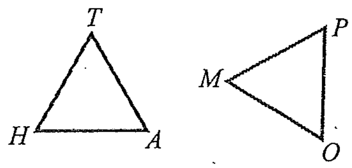
Geometry
Ch. 5 Lesson #7: Congruent Triangles Practice

Name: ______________________________
Period: _____

1. Given $\triangle HAT \cong \triangle MOP$ complete each congruence statement. Mark all congruent parts on $\triangle$'s
   a) $\angle A \cong$ $\angle O$
   b) $\overline{AT} \cong$ $\overline{OP}$
   c) $\overline{PM} \cong$ $\overline{TH}$

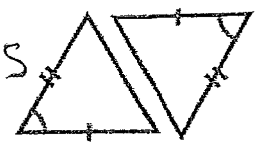


2. Circle the abbreviations that can be used to prove that two triangles are congruent.

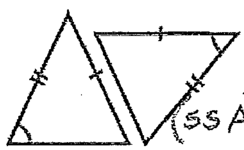
   SSS   AAA   SSA   SSS
   HL   AAS   ASA

3. Mark any sides congruent by the Reflexive Property of Congruence. Mark any angles congruent by the Vertical Angle Theorem. State whether these pairs of triangles must be congruent and if so by which property.

a) SAS



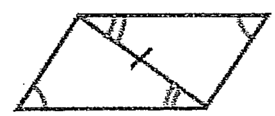
b)



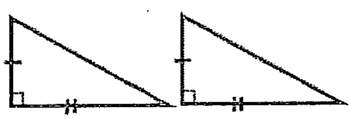
(SSA)
NO Conclusion

c) ASA

d) AAS

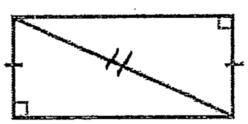


e)



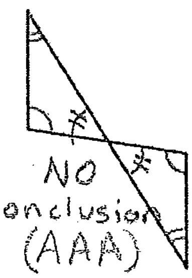
SAS

f)



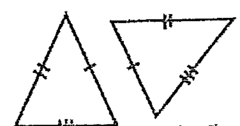
HL

g)



NO Conclusion (AAA)

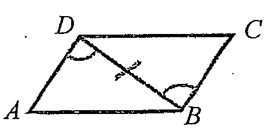
h)



SSS

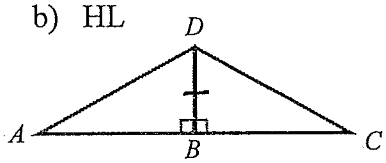
4. For each pair of triangles:
   a) Mark any sides congruent by the Reflexive Property of Congruence.
   b) Mark any angles congruent by the Vertical Angle Theorem
   c) Name one other pair of corresponding parts that must be congruent if the triangles are congruent ~~with~~ by the given property.

a) ASA



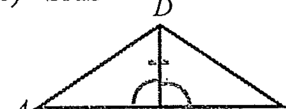
$\angle CDB \cong \angle ABD$

b) HL



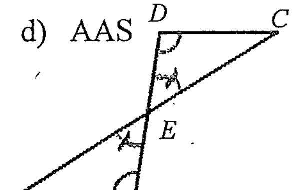
$\overline{AD} \cong \overline{CD}$

c) SAS



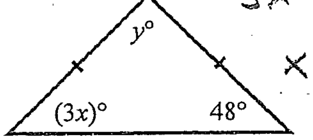
$\overline{AB} \cong \overline{CB}$

d) AAS



$\overline{AE} \cong \overline{CE}$ or $\overline{AB} \cong \overline{CD}$

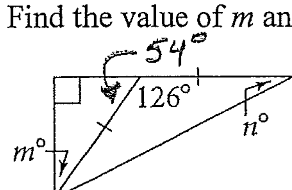
5. Find the value of x and y.



$3x = 48$
$x = 16$

$y = 180 - (48 \cdot 2)$
$y = 180 - 96$
$y = 84$

6. Find the value of m and n.

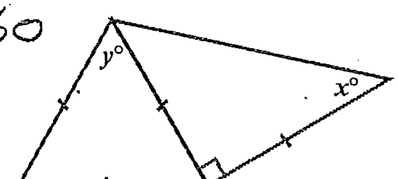


$n = \dfrac{180 - 126}{2} = 27$

$m = 180 - (90 + 54)$
$m = 36$

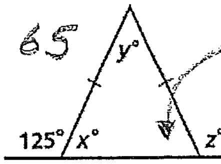
7. Find the value of x and y.

