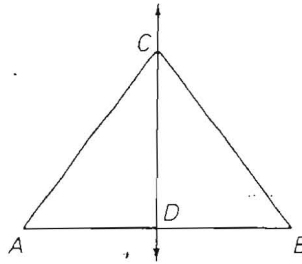


# 5.1

Use the diagram shown.  $\overleftrightarrow{CD}$  is the perpendicular bisector of  $\overline{AB}$ .

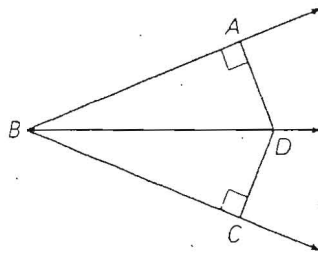
1. What is the relationship between  $AD$  and  $AB$ ?
2. What is the relationship between  $\angle ADC$  and  $\angle BDC$ ?
3. What is the relationship between  $AC$  and  $CB$ ? Explain.
4. True or False? Because  $\overleftrightarrow{CD}$  is the perpendicular bisector of  $\overline{AB}$ ,  $\overline{AC} \cong \overline{AD}$ .



1.  $AD = \frac{1}{2} AB$
2. Both are  $90^\circ$ ,  $\cong$
3.  $\cong$  because C is on  $\perp$  bisector
4. False
5.  $\cong$  - bisected angle
6.  $\cong$  - both  $90^\circ$
7.  $\cong$  - D on angle bisect so same distance from side
8. False -  $\cong \Delta$ 's
9.  $54^\circ$
10. 16

Use the diagram shown.  $\overleftrightarrow{BD}$  is the angle bisector of  $\triangle ABC$ .

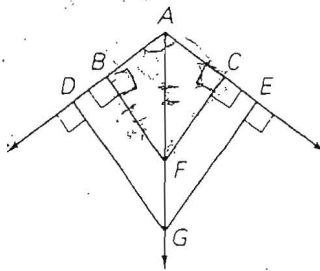
5. What is the relationship between  $\angle ABD$  and  $\angle CBD$ ?
6. What is the relationship between  $\angle DAB$  and  $\angle DCB$ ?
7. What is the relationship between  $AD$  and  $CD$ ? Explain.
8. True or False? Because  $\overleftrightarrow{BD}$  is the angle bisector of  $\angle ABC$ ,  $\overline{AB} \cong \overline{CB}$ .



7.  $\cong$  - D on angle bisect so same distance from side
8. False -  $\cong \Delta$ 's
9.  $54^\circ$
10. 16
11. on the angle bisector
12. yes - AAS, SAS, ASA

Use the diagram to answer the following. In the diagram, F is on the bisector of  $\angle DAE$ .

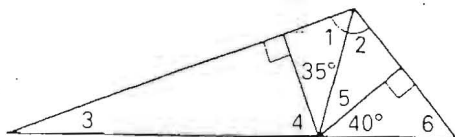
9. If  $m\angle BAF = 54^\circ$ , then  $m\angle CAF = ?$
10. If  $FC = 16$ , then  $FB = ?$
11. If  $\overline{GD} \cong \overline{GE}$ , then what can you conclude about point G?
12. Is  $\triangle ABF \cong \triangle ACF$ ? Explain.



13.  $m\angle 1 = 55^\circ$   $m\angle 4 = 70^\circ$   
 $m\angle 2 = 55^\circ$   $m\angle 5 = 35^\circ$   
 $m\angle 3 = 20^\circ$   $m\angle 6 = 50^\circ$
14.  $m\angle 1 = 25^\circ$   $m\angle 5 = 115^\circ$   
 $m\angle 2 = 65^\circ$   $m\angle 6 = 20^\circ$   
 $m\angle 4 = 115^\circ$   $m\angle 8 = 45^\circ$

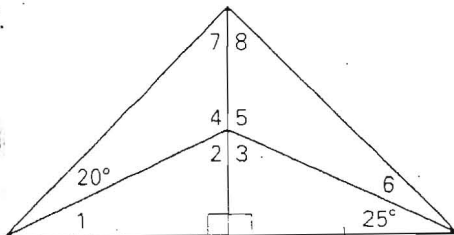
Find the measure of the numbered angles.

13.



$$\begin{aligned} \angle 3 &= 35^\circ \\ \angle 4 &= 180 - 35 - 35 - 40 \\ &= 70^\circ \\ \text{or } m\angle 3 &= 180 - (m\angle 1 + m\angle 2) \\ &= 180 - 75 = 105 \end{aligned}$$

14.

