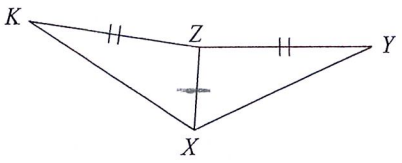
H Geometry - Unit 1C Name Huff

Review Test 3 - Congruent & Similar Triangles

Date_____

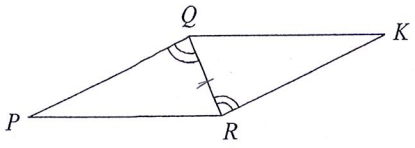
State what additional information is required in order to know that the triangles are congruent for the reason given.

1) SSS



Need $\overline{KX} \cong \overline{XY}$

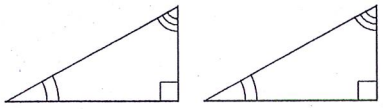
2) AAS



Need $\overline{QP} \cong \overline{RK}$

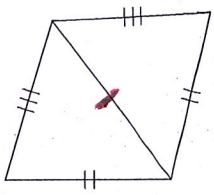
If the triangles can be shown congruent, state the rule that would show them so. If there's not enough information, then state that they're not congruent.

3)



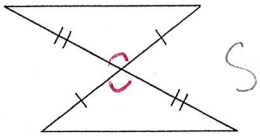
Not $\cong$

4)



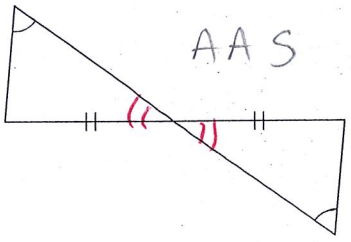
SSS

5)



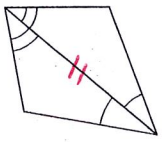
SAS

6)



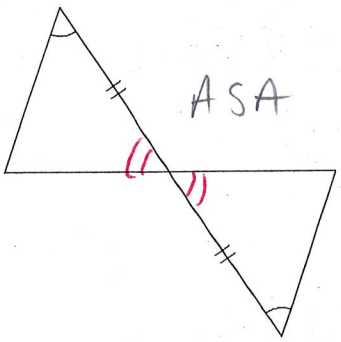
AAS

7)



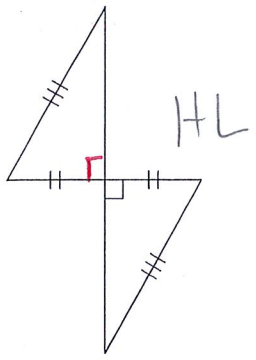
ASA

8)

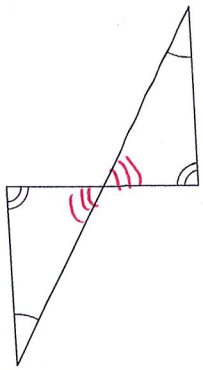


ASA

9)

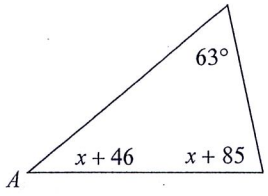


10)



Find the measure of angle A.

11)



$63+x+46+x+85=180$

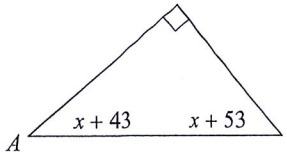
$2x+194=180$

$2x=-14$

$x=-7$

$\angle A=(-7)+46$ $=39°$

12)



$x+43+x+53=90$

$2x+96=90$

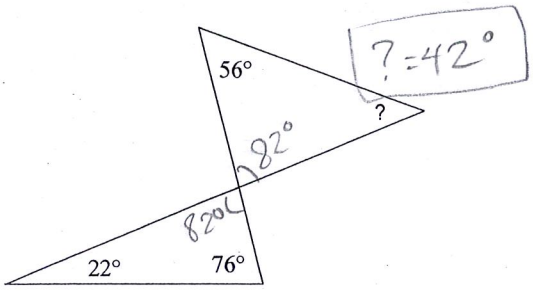
$2x=-6$

$x=-3$

$\angle A=(-3)+43$ $=40°$

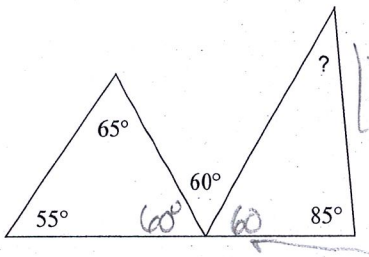
Find the measure of each angle indicated.

