1. Place a right triangle in a convenient position in the first quadrant of a coordinate plane. Label each vertex using variables for each of the coordinates. Be sure to use the fewest possible variables.

\[ y \] 
\[ x \]

2. Refer to the figure below.

If \( EF = 5x + 6 \) and \( AC = 3x - 2 \), then what is the length of \( BF \)?

3. Refer to the figure below.

Given: \( \overline{AF} \cong \overline{FC} \)
Which line is a perpendicular bisector in \( \triangle ABC \)?

4. The perpendicular bisectors of a triangle all pass through what point?

5. Find \( AB \). Is there enough information to show that \( D \) lies on the vertical line that passes through \( B \)?

Find the value of \( x \).

6. 

7. 

8. How many medians does a triangle have?

In the diagram, \( Z \) is a centroid of triangle \( ABC \).
Find the indicated length.

9. \( AZ \)
10. Can the measurements 1.4 meters, 2.7 meters, and 9.3 meters be the lengths of the sides of a triangle? Write Yes or No.

**True or False:**

11. The Triangle Inequality Theorem states that the length of any side of a triangle must be greater than the sum of the lengths of the other two sides.

12. In the diagram, $X$ is the incenter of $\triangle RTV$. Find $XU$.

13. The medians of a triangle are concurrent. Their common point is the ____.
   a. centroid
   b. incenter
   c. orthocenter
   d. circumcenter

14. Refer to the figure.

The longest segment is _____.
   a. $\overline{MP}$
   b. $\overline{NM}$
   c. $\overline{ML}$
   d. $\overline{LN}$

15. Using the Triangle Inequality Theorem, solve for all possible values of $x$. 

\[ x + 3 \]
\[ 3x \]
\[ 2x + 1 \]