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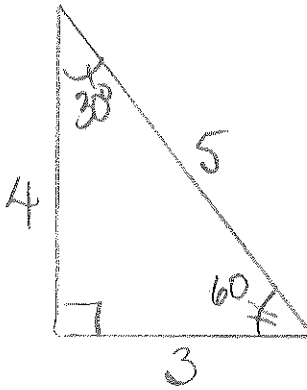
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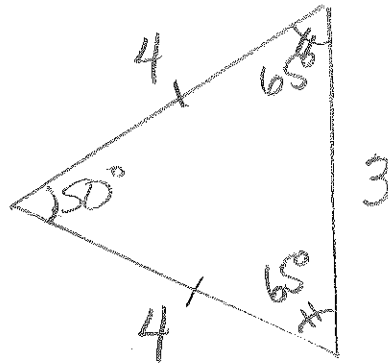
Chapter 4 - Review

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.

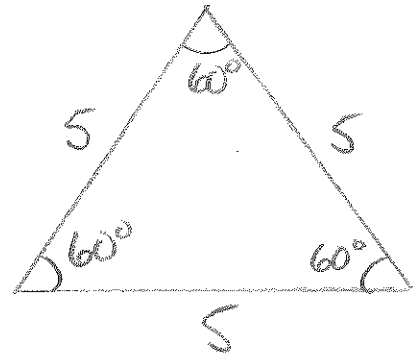
1. Right Triangle



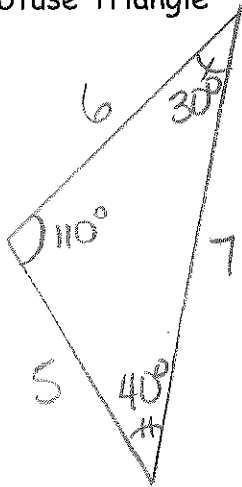
2. Isosceles Triangle



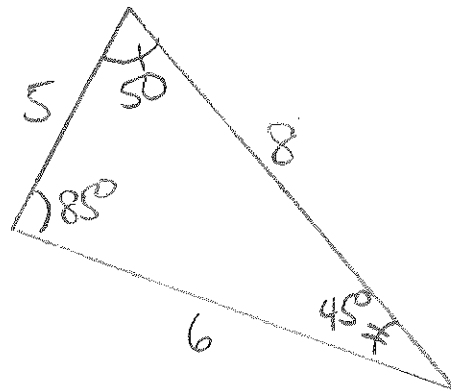
3. Equiangular Triangle



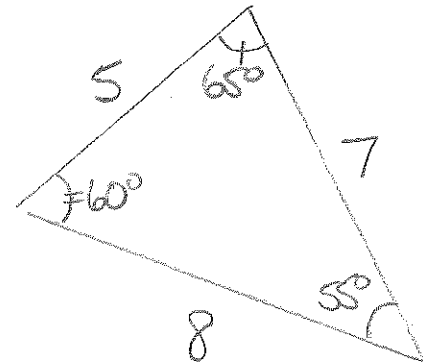
4. Obtuse Triangle



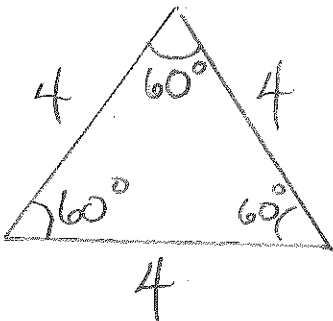
5. Scalene Triangle



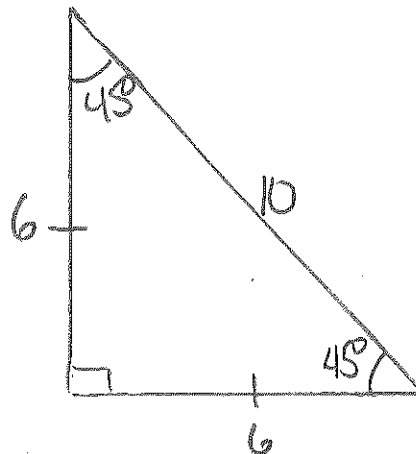
6. Acute Triangle



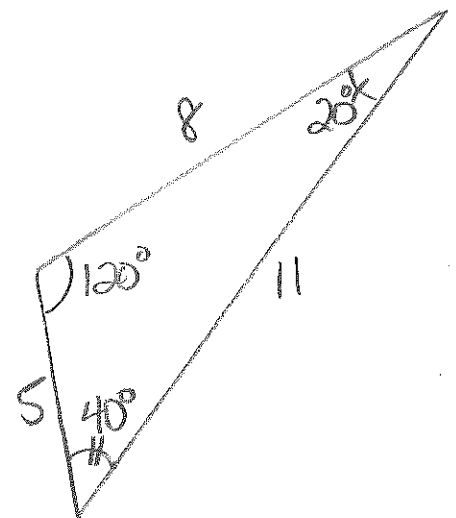
7. Equilateral Triangle