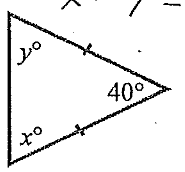
$y = 60$

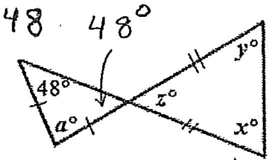


$x = \dfrac{180 - 90}{2} = 45$

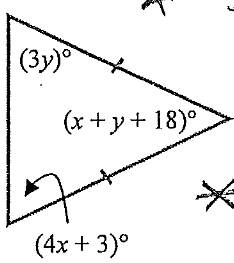
8. Find the value of x and y.	9. Find the value of x and y.	10. Find the value of x, y and z.
$x = 180 - 125$ $x = 65$ $65°$ $z = 180 - 65$ $z = 125$ $y = 180 - (65 \cdot 2)$ $y = 50$	$x = y = \frac{180 - 40}{2}$ $x = y = 70$	$z = 48$ $48°$ $y = x = \frac{180 - 48}{2}$ $a = 180 - (48 \cdot 2)$ $a = 84$ $x = y = 66$







11. Use the Triangle Sum Theorem (the angles in a △ add up to 180°) and the Isosceles Triangle Theorem to write and solve a system of equations to find x and y.



$3y + 4x + 3 + x + y + 18 = 180$

$5x + 4y + 21 = 180$

$5x + 4y = 159 \xrightarrow{(3)} 15x + 12y = 477$

$4x + 3 = 3y$

$4x - 3y = -3 \xrightarrow{(4)} 16x - 12y = -12$

$31x = 465$

$x = 15$

$4(15) - 3y = -3$

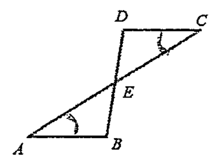
$60 - 3y = -3$

$-3y = -63$

$y = 21$

$(15, 21)$

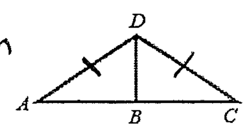
12. In the figure at right $\triangle ABE \cong \triangle CDE$. Describe how you know that $\overline{DC} \parallel \overline{AB}$.



$\angle A \cong \angle C$

$\overline{DC} \parallel \overline{AB}$ because Alternate Interior Angles are congruent

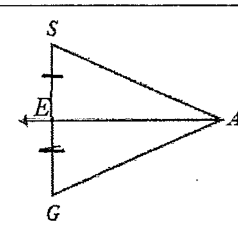
13. In the figure at right $\triangle ABD \cong$ ~~△DBC~~ △CBD. Describe you know that $\triangle ADC$ is isosceles.



$\overline{AD} \cong \overline{CD}$

△ADC is Isoseles because Isosceles △ Theorem (2 sides are ≅)

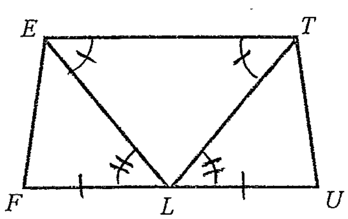
14. In the figure at right $\triangle SAE \cong \triangle GAE$. Describe you know that E is the midpoint of $\overline{SG}$.



$\overline{SE} \cong \overline{GE}$

E is midpoint of $\overline{SG}$ because The definition of midpoint (divides a segment into 2 congruent segments,)

15. **Given:** $\angle LET \cong \angle LTE$; L is the midpoint of $\overline{UF}$; $\angle ELF \cong \angle ULT$
Prove: $\triangle FEL \cong \triangle UTL$



Statements	Reasons
$\angle LET \cong \angle LTE$	Given
$\overline{EL} \cong \overline{TL}$	Isosceles △ theorem
L is midpt. of $\overline{UF}$	Given
$\overline{FL} \cong \overline{UL}$	def. of midpoint
$\angle ELF \cong \angle ULT$	Given
$\triangle FEL \cong \triangle UTL$	SAS