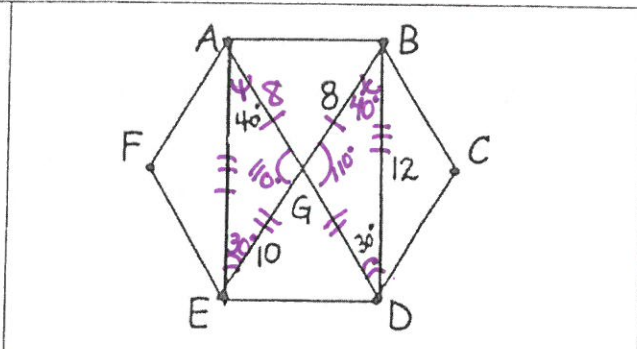


Unit 4b Review Homework

$\triangle AGE \cong \triangle BGD$

1.  $\angle AEG \cong \angle BDG$  2.  $AG = 8$   
see BG

3.  $m\angle AGB = 70^\circ$  4.  $\triangle EAG \cong \triangle DBG$



Use the information in the diagram to write an equation. Find the value of x, then find the indicated part of the triangle.

5.  $\overline{QR} \cong \overline{RP}$

5. Equation:  $4x + 30 = 9x - 20$   
Isosceles  $\triangle$  Thm

$x = 10$   $50 = 5x$

Find  $m\angle QRS$  140  
 $= m\angle Q + m\angle P = (4(10) + 30) + (9(10) - 20)$   
 $\triangle$  exterior  $\angle$  sum thm.  $70 + 70$

6.  $\triangle GHI$  is isosceles.  
 $\angle G$  is the vertex angle

6. Equation:  $3x - 5 = 2x + 7$

$x = 12$

Find HI 58  
 $4(12) + 10$

State which congruence method(s) can be used to prove the  $\triangle s \cong$ . Mark off any additional  $\angle s$  or segments you know are  $\cong$ . If  $\triangle s$  NOT  $\cong$ , write NC.

7.

ASA  $\cong$  Postulate

8.

SAS  $\cong$  Postulate

9.

AAS  $\cong$  Theorem

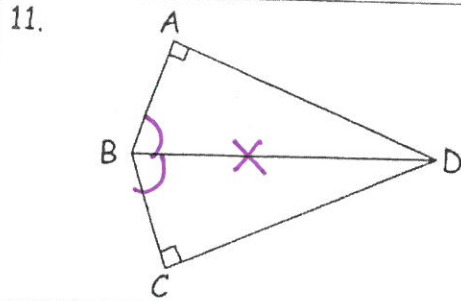
10.

AAS  $\cong$  Theorem

Mark off the given and additional  $\angle$ s and segments that are congruent. State the  $\Delta \cong$  to the given triangle and state the congruence.

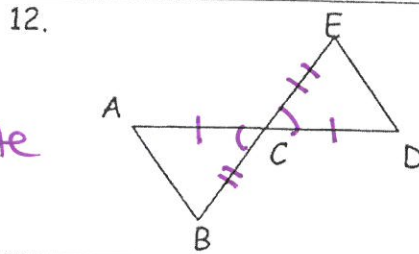
11.  $\overline{BD}$  bisects  $\angle ABC$

$\Delta ABD \cong \Delta CBD$  by AAS  $\cong$  Theorem



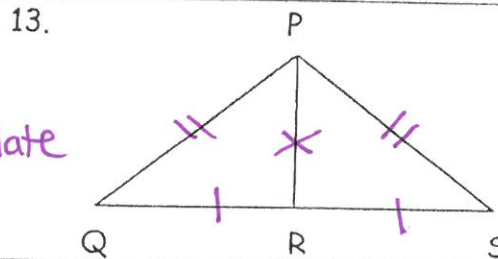
12.  $\overline{BE}$  bisects  $\overline{AD}$   
 $BC \cong CE$

