

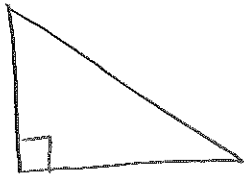
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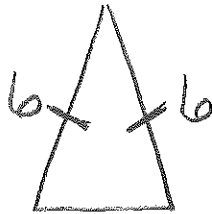
Chapter 4 - Review

For #1-9, using a ruler, draw and accurately label an example of each of the following classifications of triangles. Include angles measures, side lengths and congruency marks.

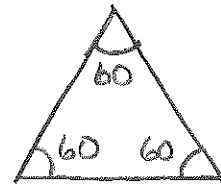
1. Right Triangle



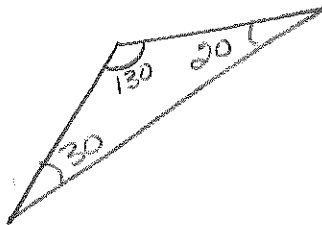
2. Isosceles Triangle



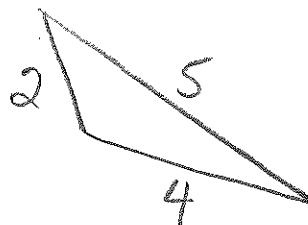
3. Equiangular Triangle



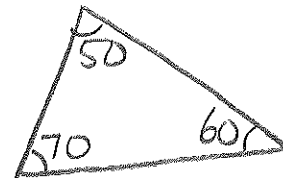
4. Obtuse Triangle



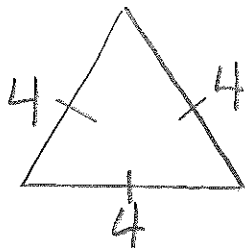
5. Scalene Triangle



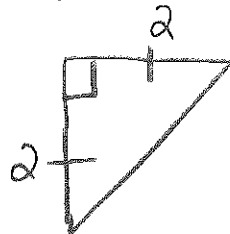
6. Acute Triangle



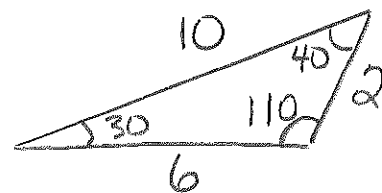
7. Equilateral Triangle



8. Right Isosceles Triangle



9. Obtuse Scalene Triangle



For # 10-11, find the measures of the sides of the triangles. Classify the triangles by their sides. Show all work.

10. $\triangle TWZ$ has vertices $T(2, 6)$, $W(4, -5)$ and $Z(-3, 0)$.

Classification: Scalene

$$(TZ)^2 = 5^2 + 6^2$$

$$(TW)^2 = 2^2 + 11^2$$

$$(ZW)^2 = 5^2 + 7^2$$

$$(TZ)^2 = 25 + 36$$

$$(TW)^2 = 4 + 121$$

$$(ZW)^2 = 25 + 49$$

$$(TZ)^2 = 61$$

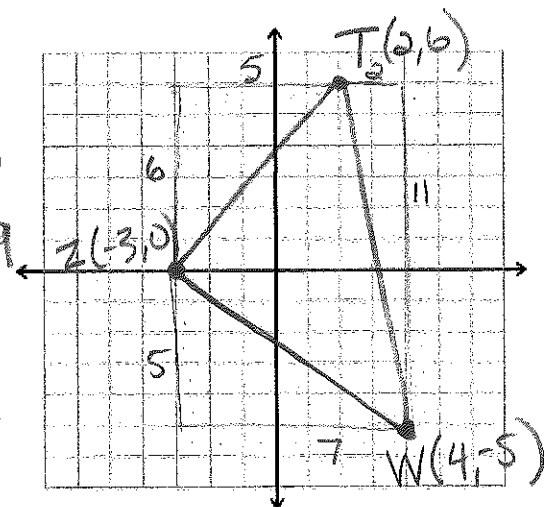
$$(TW)^2 = 125$$

$$(ZW)^2 = 74$$

$$TZ = \sqrt{61}$$

$$TW = \sqrt{125}$$

$$ZW = \sqrt{74}$$



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11. $\triangle QRS$ has vertices $Q(2, 1)$, $R(4, -3)$ and $S(-3, -2)$.

