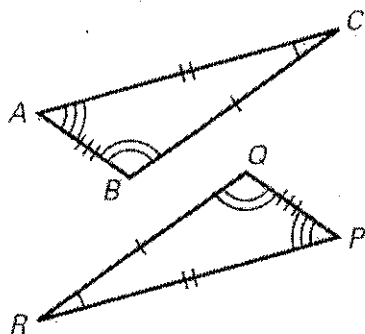


Triangle Congruency

1. Write a congruence statement for the triangles as well as congruence statements for all 3 sides and angles.



$\triangle ABC \cong \triangle PQR$

$\overline{AB} \cong \overline{PQ}$ $\angle A \cong \angle P$

$\overline{BC} \cong \overline{QR}$ $\angle B \cong \angle Q$

$\overline{AC} \cong \overline{PR}$ $\angle C \cong \angle R$

2. Complete the following statements if $\triangle BAT \cong \triangle GLV$.

a. $\overline{BA} \cong \overline{GL}$

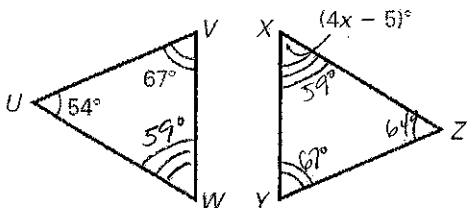
b. $\angle A \cong \angle L$

c. $\overline{VG} \cong \overline{TB}$

d. $\triangle TBA \cong \triangle VGL$

3. Find x for each pair of triangles below. **SHOW YOUR WORK.**

a.



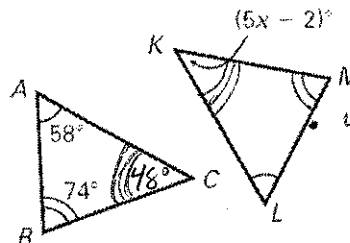
$59 = 4x - 5$

$64 = 4x$

$16 = x$

$x = 16$
 $m\angle X = 59$

b.



$48 = 5x - 2$
 $50 = 5x$
 $10 = x$

$x = 10$

4. Given: $\triangle BCD \cong \triangle EFG$. $m\angle B = (4x + 10)^\circ$. $m\angle C = (5x - 2)^\circ$. $m\angle F = (6x - 10)^\circ$. Find...

$4(8) + 10 = 42^\circ$

$5(8) - 2 = 38^\circ$

a. $x = 8$

b. $m\angle B = 42^\circ$

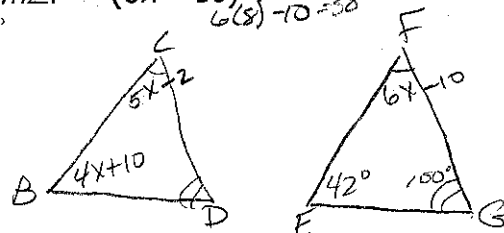
c. $m\angle C = 38^\circ$

d. $m\angle D = 100^\circ$

e. $m\angle E = 42^\circ$

f. $m\angle F = 38^\circ$

g. $m\angle G = 100^\circ$



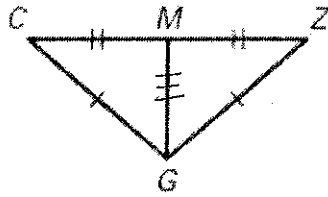
$5x - 2 = 6x - 10$

$-2 = x - 10$
 $+10$

$8 = x$

5. For each figure, **MARK** the angles and sides we know *must* be congruent, then determine if we can say the triangles are congruent. If so, complete the congruence statement and state the reason (SSS, etc.). If not, write "not enough information."

a.

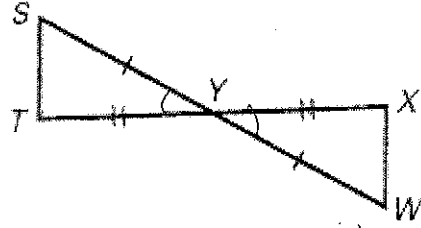


$$\triangle MZG \cong \triangle MCG$$

by SSS (SSS, etc.)

or: Not Enough Information

b.