$\Delta ABC \cong \Delta DEC$  by SAS  $\cong$  Postulate



13. R is the midpoint of  $\overline{QS}$   
 $\overline{PQ} \cong \overline{PS}$

$\Delta PQR \cong \Delta PSR$  by SSS  $\cong$  Postulate

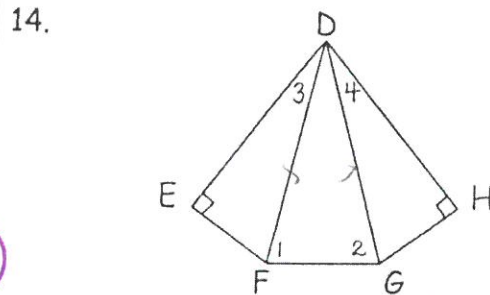


What additional information is needed to prove the  $\Delta$ s  $\cong$  by the stated congruence?

14. HL Given:  $\overline{EF} \cong \overline{GH}$   $\overline{DF} \cong \overline{DG}$

SAS Given:  $\overline{ED} \cong \overline{DH}$   $\overline{EF} \cong \overline{HG}$

AAS Given:  $\angle 1 \cong \angle 2$   $\angle 3 \cong \angle 4$   
by converse of isos.  $\Delta$  theorem (or  $\angle EFD \cong \angle HGD$ )

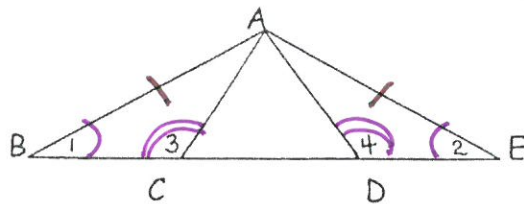


Write a two-column proof.

