Geometry

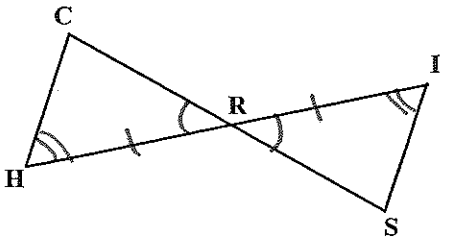
Name: KEY

Congruent Triangle Homework

Period: _____ Date: _____

1. $\angle H \cong \angle I$

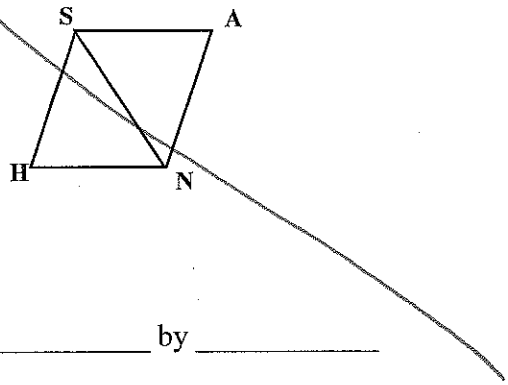
R is a midpoint of $\overline{HI}$



$\Delta CHR \cong \Delta$ SIR by ASA

2. $\overline{SN} \parallel \overline{HA}$

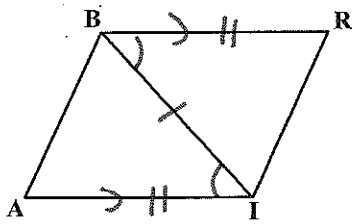
$\angle HSA \cong \angle NAS$



$\Delta SHA \cong \Delta$ _____ by _____

3. $\overline{BR} \parallel \overline{AI}$

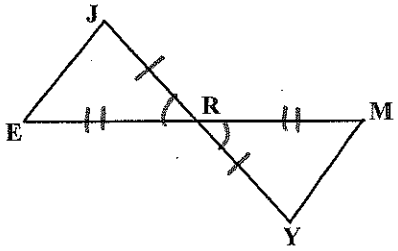
$\overline{BR} \cong \overline{AI}$



$\Delta BRI \cong \Delta$ IAB by SAS

4. R is a midpoint of $\overline{JY}$

R is a midpoint of $\overline{EM}$



$\Delta JER \cong \Delta$ YMR by SAS

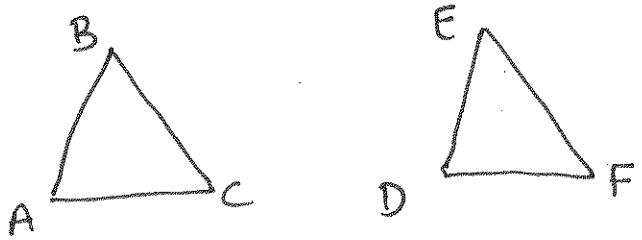
5. Which of the following sets of information does not allow you to conclude that $\Delta ABC \cong \Delta DEF$?

A) $\overline{AB} \cong \overline{DE}$, $\overline{BC} \cong \overline{EF}$, $\angle B \cong \angle E$

B) $\overline{AC} \cong \overline{DF}$, $\overline{BC} \cong \overline{EF}$, $\overline{BA} \cong \overline{DE}$

C) $\overline{AB} \cong \overline{DF}$, $\overline{AC} \cong \overline{DE}$, $\angle C \cong \angle E$

D) $\overline{AB} \cong \overline{DE}$, $\overline{AC} \cong \overline{DF}$, $\angle A \cong \angle D$

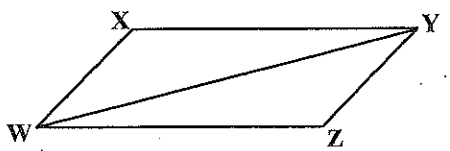


6. Use the diagram to name the included angle between the given pair of sides.

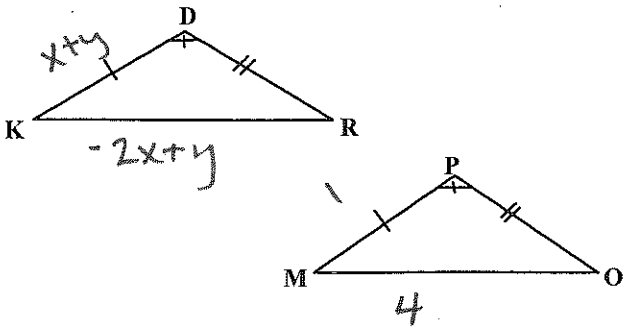
A) $\overline{XY}$ and $\overline{YW}$ is $\angle$ XYW

B) $\overline{ZW}$ and $\overline{YW}$ is $\angle$ ZWY

C) $\overline{WZ}$ and $\overline{ZY}$ is $\angle$ WZY



7.



$\Delta KDR \cong \Delta$ MPO by SAS.