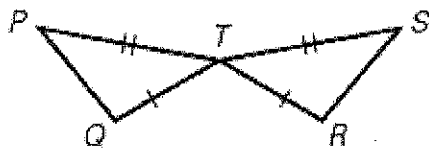


$$\triangle STY \cong \triangle WXY$$

by SAS (SSS, etc.)

or: Not Enough Information

c.



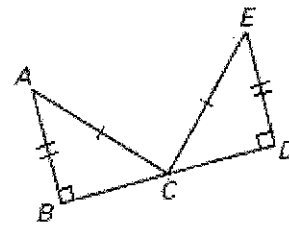
(Careful: Are these really vertical angles?) No

$$\triangle QPT \cong \text{---}$$

by --- (SSS, etc.)

or: Not Enough Information

d.

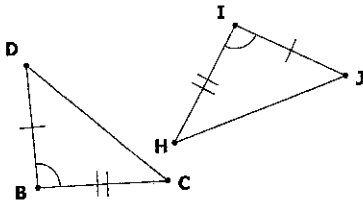


$$\triangle CDE \cong \triangle CBA$$

by HL (SSS, etc.)

or: Not Enough Information

e.

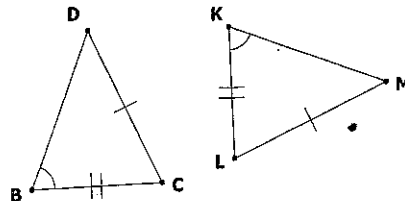


$$\triangle BCD \cong \triangle IHI$$

by SAS (SSS, etc.)

or: Not Enough Information

f.

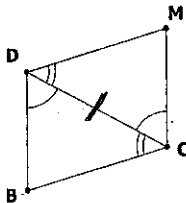


$$\triangle BCD \cong \text{---}$$

by --- (SSS, etc.)

or: Not Enough Information

g.

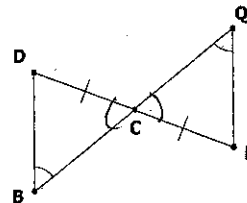


$$\triangle BCD \cong \triangle MDC$$

by ASA (SSS, etc.)

or: Not Enough Information

h.



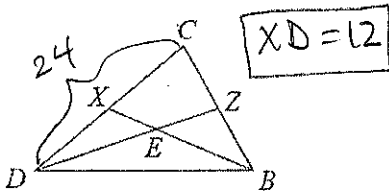
$$\triangle BCD \cong \triangle QCP$$

by AAS (SSS, etc.)

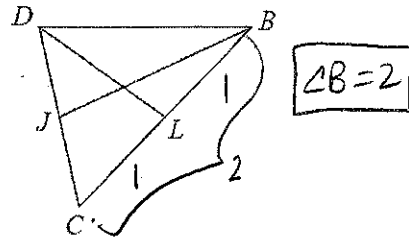
or: Not Enough Information

6. Medians

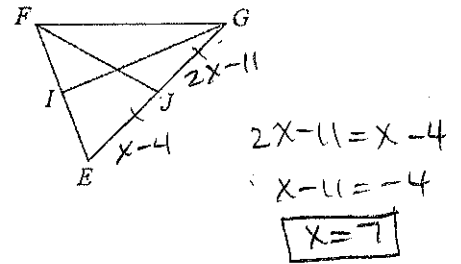
a. Find XD if $CD = 24$



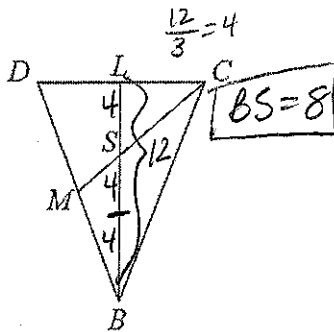
b. Find CB if $LB = 1$



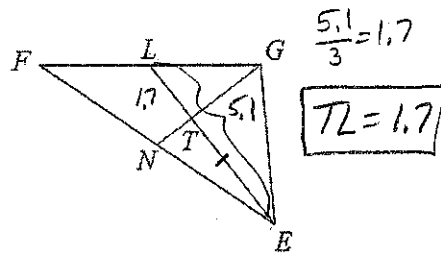
c. Find x if $JG = 2x - 11$ and $JE = x - 4$