15. Given:  $\angle 1 \cong \angle 2$

$\angle 3 \cong \angle 4$

Prove:  $\overline{BC} \cong \overline{ED}$



Statements

Reasons

1)  $\angle 1 \cong \angle 2, \angle 3 \cong \angle 4$

1) Given

2)  $\overline{AB} \cong \overline{AE}$

2) Converse of Isosceles  $\Delta$  Theorem

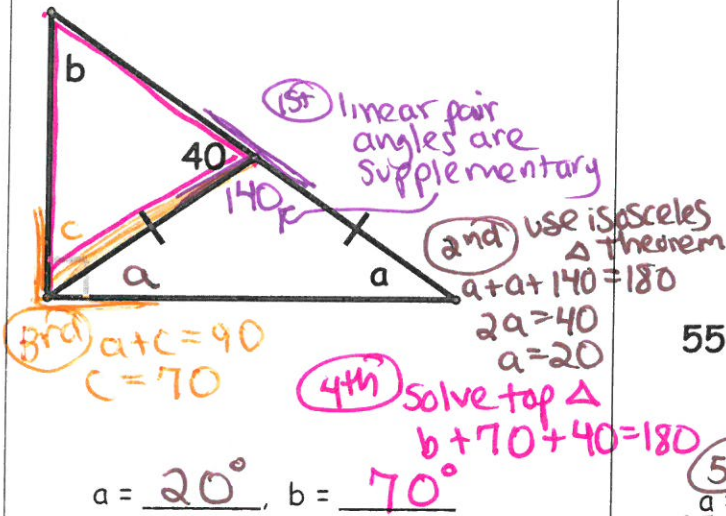
3)  $\Delta ABC \cong \Delta AED$

3) AAS  $\cong$  Theorem

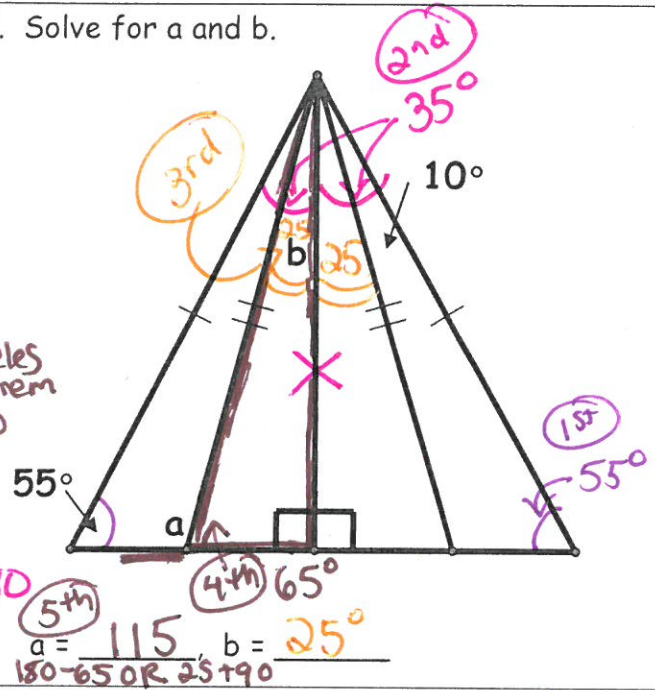
4)  $\overline{BC} \cong \overline{ED}$

4) CPCTC

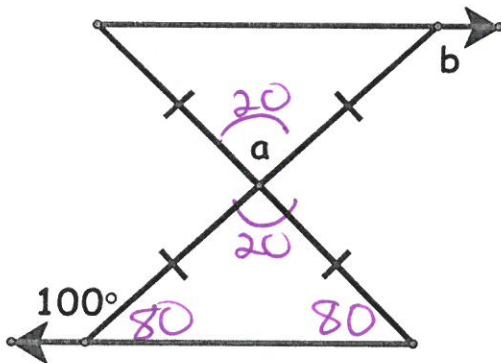
16. Solve for a and b.



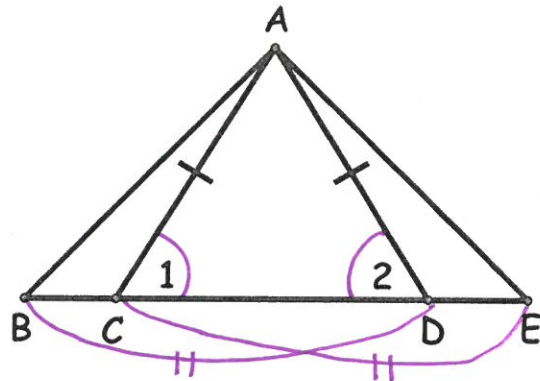
17. Solve for a and b.



18. Solve for a and b.



19. Given:  $\overline{BD} \cong \overline{CE}, \overline{AC} \cong \overline{AD}$   
 Prove:  $\overline{AB} \cong \overline{AE}$

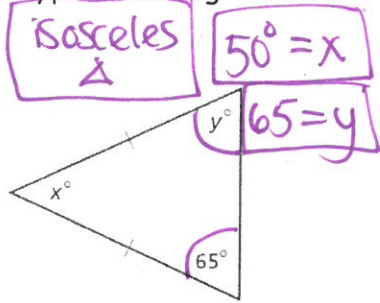


You may or may not use all the spaces provided.

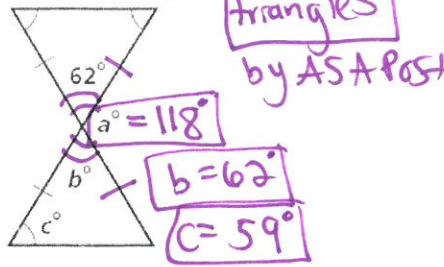
- |  |                               |
|--|-------------------------------|
| 1) $\overline{BD} \cong \overline{CE}$ | 1) Given                      |
| 2) $\overline{AC} \cong \overline{AD}$ | 2) Given                      |
| 3) $\angle 1 \cong \angle 2$           | 3) Isosceles $\Delta$ Theorem |
| 4) $\Delta ADB \cong \Delta ACE$       | 4) SAS $\cong$ Postulate      |
| 5) $\overline{AB} \cong \overline{AE}$ | 5) CPCTC                      |

Determine the value of the variables. Also provide the requested information.