8. Right Isosceles Triangle



9. Obtuse Scalene Triangle



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10. Find the measure of the sides of the triangle. Classify the triangle by its sides.

Show all work.

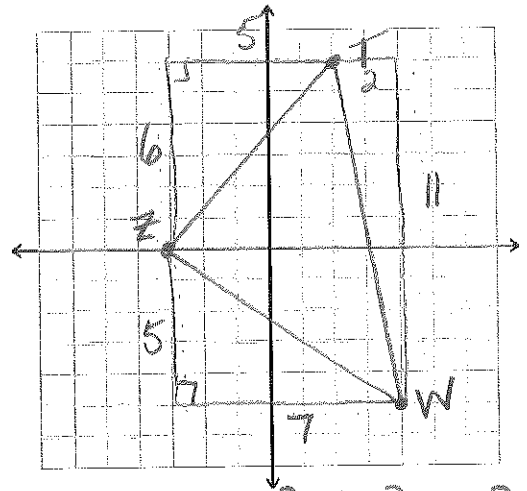
$\triangle TWZ$ has vertices $T(2, 6)$, $W(4, -5)$ and $Z(-3, 0)$

$$TW = \sqrt{125}$$

$$WZ = \sqrt{74}$$

$$ZT = \sqrt{61}$$

Classification: Scalene



$$\begin{aligned} TW: 2^2 + 11^2 &= c^2 \\ 4 + 121 &= c^2 \\ 125 &= c^2 \\ \sqrt{125} &= c \end{aligned}$$

$$\begin{aligned} ZW: 5^2 + 7^2 &= c^2 \\ 25 + 49 &= c^2 \\ 74 &= c^2 \\ \sqrt{74} &= c \end{aligned}$$

$$\begin{aligned} ZT: 5^2 + 6^2 &= c^2 \\ 25 + 36 &= c^2 \\ 61 &= c^2 \\ \sqrt{61} &= c \end{aligned}$$