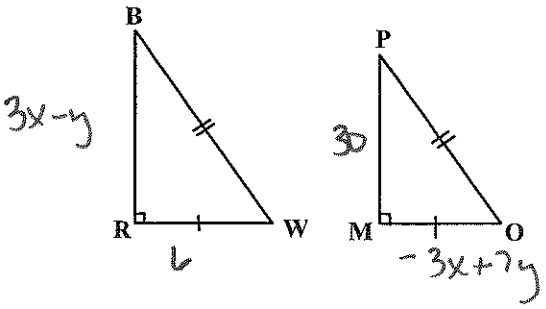
Given: $\overline{KD} = x + y$, $\overline{KR} = -2x + y$, $\overline{MP} = 1$, $\overline{MO} = 4$

$x =$ -1 $y =$ 2

$x+y=1$
$y=1-x$
$y=2$

$-2x+y=4$
$-2x+1-x=4$
$-3x+1=4$
$+3 = -3x$
$x=-1$

8.



$\Delta RBW \cong \Delta$ MPD by HL.

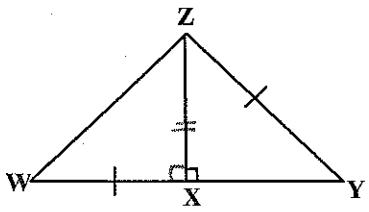
Given: $\overline{RB} = 3x - y$, $\overline{RW} = 6$, $\overline{MP} = 30$, $\overline{MO} = -3x + 7y$

$x =$ 12 $y =$ 6

$3x-y=30$
$3x-30=y$
$6=y$

$6=-3x+7y$
$6=-3x+7(3x-30)$
$6=-3x+21x-210$
$216=18x$
$x=12$

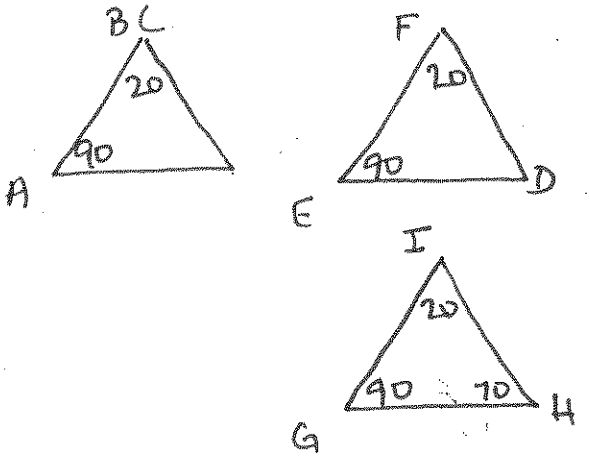
9. Decide whether enough information is given to prove that the triangles are congruent using SAS Congruence Postulate. If not, state the missing information.



yes

10. Suppose $\Delta ABC \cong \Delta EFD$, $\Delta EFD \cong \Delta GIH$, $m\angle A = 90°$, and $m\angle F = 20°$. What is $m\angle H$?

$x=12$

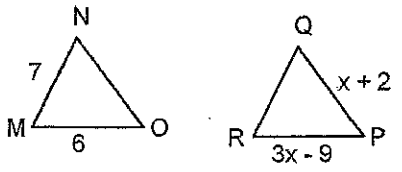


$\angle H = 70$

Extra Review: Congruent Triangles Name KEY

Show that the triangles are congruent for the given value of the variable.

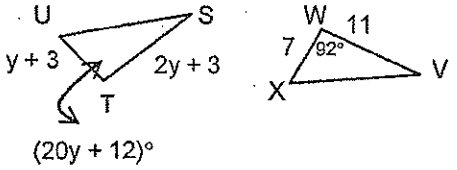
1. $\Delta MNO \cong \Delta PQR$, Solve for x



$7 = x + 2$

$x = 5$

2. $\Delta STU \cong \Delta VWX$, Solve for y.



$20y + 12 = 92$

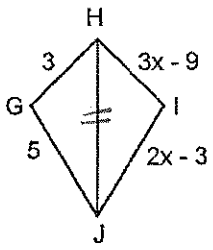
$20y = 80$

$y = 4$

OR $y + 3 = 7$

$y = 4$

3. Show that $\Delta GHJ \cong \Delta IHJ$, Solve for x



$3 = 3x - 9$

$12 = 3x$

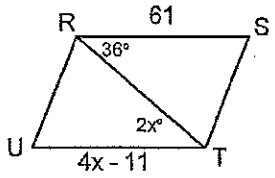
$4 = x$

$5 = 2x - 3$

$8 = 2x$

$4 = x$

4. $\Delta RST \cong \Delta TUR$, Solve for x

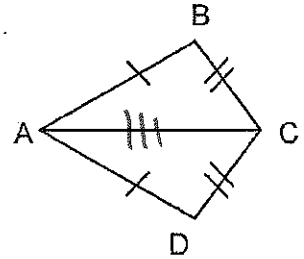


$36 = 2x$

$18 = x$

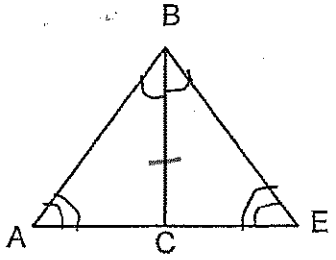
Complete the congruence statement by deciding which triangle is congruent to ΔABC. Then state the conjecture used (either SSS, SAS, ASA, AAS, HL, HA, LL, or LA).

