Shapes and Designs Unit Test Review

Standards
7.G.2: Draw, with ruler and protractor, triangles with given conditions.
7.G.2: Identify when the conditions determine a unique triangle, more than one triangle or no triangle.
7.G.5: Use facts about supplementary, complementary, vertical, and adjacent angles to write and solve simple equations for an unknown angle in a figure.

1. $\Delta ABC$ with side lengths of 4 cm, 4 cm, and 7 cm.
   a. Draw and label $\Delta ABC$ with ruler and angle ruler/protractor, if possible. If not possible, explain why.
   
   b. Is it possible to draw a different triangle with these same measures?

2. $\Delta DEF$ with side lengths of 2 in, 3 in, and 6 in.
   a. Draw and label $\Delta DEF$ with ruler and angle ruler/protractor, if possible. If not possible, explain why.

   b. Is it possible to draw a different triangle with these same measures?

3. $\Delta JKL$ with $\angle JKL = 50^\circ$, $\angle KIJ = 75^\circ$, and $KL = 2.5$ inches.
   a. Draw and label $\Delta JKL$ with ruler and angle ruler/protractor, if possible. If not possible, explain why.

   b. Is it possible to draw a different triangle with these same measures?
4. \( \triangle PQR \) with \( \overline{PQ} = 6 \, \text{cm} \), \( \angle RPQ = 46^\circ \), and \( \overline{QR} = 5.5 \, \text{cm} \).
   a. Draw and label \( \triangle PQR \) with ruler and angle ruler/protractor, if possible. If not possible, explain why.

b. Is it possible to draw a different triangle with these same measures?

5. \( \triangle ABC \) with \( \angle ABC = 30^\circ \), \( \angle CAB = 50^\circ \) and \( \angle BCA = 100^\circ \).
   a. Draw and label \( \triangle ABC \) with ruler and angle ruler/protractor, if possible. If not possible, explain why.

b. Is it possible to draw a different triangle with these same measures?

6. \( \triangle DEF \) with \( \angle ABC = 45^\circ \), \( \angle CAB = 55^\circ \) and \( \angle BCA = 85^\circ \).
   a. Draw and label \( \triangle DEF \) with ruler and angle ruler/protractor, if possible. If not possible, explain why.

b. Is it possible to draw a different triangle with these same measures?

7. \( \triangle JKL \) with \( \overline{JK} = 5 \, \text{cm} \), \( \angle JKL = 60^\circ \), and \( \overline{KL} = 7 \, \text{cm} \).
   a. Draw and label \( \triangle JKL \) with ruler and angle ruler/protractor, if possible. If not possible, explain why.

b. Is it possible to draw a different triangle with these same measures?
The following problems use your understanding of supplementary, complimentary, vertical and adjacent angles. For each problem, write and solve an equation to find the answers. The diagrams are not to scale.

8. Find the measures of the angles listed below, from the drawing at right.

\[ \angle ABC = \underline{\ \ \ \ } \]

\[ \angle DBE = \underline{\ \ \ \ } \]

9. Find the measures of the angles listed below, from the drawing at right.

\[ \angle CAD = \underline{\ \ \ \ } \]

\[ \angle DAE = \underline{\ \ \ \ } \]

\[ \angle EAF = \underline{\ \ \ \ } \]

\[ \angle FAB = \underline{\ \ \ \ } \]

10. Based on the diagram, determine whether each equation is true. Select True or False for each statement.

\[
\begin{array}{|c|c|c|}
\hline
\text{Statement} & \text{True} & \text{False} \\
\hline
2x + 16^\circ = 62^\circ & & \\
3^\circ + 5x = 118^\circ & & \\
7x + 19^\circ = 90^\circ & & \\
\hline
\end{array}
\]