11. Find each angle measure

$$m\angle 1 = \underline{75^\circ}$$

$$m\angle 2 = \underline{35^\circ}$$

$$m\angle 3 = \underline{140^\circ}$$

$$m\angle 4 = \underline{60^\circ}$$

$$m\angle 5 = \underline{25^\circ}$$

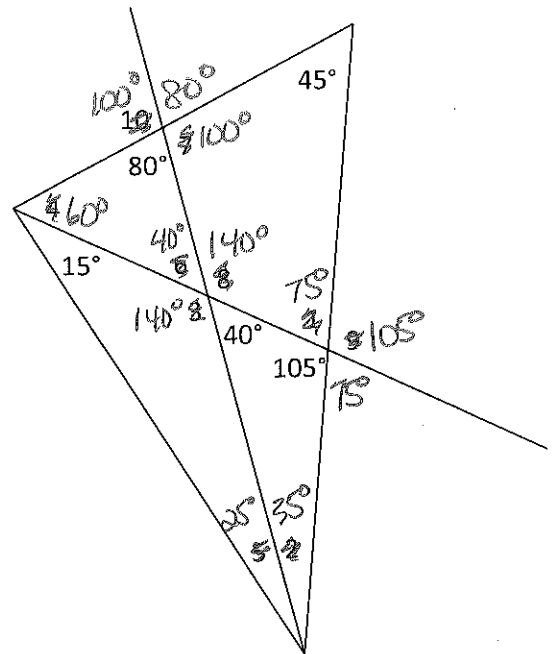
$$m\angle 6 = \underline{40^\circ}$$

$$m\angle 7 = \underline{100^\circ}$$

$$m\angle 8 = \underline{140^\circ}$$

$$m\angle 9 = \underline{105^\circ}$$

$$m\angle 10 = \underline{100^\circ}$$



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12. $\triangle ABC$ is an equilateral triangle. \overline{CD} bisects \overline{AB} .

a) Mark all congruent sides and angles on the picture

b) Find x and y . Show all work.