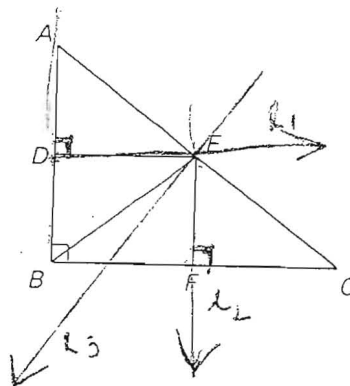


## 5.2

Blue  
Red

Use the diagram shown.  $E$  is the circumcenter of  $\triangle ABC$ .

1.  $\overline{DA} \cong ?$
2.  $\overline{BF} \cong ?$
3.  $\angle EFC \cong ?$
4.  $\overline{BE} \cong ?$  and  $?$
5. If  $AD = 6$ ,  $BF = 8$ , and  $CE = 10$ , what is the perimeter of  $\triangle ABC$ ?

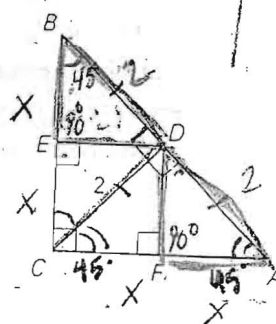


1.  $\overline{DB}$
2.  $\overline{CF}$
3.  $\angle EFB, \angle EDA, \angle EDB, \text{ etc.}$
4.  $\overline{AE}$  and  $\overline{CE}$
5. 48

Use the diagram shown.  $D$  is the circumcenter of  $\triangle ABC$ .

1. Find the length of  $\overline{DA}$ .
2. Find the length of  $\overline{AB}$ .
3. Explain why  $\triangle ADF \cong \triangle BDE$ .

Matches

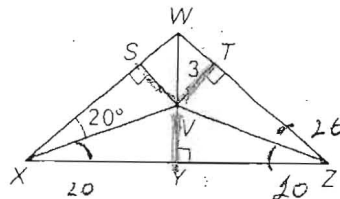


$\overline{AC} \cong \overline{BC}$   
not needed.

1. 2
2. 4
3. 90° angles,  
 $\overline{BD} \cong \overline{AD}, \overline{BE} \cong \overline{AF}$   
HL [SAS]
4. 3
5. 20°
6. 90° angles  
20° angles,  
 $\overline{SV} \cong \overline{TV}, \text{ AAS}$

Use the diagram shown.  $V$  is the incenter of  $\triangle XWZ$ .

4. Find the length of  $\overline{VS}$ .
5. Find the  $m\angle VZX$ .
6. Explain why  $\triangle XSV \cong \triangle ZTV$ .

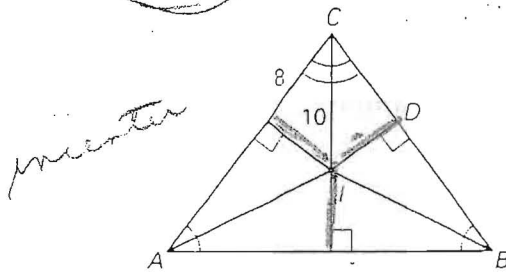


$\overline{XW} \cong \overline{WZ}$

Look for  $\cong$  parts.