Classification: Scalene

$$(SQ)^2 = 5^2 + 3^2$$

$$(SQ)^2 = 25 + 9$$

$$(SQ)^2 = 34$$

$$SQ = \sqrt{34}$$

$$(QR)^2 = 2^2 + 4^2$$

$$(QR)^2 = 4 + 16$$

$$(QR)^2 = 20$$

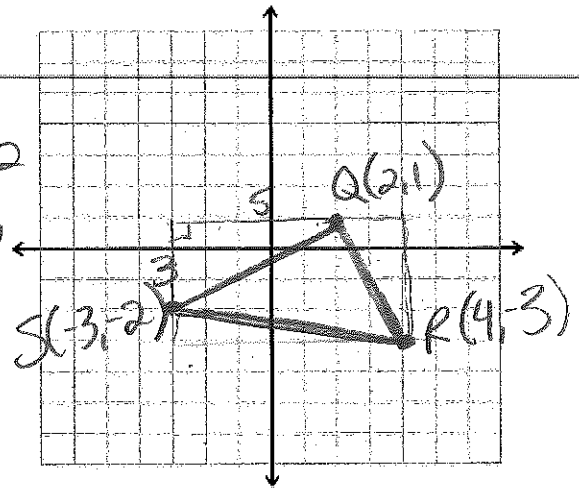
$$QR = \sqrt{20}$$

$$(RS)^2 = 1^2 + 7^2$$

$$(RS)^2 = 1 + 49$$

$$(RS)^2 = 50$$

$$(RS) = \sqrt{50}$$



For #12-13, find x and the measure of each side of the triangle. Show all work.

Equilateral

12. $x = \underline{5}$

$QR = \underline{25}$

$RS = \underline{25}$

$SQ = \underline{25}$

$$5x = 3x + 10$$

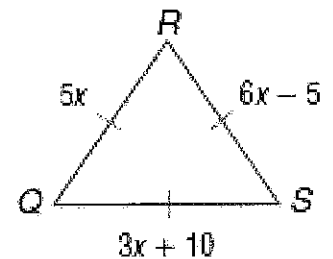
$$2x = 10$$

$$\boxed{x = 5}$$

$$\begin{aligned} QS &= 3x + 10 \\ &= 3(5) + 10 \\ &= 15 + 10 \\ &= \boxed{25} \end{aligned}$$

$$\begin{aligned} RQ &= 5x \\ &= 5(5) \\ &= \boxed{25} \end{aligned}$$

$$\begin{aligned} RS &= 6x - 5 \\ &= 6(5) - 5 \\ &= 30 - 5 \\ &= \boxed{25} \end{aligned}$$



13. $\triangle JMN$ is an isosceles triangle with $\overline{JM} \cong \overline{MN}$

$x = \underline{4}$

$JM = \underline{3}$

$MN = \underline{3}$

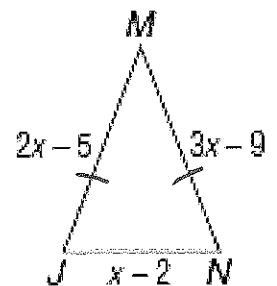
$JN = \underline{2}$

$$\begin{aligned} 2x - 5 &= 3x - 9 \\ \boxed{4} &= x \end{aligned}$$

$$\begin{aligned} MN &= 3x - 9 \\ &= 3(4) - 9 \\ &= 12 - 9 \\ &= \boxed{3} \end{aligned}$$

$$\begin{aligned} JM &= 2x - 5 \\ &= 2(4) - 5 \\ &= 8 - 5 \\ &= \boxed{3} \end{aligned}$$

$$\begin{aligned} JN &= x - 2 \\ &= 4 - 2 \\ &= \boxed{2} \end{aligned}$$



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14. Find each angle measure in $\triangle DEF$. Show all work.