$x = \underline{12}$

$y = \underline{7}$

$2(3x-2) = 5x+8$

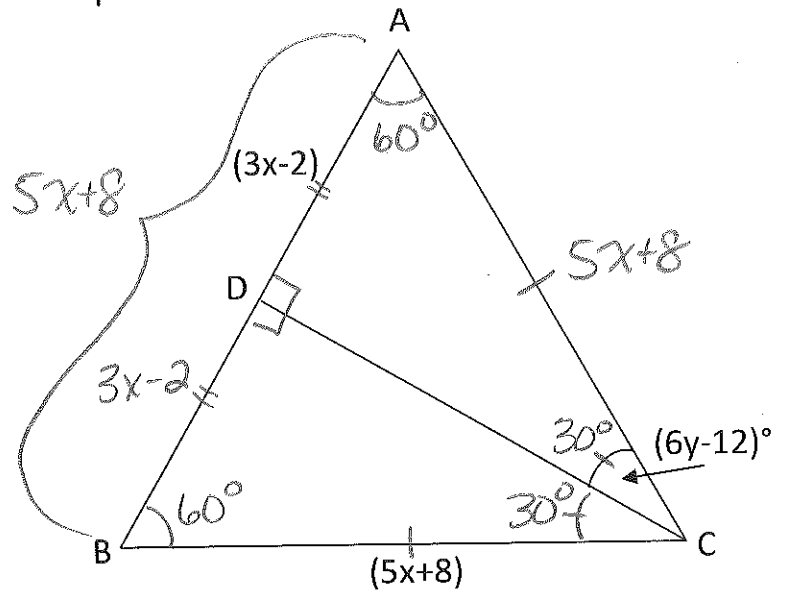
$6x-4 = 5x+8$

$x = 12$

$6y-12 = 30$

$6y = 42$

$y = 7$



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

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

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

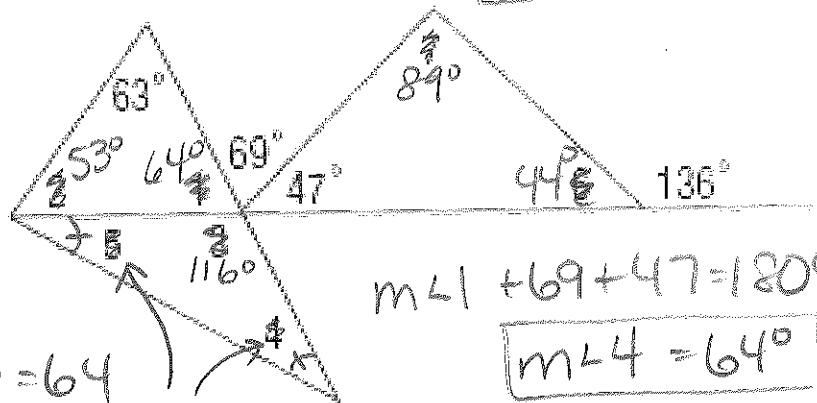
$m\angle 3 = \underline{116^\circ}$

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

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

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

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



$m\angle 7 + 47 + 44 = 180$
 $m\angle 7 = 89$

$180 - 116 = 64$
 $64 \div 2 = 32^\circ$

$m\angle 1 + 69 + 47 = 180^\circ$
 $m\angle 1 = 64^\circ$

$m\angle 2 + 63 + 64 = 180$
 $m\angle 2 = 53$

$136 + m\angle 6 = 180$
 $m\angle 6 = 44$

$m\angle 3 = 69 + 47$
 $m\angle 3 = 116$

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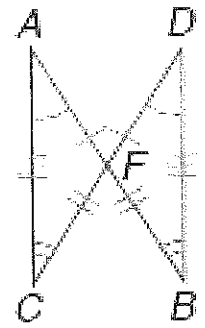
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For # 14-17, identify the corresponding congruent angles and sides, then name the congruent triangles in each figure.

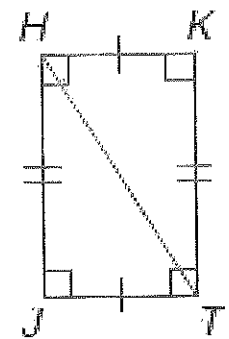
14. Angles: $\angle A \cong \angle D, \angle C \cong \angle B$
 $\angle AFC \cong \angle DFB$
 Sides: $\overline{AC} \cong \overline{DB}, \overline{AF} \cong \overline{DF}$
 $\overline{CF} \cong \overline{BF}$

Congruent Triangles: $\triangle AFC \cong \triangle DFB$



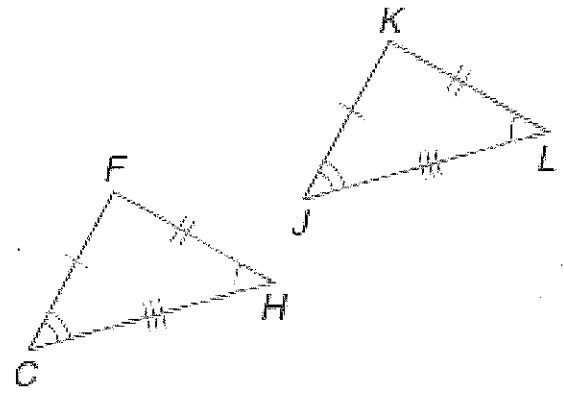
15. Angles: $\angle K \cong \angle J, \angle KHT \cong \angle JTH$
 $\angle JHT \cong \angle KTH$
 Sides: $\overline{HT} \cong \overline{HT}, \overline{HJ} \cong \overline{KT}$
 $\overline{KH} \cong \overline{JT}$

Congruent Triangles: $\triangle JHT \cong \triangle KTH$



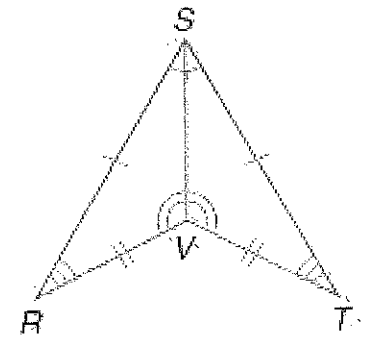
16. Angles: $\angle F \cong \angle K, \angle H \cong \angle L$
 $\angle C \cong \angle J$
 Sides: $\overline{FH} \cong \overline{KL}, \overline{FC} \cong \overline{KJ}$
 $\overline{CH} \cong \overline{JL}$

Congruent Triangles: $\triangle FHC \cong \triangle KLT$



17. Angles: $\angle R \cong \angle T, \angle SVR \cong \angle SVT$
 $\angle RSV \cong \angle TSV$
 Sides: $\overline{RS} \cong \overline{TS}, \overline{SV} \cong \overline{SV}$
 $\overline{RV} \cong \overline{TV}$