13)



$?=42°$

14)



$?=35°$

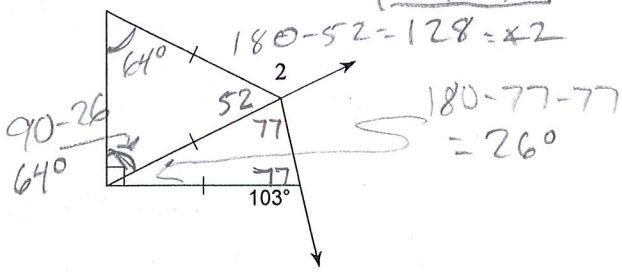
$180-60-60=60$

Using the Base Angles Theorem, find the value of *x*.

15) $m\angle 2 = 137 + x$

$128=137+x$

$-9=x$

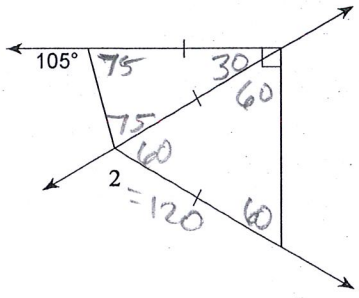


$180-52=128=x2$

$90-26=64°$

$180-77-77=26°$

16) $m\angle 2 = 13x + 3$



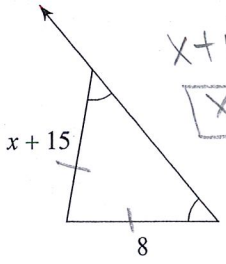
$=120$

$13x+3=120$

$13x=117$

$x=9$

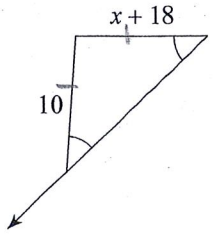
17)



$x+15=8$

$x=-7$

18)



$x+18=10$

$x=-8$

19. Make sure to memorize the special segments, points of concurrency and their diagrams.

Always/Sometimes/Never?

20. A triangle has 3 medians A

21. An obtuse triangle is congruent to an acute triangle. N

22. The base angles in an isosceles Δ are congruent. A

23. The centroid of a triangle is the same point as the circumcenter. S

24. A triangle's orthocenter is on the interior of the Δ. S

25. If $\Delta IPH \cong \Delta ONE$, then $\angle P \cong$ ∠N, and $\overline{NE} \cong$ $\overline{PH}$.

26. $\Delta CAT \cong \Delta DOG$. CA = 14cm. DO = $2x - 4$. Find x!

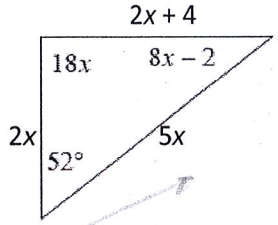
$\overline{CA} \cong \overline{DO}$

$14 = 2x - 4$

$18 = 2x$

$9 = x$

27. Find the perimeter of the Δ.



Use the xs to find x

$18x + 8x - 2 + 52 = 180$

$26x + 50 = 180$

$26x = 130$

$x = 5$

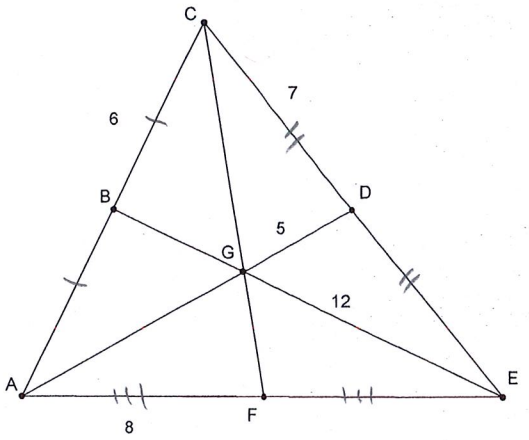
$P = 2x + 4 + 5x + 2x$

$= 2(5) + 4 + 5(5) + 2(5)$

$= 10 + 4 + 25 + 10$

$= 49$

28. Given that B, D, & F are midpoints, use the diagram at right to find the following lengths.



AB = 6

CE = 14

BG = $12/2 = 6$

AG = $5(2) = 10$

AD = $5(3) = 15$

Perimeter of ΔACE =

$2(6 + 7 + 8)$

$2(21)$

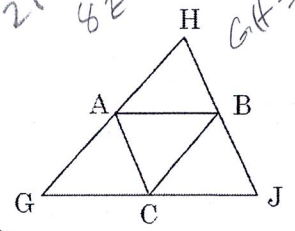
$= 42$

(29) Use ΔGHJ, where A, B, and C are midpoints of the sides.

23) If $AB = 3x + 8$ and $GJ = 2x + 24$, what is AB?

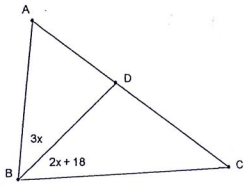
24) If $AC = 3y - 5$ and $HJ = 4y + 2$, what is HB?

25) If $GH = 7z - 1$ and $BC = 4z - 3$, what is GH?