$m\angle 1 = \underline{65^\circ}$

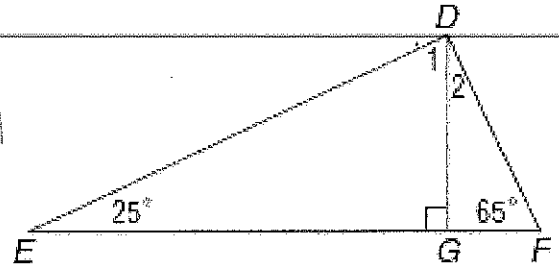
$m\angle 2 = \underline{25^\circ}$

$90 + 25 + m\angle 1 = 180$

$m\angle 1 = 65$

$90 + 65 + m\angle 2 = 180$

$m\angle 2 = 25$



15. Find each angle measure if $m\angle 4 = m\angle 5$

$m\angle 1 = \underline{64^\circ}$

$m\angle 2 = \underline{53^\circ}$

$m\angle 3 = \underline{116^\circ}$

$m\angle 4 = \underline{32^\circ}$

$m\angle 5 = \underline{32^\circ}$

$m\angle 6 = \underline{44^\circ}$

$m\angle 7 = \underline{89^\circ}$

$m\angle 1 + 69 + 47 = 180$

$m\angle 1 = 64$

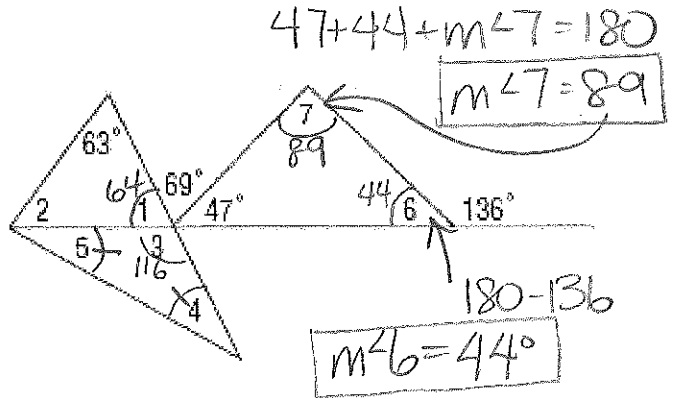
$m\angle 3 + 64 = 180$

$m\angle 3 = 116$

$m\angle 4 = m\angle 5 = \frac{180 - 116}{2} = 32$

$m\angle 2 + 63 + 64 = 180$

$m\angle 2 = 53$



For # 16-19, identify the corresponding congruent angles and sides, then name the congruent triangles in each figure.

16. Angles: $\angle AFC \cong \angle DFB, \angle A \cong \angle D, \angle C \cong \angle B$

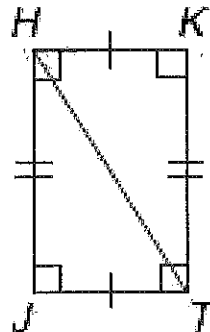
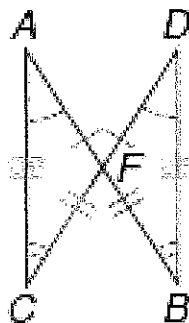
Angles: $\angle K \cong \angle J, \angle KHT \cong \angle JTH, \angle KTH \cong \angle JHT$

Sides: $\overline{FA} \cong \overline{FD}, \overline{AC} \cong \overline{DB}, \overline{CF} \cong \overline{BF}$

Sides: $\overline{HT} \cong \overline{HT}, \overline{HK} \cong \overline{JT}, \overline{KT} \cong \overline{JT}$