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



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

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

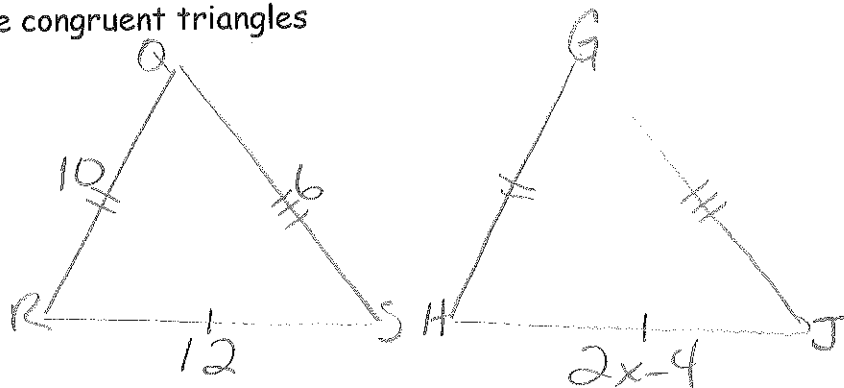
$$12 = 2x - 4$$

$$16 = 2x$$

$$8 = x$$

b) Find x

$$x = \underline{8}$$



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

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

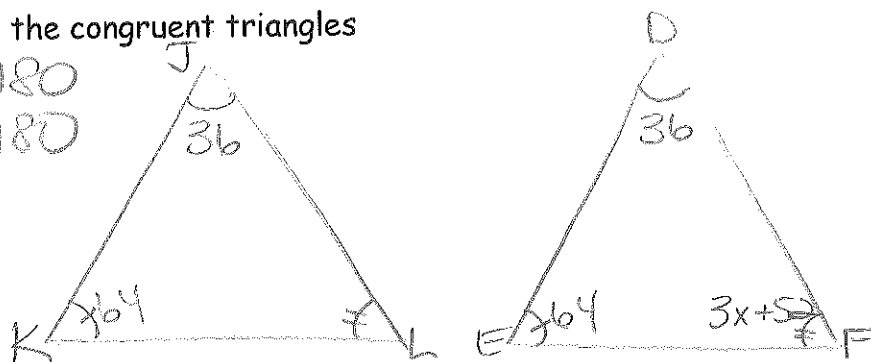
$$36 + 64 + 3x + 52 = 180$$

$$3x + 152 = 180$$

$$3x = 28$$

b) Find x

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



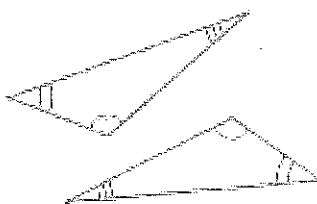
For #20-25, determine which postulate can be used to prove that the triangles are congruent. If it is not possible to prove the triangles are congruent, write *not possible*.

20.



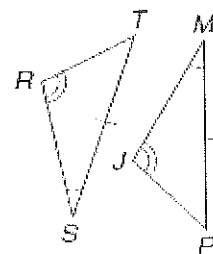
SSS

21.



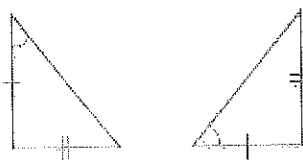
not possible

22.



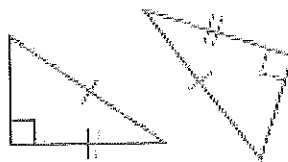
AAS

23.



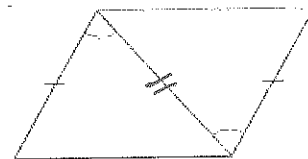
~~SSA~~
not possible

24.



HL

25.