Since  $XW = WZ$   
 $\angle X \cong \angle Z$

13. Find  $ID$ .



$$8^2 + x^2 = 10^2$$

$$x^2 = 36$$

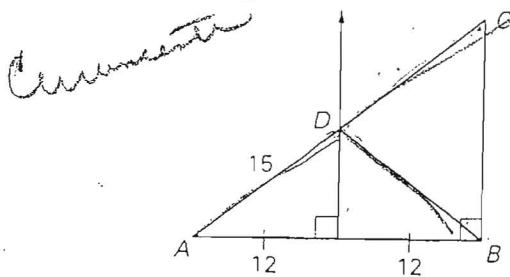
$$x = 6$$

13. 6

14. 15

15. 13

14. Find  $BD$ .

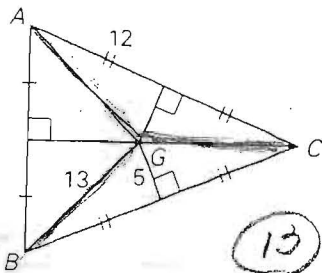


16. 5

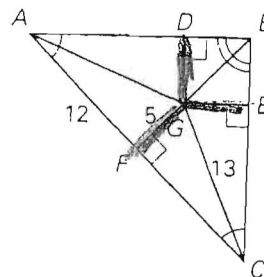
17. 9

18. 8

15. The perpendicular bisectors of  $\triangle ABC$  meet at point  $G$ . Find  $GA$ .

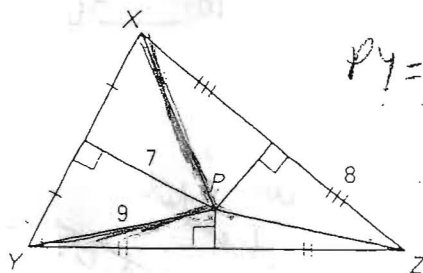


16. The angle bisectors of  $\triangle ABC$  meet at point  $G$ . Find  $GD$ .

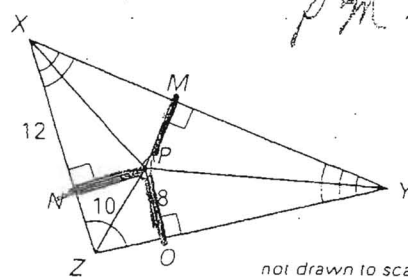


$$GD = GE = GF = 5$$

17. The perpendicular bisectors of  $\triangle XYZ$  meet at point  $P$ . Find  $PX$ .



18. The angle bisectors of  $\triangle XYZ$  meet at point  $P$ . Find  $PM$ .

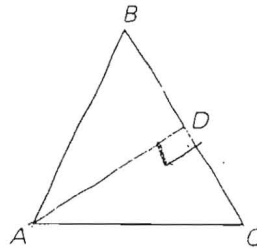


not drawn to scale

### 5.3

Use the diagram shown and the given information to decide in each case whether  $\overline{AD}$  is a perpendicular bisector, an angle bisector, a median, or an altitude of  $\triangle ABC$ .

1.  $\overline{DB} \cong \overline{DC}$
2.  $\angle BAD \cong \angle CAD$
3.  $\overline{DB} \cong \overline{DC}$  and  $\overline{AD} \perp \overline{BC}$
4.  $\overline{AD} \perp \overline{BC}$
5.  $\triangle BAD \cong \triangle CAD$

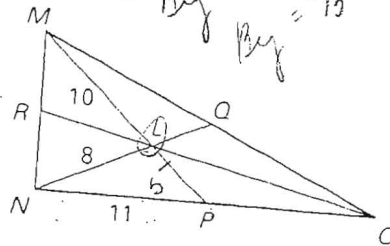


1. median
2. angle bisector
3.  $\perp$  bisector, med, alt
4. altitude
5. all 4

Use the figure shown and the given information.

$L$  is the centroid of  $\triangle MNO$ ,  $NP = 11$ ,  $ML = 10$ , and  $NL = 8$ .

6. Find the length of  $\overline{PO}$ .
7. Find the length of  $\overline{MP}$ .
8. Find the length of  $\overline{LQ}$ .
9. Find the length of  $\overline{NQ}$ .
10. Find the perimeter of  $\triangle NLP$ .



$$11 + 8 + 5 = 24$$

6. 11
7. 15
8. 4
9. 12
10. 24

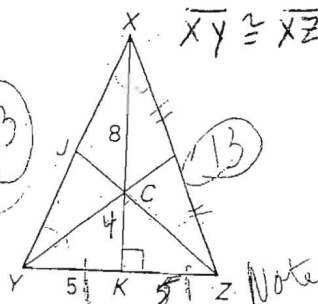
Use the figure shown and the given information.

$C$  is the centroid of  $\triangle XYZ$ ,  $YK = 5$ ,  $XC = 8$ ,  $YI = 9.6$  and  $\overline{XK} \perp \overline{YZ}$ .

5. Find the length of  $\overline{CK}$ .
6. Find the length of  $\overline{XK}$ .
7. Find the length of  $\overline{YC}$  ✓
8. Find the length of  $\overline{KZ}$ .
9. Find the length of  $\overline{YZ}$   $6.4 + 3.2$
10. Find the perimeter of  $\triangle XYZ$ .

$$JX = 6.5$$

$$JC = 3.2$$



5. 4 ✓
6. 12 ✓
7. 6.4 ✓
8. 5
9. 9.6
10. 31.2

$$YC = \frac{2}{3} \text{ (whole)}$$

$$= \frac{2}{3} (9.6)$$

$$= 2(3.2)$$

$$= 6.4$$

Note  $\overline{XK}$  is a median  
 & a  $\perp$  bisector  
 $YC = CE$   
 $6.4 = 6.4$