Congruent Triangles: $\triangle FAC \cong \triangle FDB$

Congruent Triangles: $\triangle KHT \cong \triangle JTH$



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18. Angles: $\angle K \cong \angle F, \angle L \cong \angle H, \angle J \cong \angle C$

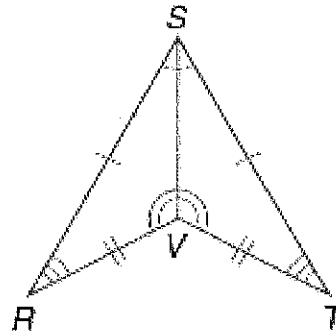
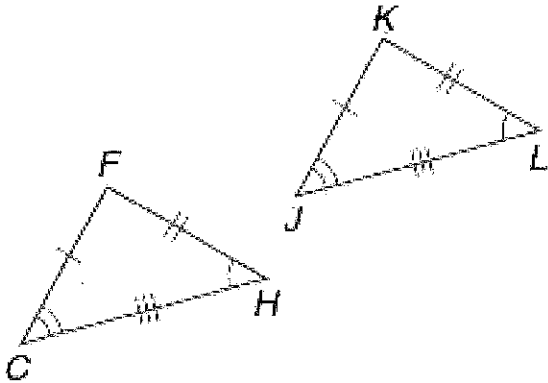
19. Angles: $\angle RSV \cong \angle TSV, \angle T \cong \angle R, \angle SVT \cong \angle SVR$

Sides: $KL \cong FH, LJ \cong HC, JK \cong CF$

Sides: $SV \cong SV, SR \cong ST, VR \cong VT$

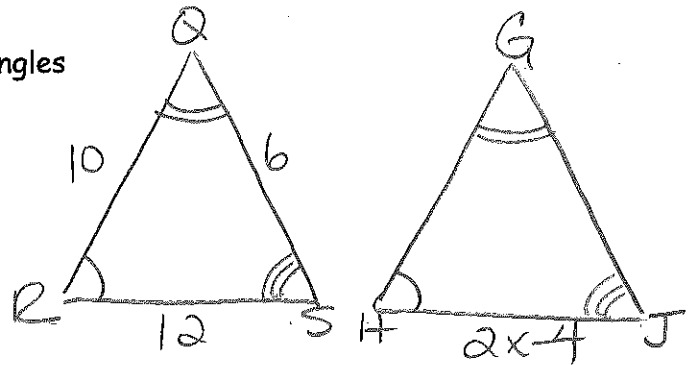
Congruent Triangles: $\triangle K LJ \cong \triangle FHC$

Congruent Triangles: $\triangle SVR \cong \triangle SVT$



20. $\triangle QRS \cong \triangle GHJ, RS = 12, QR = 10, QS = 6,$ and $HJ = 2x-4.$

a) Draw and label a figure to show the congruent triangles



b) Find x

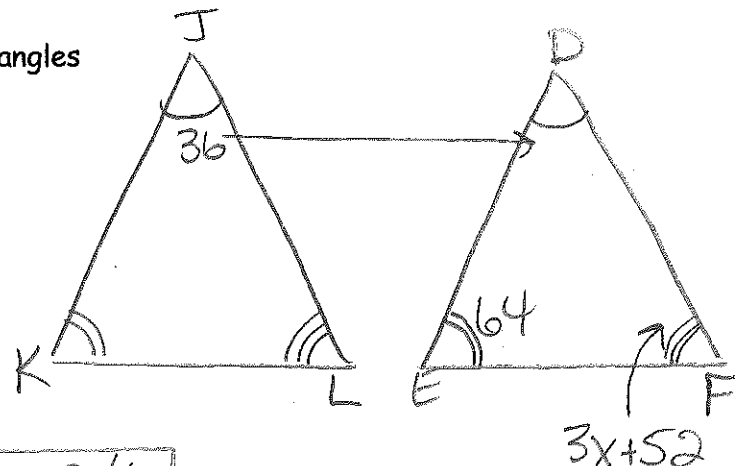
$$2x - 4 = 12$$

$$2x = 16$$

$$\boxed{x = 8}$$

21. $\triangle JKL \cong \triangle DEF, m\angle J = 36, m\angle E = 64,$ and $m\angle F = 3x+52.$

