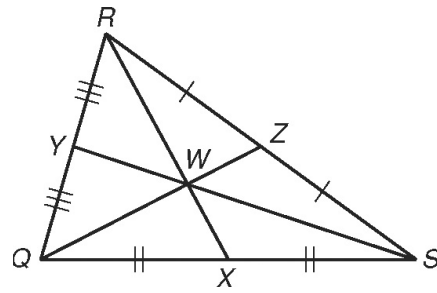


Study Guide  
Centroids and Medians

In  $\triangle QRS$ ,  $RX = 48$  and  $QW = 30$ . Find each length.

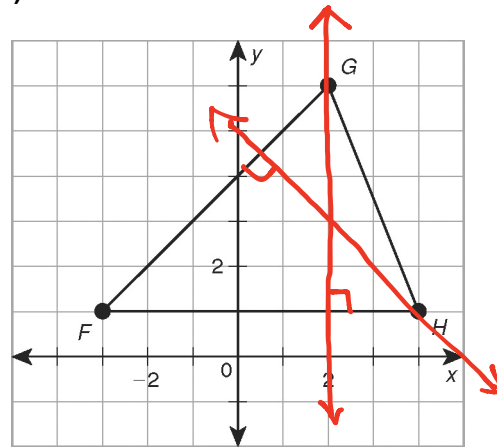
1.  $RW$  32                      2.  $WX$  16  
 3.  $QZ$  45                      4.  $WZ$  15



Orthocenter and Altitudes, using algebra

Triangle  $FGH$  has coordinates  $F(-3, 1)$ ,  $G(2, 6)$ , and  $H(4, 1)$ .

5. Draw an altitude from  $G$  to  $\overline{FH}$ .  
 \_\_\_\_\_  
 6. Graph the equation of a second altitude, which is  
 . What vertex and side does it connect?  
 \_\_\_\_\_  
 7. Find the coordinates of the orthocenter.  
 \_\_\_\_\_



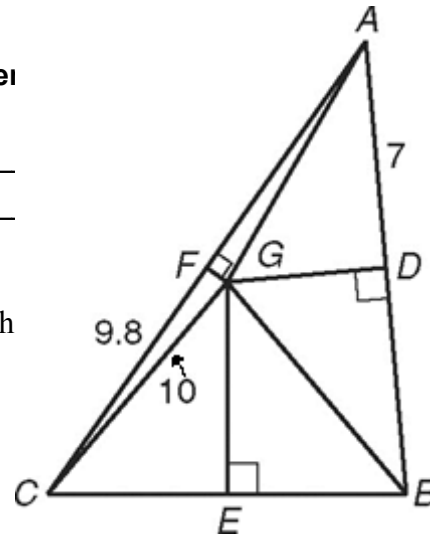
Perpendicular Bisectors and Circumcenters

Use the figure for Exercises 8-11.  $\overline{DG}$ ,  $\overline{EG}$ , and  $\overline{FG}$  are perpendicular to  $\triangle ABC$ . Find each length.

8.  $AG$  10                      9.  $DB$  7  
 10.  $AF$  9.8                      11.  $GB$  18

11b: If three friends, André 3000, Beyoncé, and Common want to meet somewhere for lunch that's the same distance from each of the homes (points A, B, and C), where should they meet?

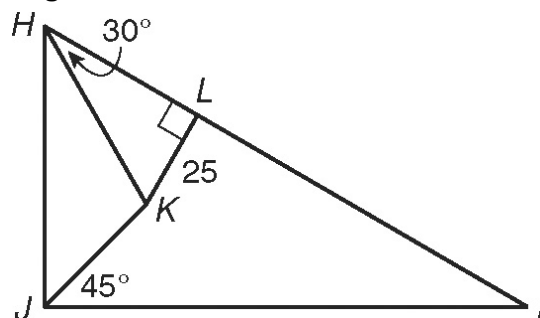
*At point G. The circumcenter is equidistant to all 3 vertices.*



Angle Bisectors and Incenters

Use the figure for Exercises 12-15.  $\overline{HK}$  and  $\overline{JK}$  are angle bisectors of  $\triangle HIJ$ . Find each measure.