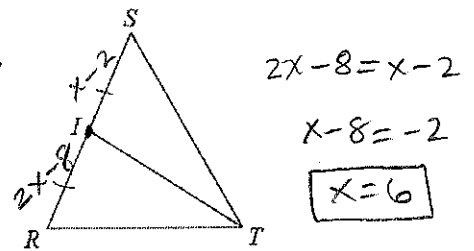
d. Find BS if $BL = 12$



e. Find TL if $EL = 5.1$

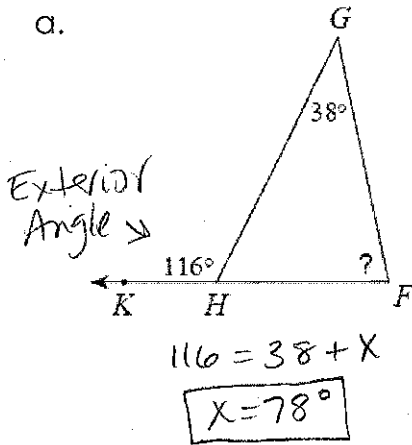


f. Find x if $IR = 2x - 8$ and $IS = x - 2$

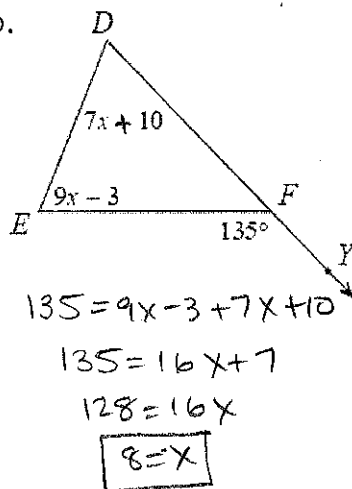


7. Angles in Triangles

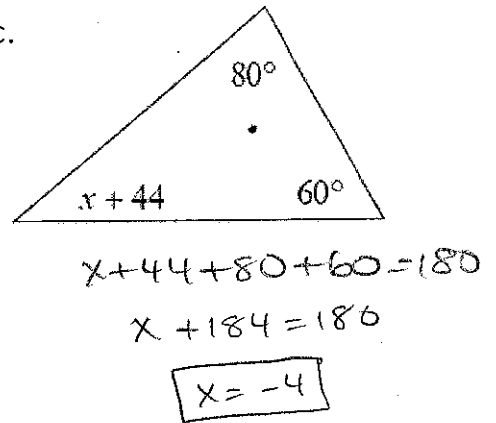
a.



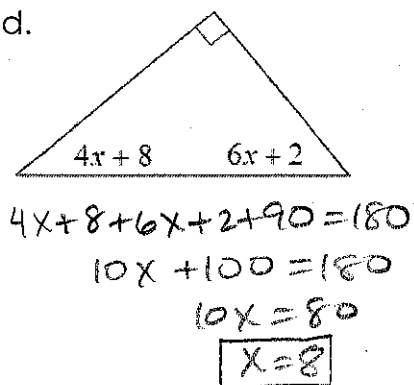
b.



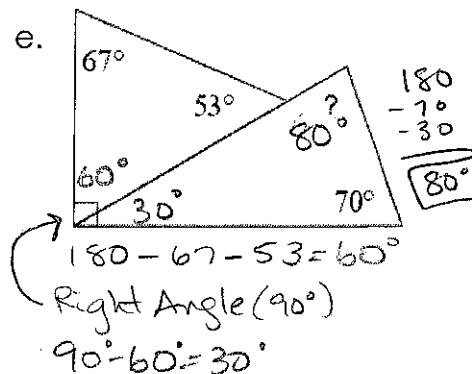
c.