a) Draw and label a figure to show the congruent triangles



b) Find x

$$36 + 64 + 3x + 52 = 180$$

$$3x + 152 = 180$$

$$3x = 28$$

$$\boxed{x = 9 \frac{1}{3}}$$

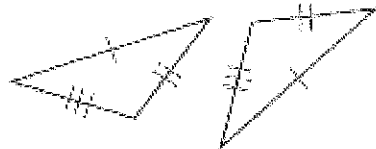
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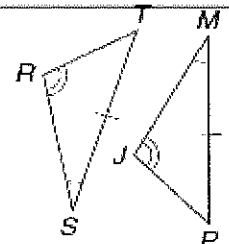
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For #22-27, determine which method can be used to prove that the triangles are congruent.

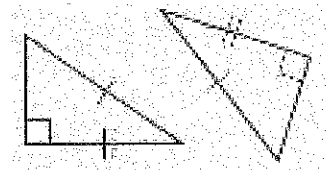
If it is not possible to prove the triangles are congruent, write *not possible*.

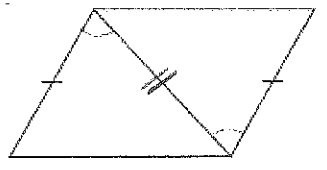
22. 
SSS

23. 
~~AAA~~
not possible

24. 
AAS

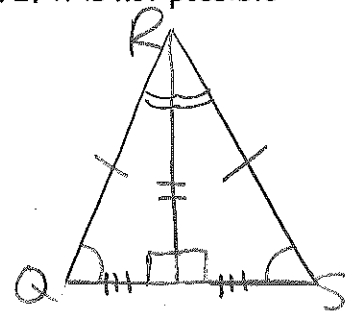
25. 
~~SSA~~
not possible

26. 
HL

27. 
SAS

28. $\triangle QRS$ is an isosceles triangle with $\overline{QR} \cong \overline{RS}$. \overline{RT} bisects $\angle QRS$ and \overline{QS} . Draw and label the figure. Determine which method can be used to prove that $\triangle QRT \cong \triangle SRT$. If it is not possible to prove that they are congruent, write *not possible*.

- AAS
 ASA
 SSS
 ~~SSA~~
 HL
 SAS
 ~~AAA~~

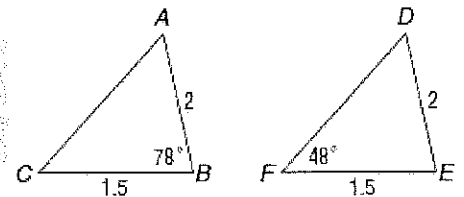


29. Carmelita and Jonathan are trying to determine whether $\triangle ABC$ is congruent to $\triangle DEF$.

Who is correct and why?

Carmelita
 $\triangle ABC \cong \triangle DEF$
 by SAS

Jonathan
 Congruence
 cannot be
 determined.



\Rightarrow SAS uses the included angle. In $\triangle DEF$ we do not know what the value of the included \angle is.

30. What does CPCTC stand for? What is it used for?

\Rightarrow Corresponding Parts of Congruent Triangles are Congruent \rightarrow used in proving triangle congruence

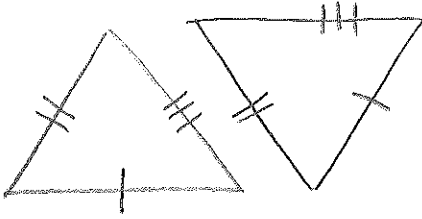
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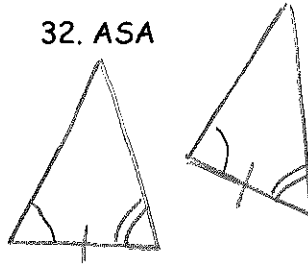
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For #31-35, draw and label two triangles that can be proven to be congruent using the specified method.