12. the distance from  $K$  to  $\overline{JI}$  25  
 13.  $m\angle HJK$  45°  
 14.  $m\angle JHK$  30°  
 15.  $m\angle HJI$  90°



**Pythagorean Theorem/Inequalities**

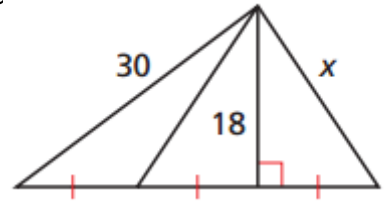
Do the following lengths make a triangle? If so, classify it by its angle mea

16. 12, 32, 31 *Yes; acute*

17. 9, 40, 41 *Yes; right*

18. Find the length of x. Give your answer in simplest radical form. →

*$x = 6\sqrt{13}$*



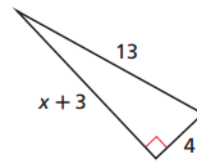
19. **ERROR ANALYSIS** Below are two solutions for finding x. Which is incorrect? Explain the error.

**A**

$a^2 + 4^2 = 13^2$
$a^2 = 169 - 16 = 153$
$a \approx 12.4$
$x + 3 \approx 12.4$
$x \approx 9.4$

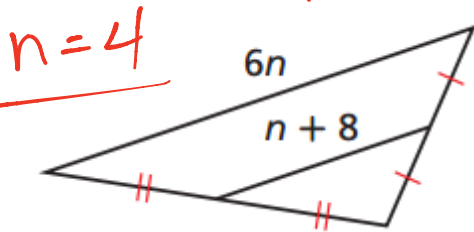
**B** *error*

$(x + 3)^2 + 4^2 = 13^2$
$x^2 + 9 + 16 = 169$
$x^2 = 144$
$x = 12$

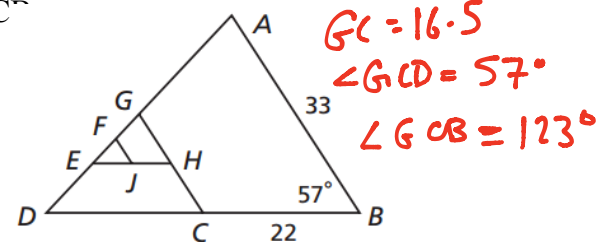


**Triangle Midsegments**

Find n.

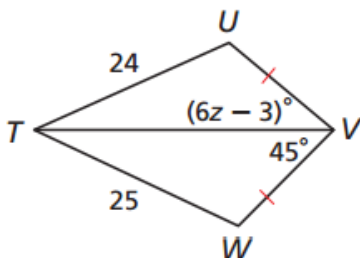


21. GC is a midsegment. Find the length of GC and the angle measures  $\angle GCD$  and  $\angle GCB$



**Hinge Theorem**

22. Find a range of values for z.

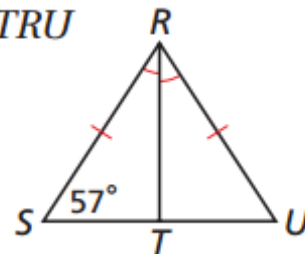


*$2 < z < 8$*

23. **Isosceles and Equilateral Triangles**

Find  $\angle TRU$

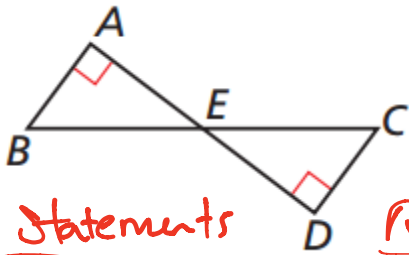
*$33^\circ$*



HL shortcut and CPCTC

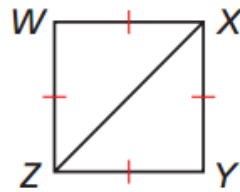
24. Given: E is the midpoint of AD and BC.

Prove:  $\triangle ABE \cong \triangle DCE$



<u>Statements</u>	<u>Reasons</u>
1. E is midpoint of AD, BC	1. Given
2. $\overline{BE} \cong \overline{CE}$	2. Definition of midpoint.
3. $\overline{AE} \cong \overline{DE}$	3. Def. of M.P.
4. $\triangle ABE \cong \triangle DCE$	4. HL

25. Given:  $\overline{WX} \cong \overline{XY} \cong \overline{YZ} \cong \overline{ZW}$   
Prove:  $\angle W \cong \angle Y$



<u>Statements</u>	<u>Reasons</u>
1. $\overline{WX} \cong \overline{XY} \cong \overline{YZ} \cong \overline{ZW}$	1. Given
2. $\overline{XZ} \cong \overline{XZ}$	2. Reflexive Property.
3. $\triangle WXZ \cong \triangle ZYX$	3. SSS
4. $\angle W \cong \angle Y$	4. CPCTC.