SAS

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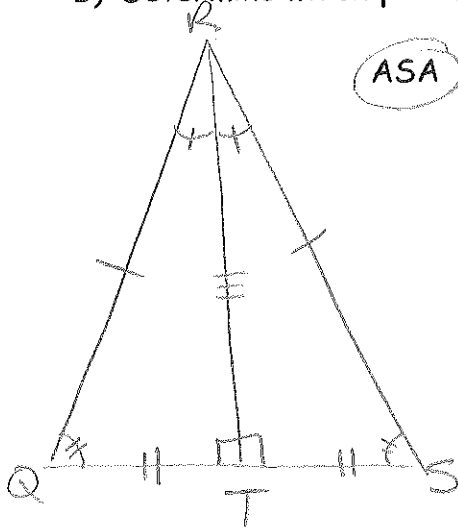
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26. $\triangle QRS$ is an isosceles triangle with $\overline{QR} \cong \overline{RS}$. \overline{RT} bisects $\angle QRS$ and \overline{QS} .

a) Draw and label the figure.

b) Determine which postulate(s) can be used to prove that $\triangle QRT \cong \triangle SRT$.



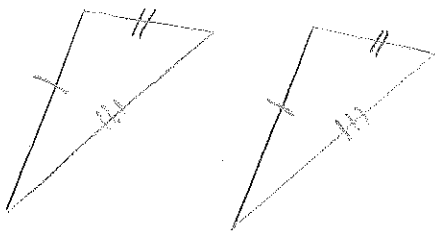
- ASA AAS SSS ~~AAA~~ HL ~~SSA~~ SAS

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

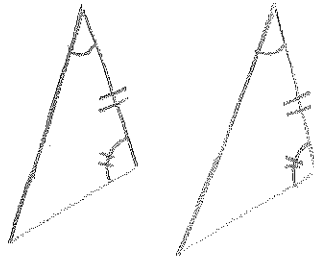
Corresponding parts of congruent triangles are congruent. Used to prove triangle congruence

For #28-32, draw and label two triangles that can be proven to be congruent using the specified postulate.

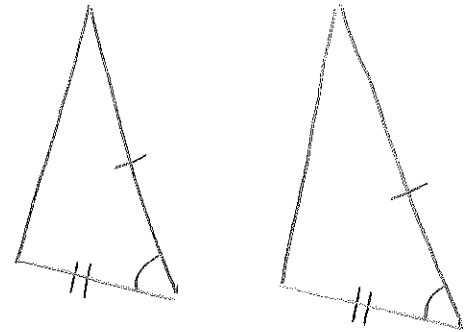
28. SSS



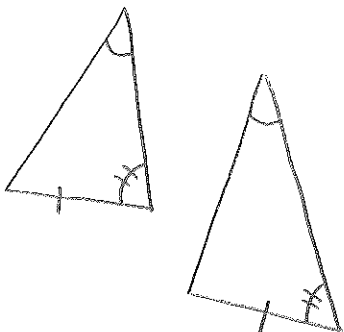
29. ASA



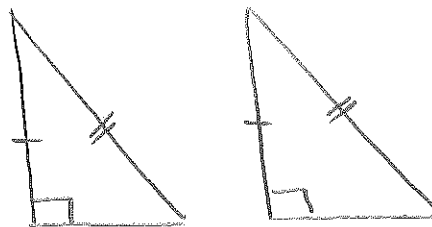
30. SAS



31. AAS



32. HL



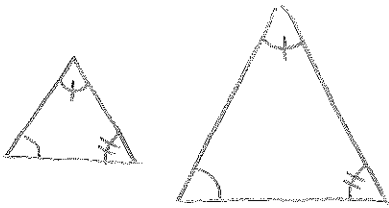
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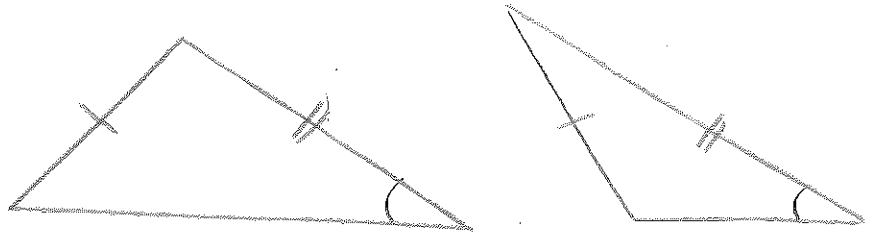
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For #33-34, draw and label two triangles that are a counterexample showing why the specified method cannot be used to prove congruence in triangles.