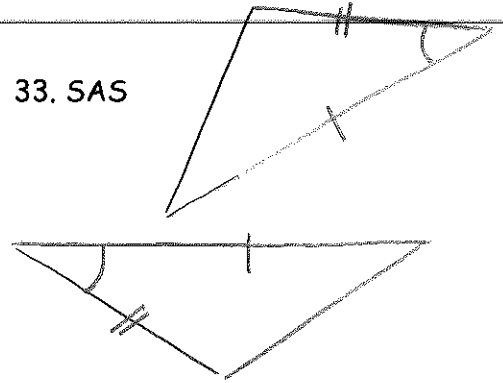
31. SSS



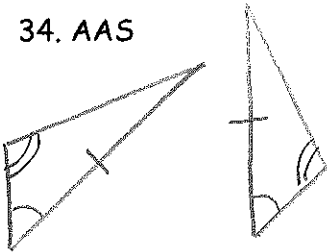
32. ASA



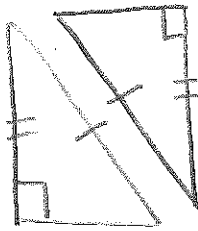
33. SAS



34. AAS

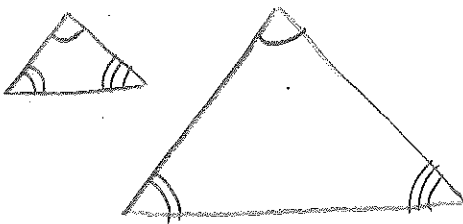


35. HL

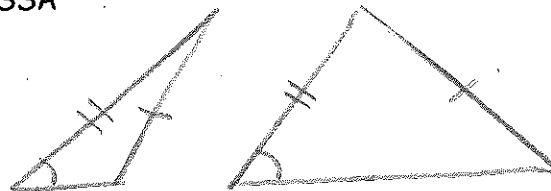


For #36-37, draw and label two triangles that are a counterexample showing why the specified method cannot be used to prove congruence in triangles.

36. AAA

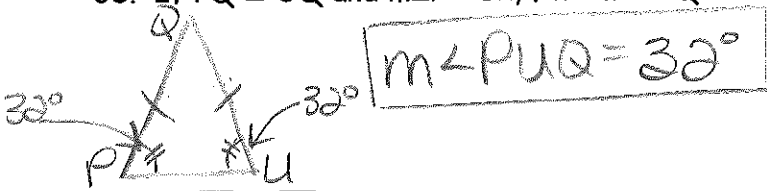


37. SSA

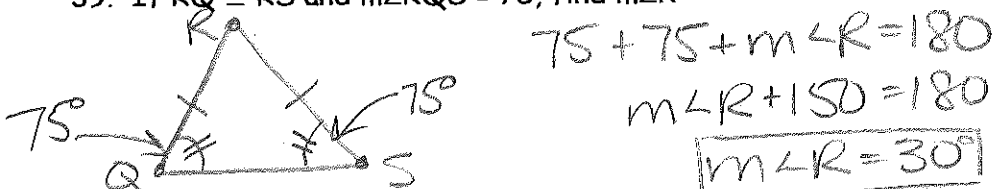


For #38-40, refer to the figure

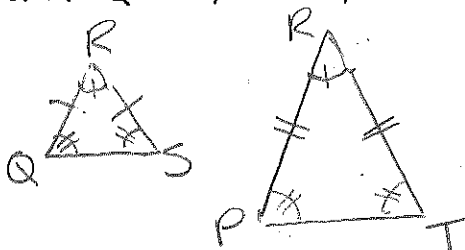
38. If $\overline{PQ} \cong \overline{UQ}$ and $m\angle P = 32$, find $m\angle PUQ$



