overline{BC} \cong \overline{YZ}$?
   (b) Can we also say $\triangle BAC \cong \triangle XYZ$?
   (c) If $m\angle A = 90^\circ$ and $m\angle Y = 30^\circ$, what are $m\angle B$, $m\angle C$, and $m\angle Z$?

19. **Given:** Trapezoid ABCD, MN is the median  
   $AB = 7$  
   $MN = 9$  

   **Find:** DC  

20. Without measuring, list the five line segments in quadrilateral ABCD in order of their length, starting with the longest.
21. The angle to the right measures 72°, use it for the following constructions
(a) Construct angles of measure 108°, 36°, and 96°.
(b) Construct a regular pentagram

22. \textit{Given:} ABCD is a parallelogram,
\begin{itemize}
  \item DX bisects \angle ADC
  \item CX bisects \angle BCD
\end{itemize}

\textit{Prove:} \angle DXC (or \angle 5) is a right angle

23. \textit{Given:} XM \perp ZY
\begin{itemize}
  \item M is the midpoint of ZY
\end{itemize}

\textit{Prove:} \triangle XYZ is isosceles
1. false  2. true  3. true  4. false  5. true  6. false  7. true  8. true  9. true  10. false
11. $38^\circ$, $104^\circ$, and $71^\circ$  12. $106^\circ$  13. about 43.8 inches  14. $116^\circ$  15. $\overline{DB} \cong \overline{DB}$ by identity and $\triangle DAB \cong \triangle BCD$ by SSS.  16. $65^\circ$  17. $x = 9, y = 2$  18. (a) CPCTC  (b) no  (c) $30^\circ$, $60^\circ$, $60^\circ$
19. $DC = 11$  20. CD, AD, AC, BC, AB