$2(BC) = GH$
$2(4z-3) = 7z-1$
$8z-6 = 7z-1$
$z = 5$
$GH = 7(5)-1$
$= 34$

30. BD is an ∠bisector. Find the measure of ∠ABC.



$2(AB) = GJ$
$2(3x+18) = 2x+24$
$6x+16 = 2x+24$
$4x = 8$
$x = 2$
$AB = 3(2)+18$
$= 14$

$2(AC) = HJ$
$2(3y-5) = (4y+2)$
$6y-10 = 4y+2$
$2y = 12$
$y = 6$
$HJ = 4(6)+2 = 26$
$HB = 26/2 = 13$

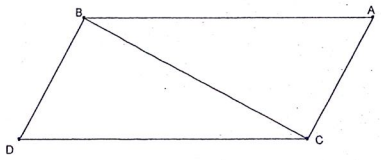
$3x = 2x+18$
$x = 18$
$\angle ABD = 3(18) = 54$
$\angle ABC = 2(54)$
$= 108°$

Proofs!

31.

Given: $\overline{AB} \cong \overline{DC}$, $\overline{DB} \cong \overline{AC}$

Prove: ~~ΔABD~~ ΔABC ≅ ΔDCB ← oops

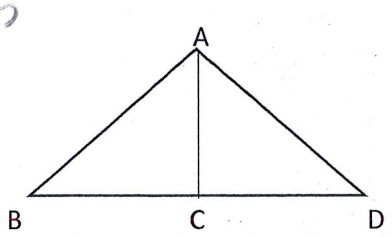


32.

Given: $\overline{AC}$ is a median, $\overline{AB} \cong \overline{AD}$

Prove: ∠B ≅ ∠D

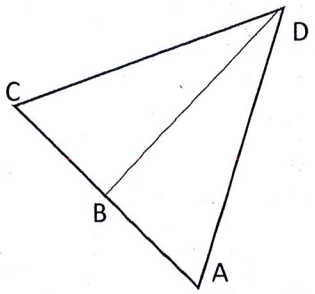
Scroll down for proofs



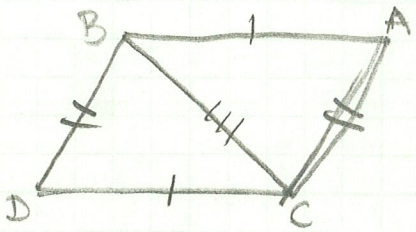
33. Given: ΔADC is isosceles with base $\overline{AC}$

$\overline{DB}$ is a median

Prove: $\overline{DB}$ is an ∠ bisector

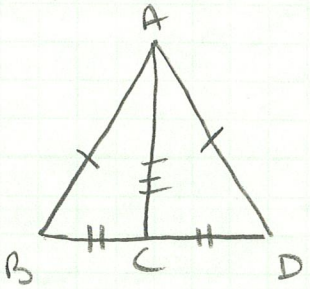


31.



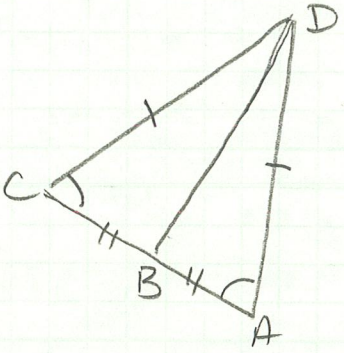
① $\overline{AB} \cong \overline{DC}$, $\overline{DB} \cong \overline{AC}$	① given
② $\overline{BC} \cong \overline{BC}$	② Reflx Prop
③ $\triangle ABC \cong \triangle DCB$	③ SSS (1,2)

32.



① $\overline{AC}$ is median, $\overline{AB} \cong \overline{AD}$	① given
② C midpt $\overline{BD}$	② Def. Median
③ $\overline{BC} \cong \overline{CD}$	③ Def. Midpt
④ $\overline{AC} \cong \overline{AC}$	④ Reflx.
⑤ $\triangle BCA \cong \triangle DCA$	⑤ SSS (1,3,4)
⑥ $\angle B \cong \angle D$	⑥ CPCTC

33.



① $\triangle ADC$ Isos. $\overline{DB}$ is median	① given
② $\overline{DC} \cong \overline{AD}$	② Def isos.
③ $\angle C \cong \angle A$	③ Base $\angle$s Thm
④ B midpt $\overline{AC}$	④ Def median
⑤ $\overline{BC} \cong \overline{AB}$	⑤ Def midpt
⑥ $\triangle DCB \cong \triangle DAB$	⑥ SAS (2,3,5)
⑦ $\angle CDB \cong \angle ADB$	⑦ CPCTC
⑧ $\overline{DB}$ is an $\angle$ Bis	⑧ Def. $\angle$ Bisector.

Can be done other ways you just need to prove the $\triangle$s $\cong$. I was trying to be creative. ☺