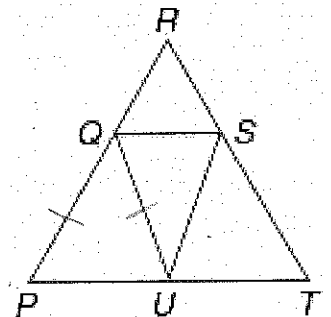
39. If $\overline{RQ} \cong \overline{RS}$ and $m\angle RQS = 75$, find $m\angle R$



40. If $\overline{RQ} \cong \overline{RS}$, $\overline{RP} \cong \overline{RT}$, and $m\angle RQS = 80$, find $m\angle P$



$m\angle P = m\angle RQS$
 $m\angle P = 80^\circ$



* Both isosceles with the same vertex angle so base angles must be the same

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41. Draw an isosceles triangle. Label the vertices A, B & C where $AB = BC$.

Using the triangle, do the following:

A. Mark all congruent sides and angles.

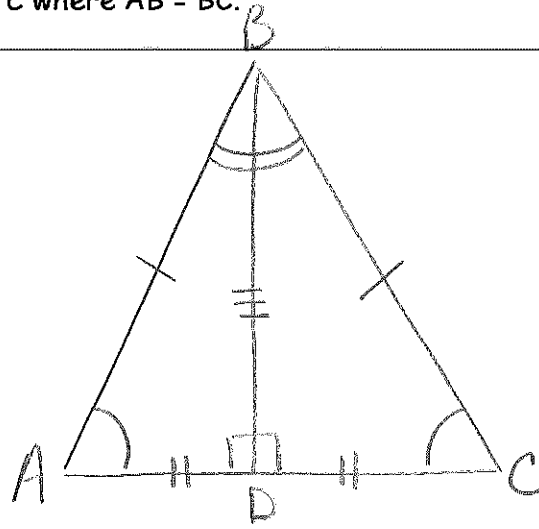
B. Draw angle bisector BD.

C. Mark all congruent sides and angles.

D. Is the statement $\triangle ABD \cong \triangle CBD$ true?

yes

E. If $\triangle ABD \cong \triangle CBD$, which of the following can be used to prove the triangles are congruent? (may be more than one)



ASA

AAS

SSS

~~AAA~~

HL

~~SSA~~

SAS

Does not prove triangle congruence

42. Given: $\overline{AC} \parallel \overline{DF}$ and $\overline{BC} \cong \overline{DE}$

a) Mark all congruent sides and angles

b) Is $\triangle BCE \cong \triangle EDB$?

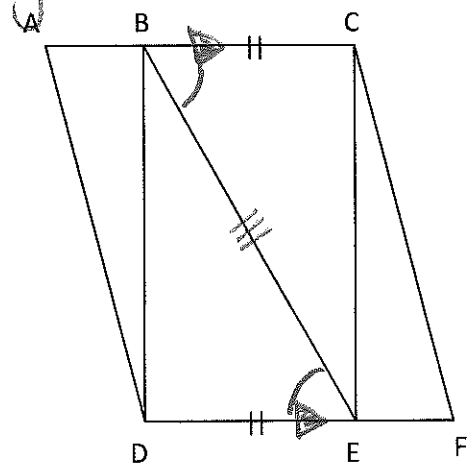
If so, by what postulate? (choose all that apply)

ASA AAS

SSS AAA

HL SSA

SAS



* Can not assume right angles*

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43. Given: $\overline{GB} \cong \overline{GD}$, $\overline{AB} \cong \overline{DE}$ and \overline{CG} bisects \overline{AE}

a) Classify $\triangle BGD$ by its sides

Isosceles

b) Mark all congruent sides and angles

c) Is the statement $\triangle BGC \cong \triangle DGC$ true?

Yes

d) If $\triangle BGC \cong \triangle DGC$ by what postulate? (choose all that apply)

ASA AAS SSS AAA HL SSA SAS

Does not prove triangle congruence

