PRACTICE FOR TEST #4 on TRIANGLES (100 pts)

1. Sketch, then answer.
   (a) To prove $\triangle LMN \cong \triangle PQR$ by SSS you need ____________ and ____________ and ____________

   (b) To prove $\triangle RAT \cong \triangle MED$ by ASA, given $\overline{RT} \equiv \overline{MD}$, you also need ____________ and ____________

2. Multiple choice. Choose all that apply. SKETCH FIRST!

   Given: $\triangle SUN \cong \triangle TAN$. You can conclude that:
   
   (A) $\angle S \equiv \angle A$    (B) $\overline{SN} \equiv \overline{TN}$    (C) $\angle T \equiv \angle U$
   (D) $\overline{SU} \equiv \overline{TN}$    (E) $\overline{UN} \equiv \overline{TA}$

3. Which other parts must be equal for $\triangle ABC \cong \triangle MTR$ by:

   ASA? ______________  SAS? ______________  AAS? ______________
4. If in \( \triangle ABC \) \( m \angle A = 50 \), \( m \angle C = 80 \), \( AC = 7x + 8 \), and \( BC = 38 - 3x \), then \( x = \_ \_ \). 

5. Tell which theorem (SSS, SAS, ASA, AAS, HL) can be used to prove the triangles congruent. Remember to mark vertical angles and segments that are equal to themselves (reflexive property).

6. Answer the following questions, using the diagram below:

   If \( \angle 3 \equiv \angle 4 \), then which segments must be congruent?

   If \( \triangle REV \) is an equiangular triangle, then \( \triangle REV \) is also an \( \_ \_ \) triangle.

   If \( \overline{ES} \equiv \overline{ET} \), \( m \angle 1 = 75 \), and \( m \angle 2 = 3x \), then \( x = \_ \_ \).

   If \( \angle 1 \equiv \angle 2 \), \( ES = 3y + 5 \), and \( ET = 25 - y \), then \( y = \_ \_ \).

7. The two triangles shown are congruent.

   Complete.

   \( \triangle STW \equiv \_ \_ \)  \( \angle R \equiv \_ \_ \)

   \( \triangle PQR \equiv \_ \_ \)  \( \_ \_ \_ \_ = RP \)
8. In each case, mark the diagram with the information given, and decide whether you can conclude that \( \triangle RXY \) is congruent to \( \triangle SXY \). If you do, say why (SSS, SAS, ASA, AAS). If you don’t, say so.

(a) Given: \( \overline{RX} \cong \overline{SX}; \overline{RY} \cong \overline{SY} \)

(b) Given: \( \overline{RY} \cong \overline{SY}; \angle R \cong \angle S \)

(c) Given: \( \overline{XY} \) bisects \( \angle RXS \) and \( \angle RYS \).

(d) Given: \( \angle RXY \cong \angle SXY; \overline{RX} \cong \overline{SX} \)

9. Find the value of \( x \).

1. \[
\begin{array}{c}
\text{17} \\
\text{40°} \\
\text{17} \\
x°
\end{array}
\]

2. \[
\begin{array}{c}
\text{4x - 2} \\
\text{5x - 11} \\
\text{3x + 3}
\end{array}
\]

3. \[
\begin{array}{c}
x°
\end{array}
\]
10.
Find $x$ and the perimeter.

\[
x = \underline{\phantom{0000}}
\]

perimeter:

11.
3. If the triangles below can be proved congruent by one of the five properties you have had (SAS, ASA, AAS, SSS, HL), write its initials. If not, write no property.

A.

B.

C.

D.

E.

F.

12.

Given $\triangle ABC \cong \triangle DEF$, $AB = 15$, $BC = 20$, $AC = 25$, and $FE = 3x - 7$, find $x$.

Draw a diagram of the 2 triangles and label. Then find $x$. 
13.

Find the three angles of the triangle and the exterior angle:

Three angles of the triangle:

Exterior angle:

14.

A. \( \triangle ABC \cong \triangle \) ______

B. Therefore we know \( \angle B = \) ______

C. Find \( x \) and \( \angle B \)

\[ x = \] ______

\[ \angle B = \] ______

15. Draw a diagram of isosceles triangle EFG with the measure of angle \( F = 98^\circ \).

Which two sides are the legs? ______ and _____

What are the measures of the other two angles? ______° and _____°
16. 

\[ \angle a = \quad \angle b = \quad \angle c = \quad \angle d = \quad \angle e = \quad \]

17. 

A. \( \triangle WX A \cong \triangle ZYA \) by ________

B. \( x = \quad \)

18. 

8. What theorems could be used to prove the following triangles congruent?
19. 

12. 

a) Is QP an altitude? Why/why not? Remember to check two slopes!

b) Is QP a median? Why/why not?

20. 

What third piece of information can you also mark in the diagram?

\[
\text{ } \quad \equiv \quad \text{ because } \quad \text{ } 
\]

\[\triangle ADB \equiv \triangle CBD \text{ by } \text{ } \]

so \[AB = \text{ } \]

\[x = \text{ } \]

**REMEMBER TO REDO PROBLEMS FROM YOUR QUIZ AND PROOFS!**