33. AAA



34. SSA



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

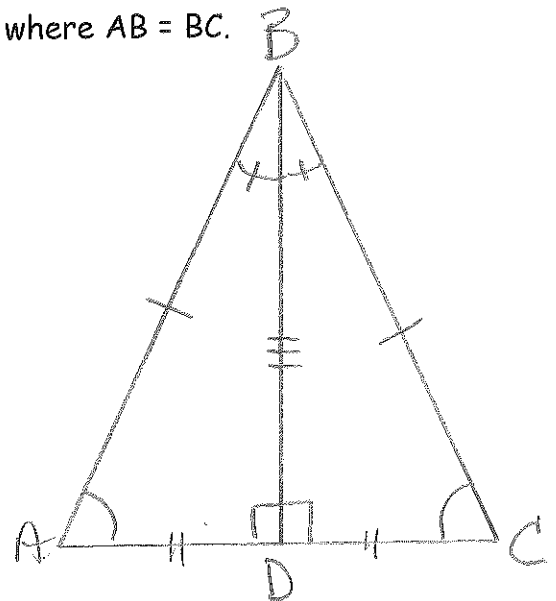
Using the triangle, do the following:

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/NO



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

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36. 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)

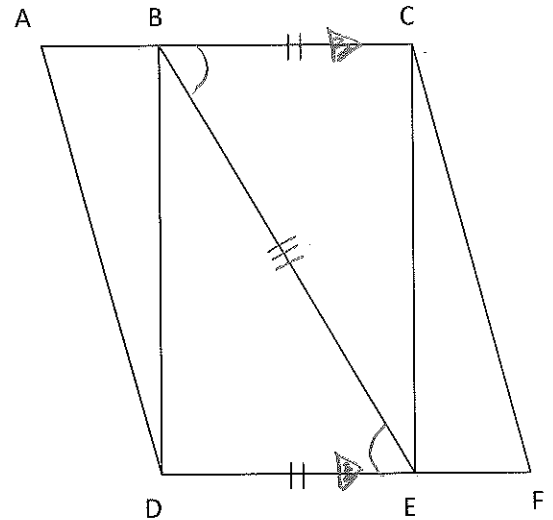
ASA AAS

SSS AAA

HL SSA

SAS

* Can not assume right angles! *



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

a) Classify $\triangle BGD$ by its sides

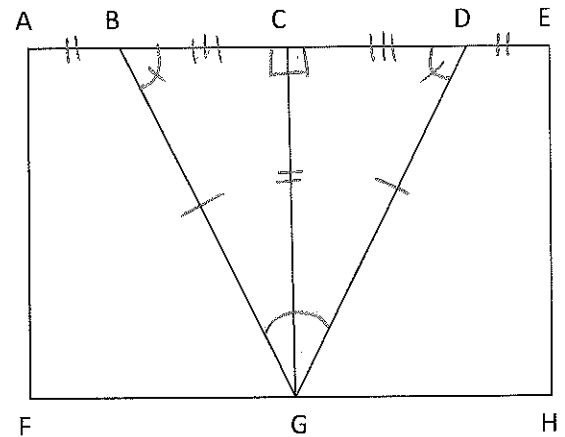
Isosceles

b) Mark all congruent sides and angles

c) Is the statement $\triangle BGC \cong \triangle DGC$ true? YES/NO

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

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



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38. $\triangle QRS$ has vertices $Q(5, 6)$, $R(-3, 2)$ and $S(1, -6)$

a) Find the measure of the sides of the triangle. Show all work.