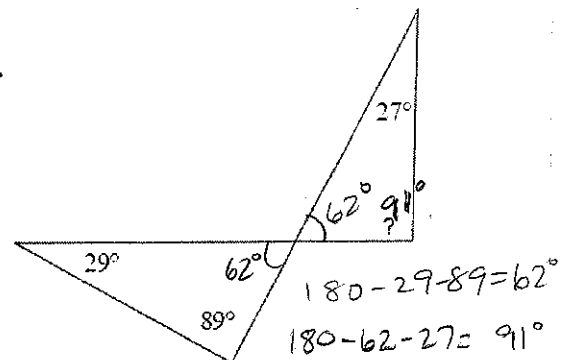
d.



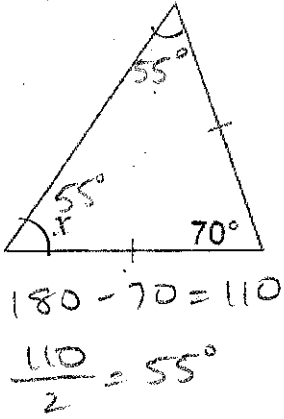
e.



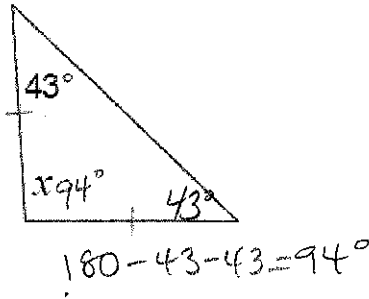
f.



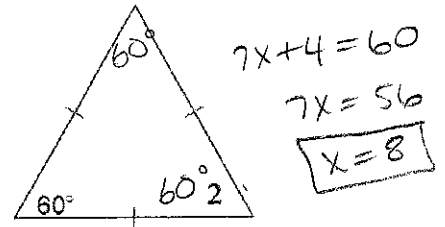
g.



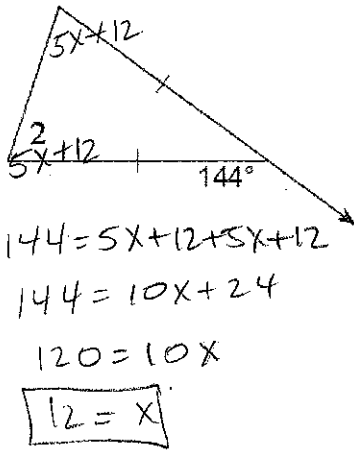
h.



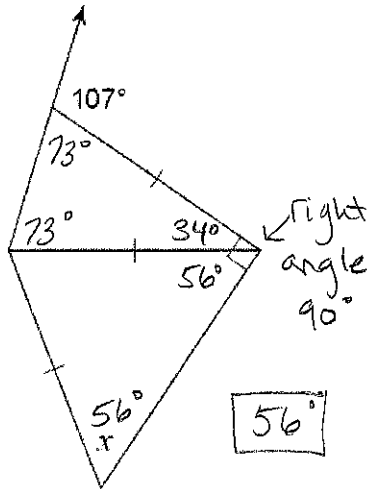
i. $m\angle 2 = 7x + 4$



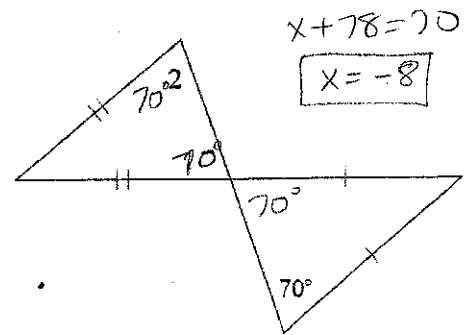
j. $m\angle 2 = 5x + 12$



k.



l. $m\angle 2 = x + 78$



8. Algebraic Proof

Given: $-4x + 6 = 2x - 30$

Prove: $x = 6$

Statements

Reasons

$$\begin{array}{r} -4x + 6 = 2x - 30 \\ +4x \quad +4x \\ \hline \end{array}$$

$$\begin{array}{r} 6 = 6x - 30 \\ +30 \quad +30 \\ \hline \end{array}$$

$$\frac{36}{6} = \frac{6x}{6}$$

$$6 = x$$

$$\rightarrow x = 6$$

Given

Addition Property

Addition Property

Division Property

Symmetric Property

* Answers may vary!