Geometry

Chapter 5 Review

1. A point on the \( \perp \) bisector is equidistant from the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the bisected \_\_\_\_\_\_\_\_\_.

2. a. Solve for \( x \). Then determine BC and BA.

   \[ x = \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \]

   \[ BC = \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \]

   \[ BA = \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \]

   2b. Is point B on the perpendicular bisector? Explain.

3. Tell whether the information in the diagram allows you to conclude that \( C \) is on the perpendicular bisector of \( AB \). Explain.

4. A point on the angle bisector is equidistant from the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the bisected \_\_\_\_\_\_\_\_\_.

For questions 5 and 6 determine if \( DA = DC \). Explain your reasoning.

5.

6.

For questions 7-12 decide if it is possible to determine \( x \). If it is possible, explain your reasoning and determine the value of \( x \). If it is not possible, explain your reasoning.

7. 

8. 

9. 

10. 

11. 

12.
13. In \( \triangle DEF \) below, points G, J, and K are midpoints.
   a. \( \overline{GJ} \parallel \) ______
   b. \( \overline{EJ} \cong \) ______ \( \cong \) ______
   c. \( \overline{DE} \parallel \) ______
   d. \( \overline{GJ} \cong \) ______ \( \cong \) ______
   e. If \( GK = 4x - 1 \) and \( EF = 5x + 4 \), determine:
      \[ x = \quad GK = \quad EJ = \quad EF = \quad \]

14. Use the graph shown at the right.
   a. Prove that \( \overline{ST} \) is parallel to \( \overline{PR} \).
      Slope of \( \overline{ST} \): \hspace{1cm} Slope of \( \overline{PR} \):
   b. Prove that the length of \( \overline{PR} \) is twice the length of \( \overline{ST} \).
      Length of \( \overline{PR} \): \hspace{1cm} Length of \( \overline{ST} \):
   c. Now that you have proven \( \overline{ST} \parallel \overline{PR} \) and \( PR = 2 \cdot ST \), what type of segment is \( ST \)? What kind of points are points \( S \) and \( T \) for the triangle?

15. Point \( G \) is the point of intersection of the three medians of \( \triangle ABC \). You are given \( AD = 8, AG = 10 \), and \( CD = 18 \). Find the length of each segment.
   a. \( BD = \quad \)
   b. \( AB = \quad \)
   c. \( EG = \quad \)
   d. \( AE = \quad \)
   e. \( CG = \quad \)
   f. \( DG = \quad \)

21. \( \overline{AE} \) and \( \overline{CD} \) are medians of \( \triangle ABC \). Find the value of \( x \) and \( y \).
22. The angle bisectors of \( \triangle ABC \) intersect at point \( D \). If \( BD = 25 \) and \( BG = 24 \), find \( FD \).

23. The perpendicular bisectors of \( \triangle ABC \) meet at point \( D \). If \( BD = 7 \), \( ED = 5 \), and \( FC = 6 \), find \( DC \).

24. Given that \( \overline{CD} \) is the perpendicular bisector of \( \overline{AB} \) with \( AB = 16 \) and \( CD = 15 \) determine the following measures.

\[
m\angle ADC = \phantom{0000} \\
AD = \phantom{0000} \\
AC = \phantom{0000}
\]

25. In the picture you are given that \( \overline{AD} \cong \overline{BD} \) and \( \angle ACE \cong \angle BCE \). Identify an example of each.

An example of a perpendicular bisector is

An example of an angle bisector is

An example of a median is

An example of an altitude is