$$QR = \frac{\sqrt{80}}{\quad} (8.94)$$

$$RS = \frac{\sqrt{80}}{\quad} (8.94)$$

$$SQ = \frac{\sqrt{160}}{\quad} (12.65)$$

$$QR: 8^2 + 4^2 = c^2$$

$$64 + 16 = c^2$$

$$80 = c^2$$

$$\sqrt{80} = c$$

$$RS: 8^2 + 4^2 = c^2$$

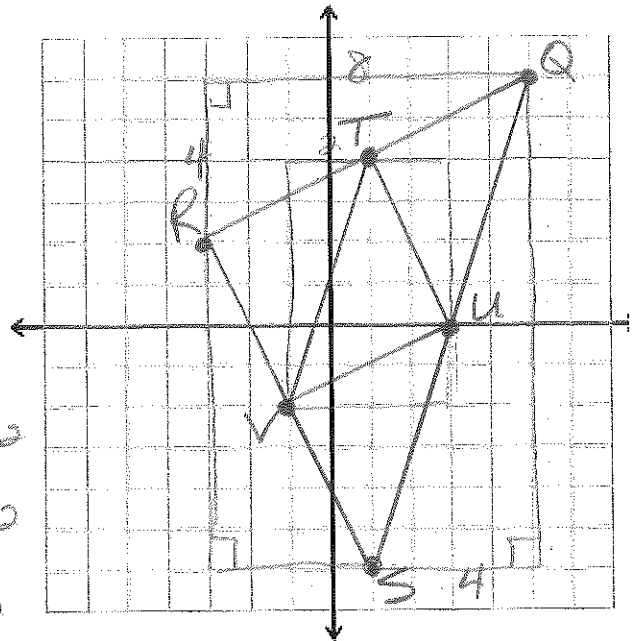
$$\sqrt{80} = c$$

$$QS: 4^2 + 12^2 = c^2$$

$$16 + 144 = c^2$$

$$160 = c^2$$

$$\sqrt{160} = c$$



b) Classify the triangle by its sides.

Classification: Isosceles

c) Find the midpoints of each side of the triangle

$$\text{Midpoint}_{QR}: \underline{(1, 4)}$$

$$\text{Midpt}_{QR}: \left(\frac{5+(-3)}{2}, \frac{6+2}{2} \right) \rightarrow (1, 4)$$

$$\text{Midpoint}_{RS}: \underline{(-1, -2)}$$

$$\text{Midpt}_{RS}: \left(\frac{-3+1}{2}, \frac{2+(-6)}{2} \right) \rightarrow (-1, -2)$$

$$\text{Midpoint}_{SQ}: \underline{(3, 0)}$$

$$\text{Midpt}_{SQ}: \left(\frac{5+1}{2}, \frac{6+(-6)}{2} \right) \rightarrow (3, 0)$$

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d) Draw the three lines connecting the midpoints of each side of $\triangle QRS$.
Label the new triangle TUV.

e) Find the measure of the sides of $\triangle TUV$. Show all work.

TU = $\frac{\sqrt{20}}{2}$ (4.47)

UV = $\frac{\sqrt{20}}{2}$ (4.47)

TV = $\frac{\sqrt{40}}{2}$ (6.32)

TU: $2^2 + 4^2 = c^2$

$4 + 16 = c^2$

$20 = c^2$

$\sqrt{20} = c$

UV: $2^2 + 4^2 = c^2$

$\sqrt{20} = c$

TV: $2^2 + 6^2 = c^2$

$4 + 36 = c^2$

$40 = c^2$

$\sqrt{40} = c$

f) Classify $\triangle TUV$ by its sides. Show all work to justify your answer.

Classification: Isosceles

39. Given: E is the midpoint of \overline{FD} and $\overline{CG} \perp \overline{FD}$

a) Mark the given information on the picture.

Make sure you mark ALL congruent angles and sides.