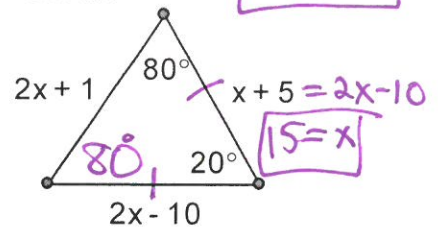
20. type of triangle shown



21. relationship between the triangles



22. type of triangle shown



23.  $\triangle LMN \cong \triangle XYZ$ ,  $m\angle L = x^2 + 50$ ,  $m\angle N = 40$ ,  $m\angle Y = -2x + 10$ . Find  $m\angle X$ .

$$x^2 + 50 + -2x + 10 + 40 = 180$$

$$x^2 - 2x - 80 = 0$$

$$m\angle M = -2x + 10$$

$$(x - 10)(x + 8)$$

$$x = 10, -8$$

$$m\angle X = m\angle L$$

$$= (-8)^2 + 50$$

$$= 64 + 50$$

$$= 114^\circ$$

Use the diagram shown for #24 - 26

24. Find BD.

16

25. Complete the statement: C is equidistant from A and B.

26. Can you conclude  $CN = DN$ ? Explain.

NO. Points on a  $\perp$  bisector are equidistant from the endpoints of the segment being bisected so.

$\overline{CD}$  is the perpendicular bisector of both  $\overline{XY}$  and  $\overline{ST}$ , and  $CY = 16$ . Find each length.

27. CT

12

28. TY

4

29. MT

5

29. SX

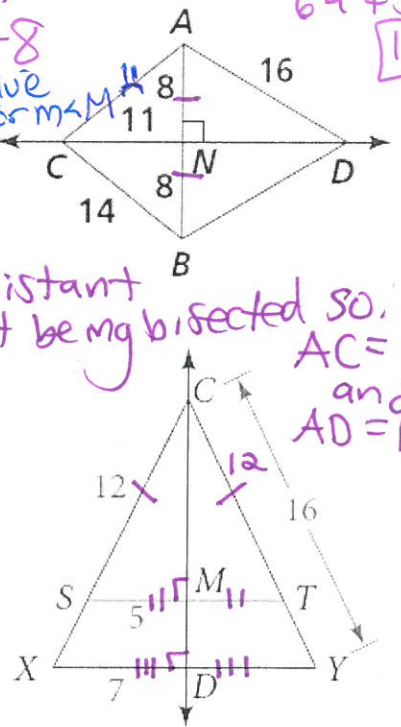
4

31. If  $CX = 3x - 5$ , find x.

$$3x - 5 = 16$$

$$3x = 21$$

x = 7



AC = BC and AD = BD.

32. Given:  $\overline{BD} \perp \overline{AC}$   
 $\overline{BD}$  bisects  $\angle B$ .

Prove:  $\angle 2 \cong \angle 5$

1) $\overline{BD} \perp \overline{AC}$	1) Given
2) $\overline{BD}$ bisects $\angle B$	2) Given
3) $\angle 3 \cong \angle 4$	3) Defn of $\angle$ bisector
4) $\angle BDA$ and $\angle BDC$ are r.t.s	4) Defn of $\perp$ (perp. lines make right $\angle$ s)
5) $\angle BDA \cong \angle BDC$	5) All right $\angle$ s are $\cong$
6) $\triangle BDA \cong \triangle BDC$	6) ASA $\cong$ Postulate
7) $\angle 2 \cong \angle 5$	7) CPCTC