5.



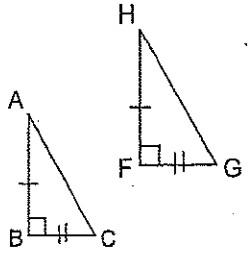
$\Delta ABC \cong \Delta$ ADC by SSS

6.



$\Delta ABC \cong \Delta$ EBC by AAS

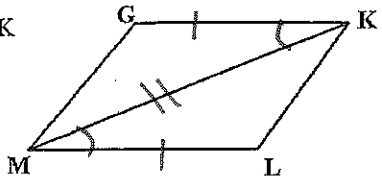
7.



$\Delta ABC \cong \Delta$ HFG by LL

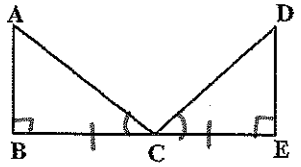
8. $\Delta GKM \cong \Delta$ LMK by SAS

$\angle GKM \cong \angle LMK$
$GK \cong ML$



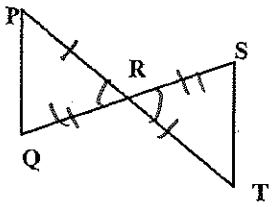
9. $\Delta ABC \cong \Delta$ DEC by LA

$AB \perp BE$ & $DE \perp BE$
C is midpoint of BE
$\angle ACB \cong \angle ECD$



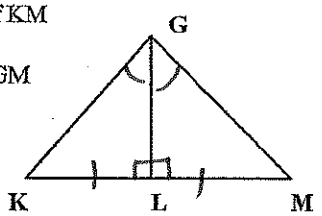
10. $\Delta PRQ \cong \Delta$ TRS by SAS

R is midpoint of
Both PT and QS



11. $\Delta KLG \cong \Delta$ MLG by LA

L is midpoint of KM
$GL \perp KM$
GL bisects $\angle KGM$

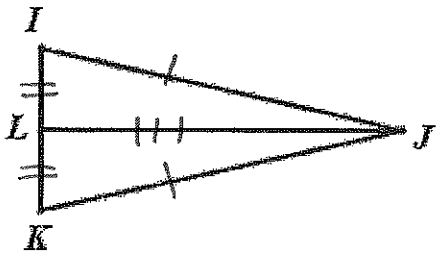


Complete the Two-Column Proof.

12.

GIVEN: $\overline{IJ} \cong \overline{KJ}$; $\overline{IL} \cong \overline{KL}$

PROVE: $\angle I \cong \angle K$

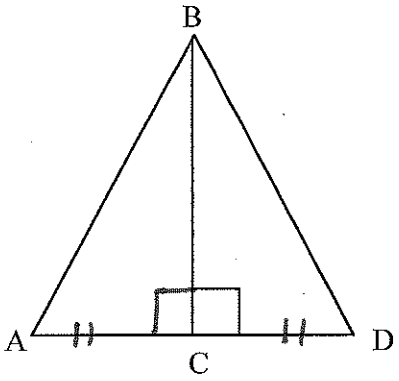


STATEMENTS	REASONS
1) $\overline{IJ} \cong \overline{KJ}$	1) Given
2) $\overline{IL} \cong \overline{KL}$	2) Given
3) $\overline{LJ} \cong \overline{LJ}$	3) Reflexive Property
4) Δ IJL $\cong \Delta$ KJL	4) SSS
5) $\angle I \cong \angle K$	5) CPCTC

Name: _____ Date: _____

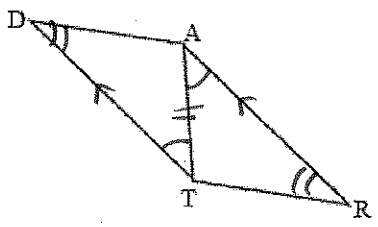
Proofs Worksheet

1.) Let $\Delta ABC \cong \Delta DBC$. Suppose $m\angle ACB = 90°$. Prove BC is the perpendicular bisector of ΔADB.



Statement	Proof
$\Delta ABC \cong \Delta DBC$ $m\angle ~~ABC~~ ACB = 90°$	Given
$\angle ACB + \angle DCB = 180°$	Definition of Linear Pair
$\overline{BC} \cong \overline{BC}$	Reflexive Property
$\overline{AC} \cong \overline{CD}$	CPCTC
BC is the perpendicular bisector of $\overline{AB}$	Definition of $\perp$ bisector

2.)

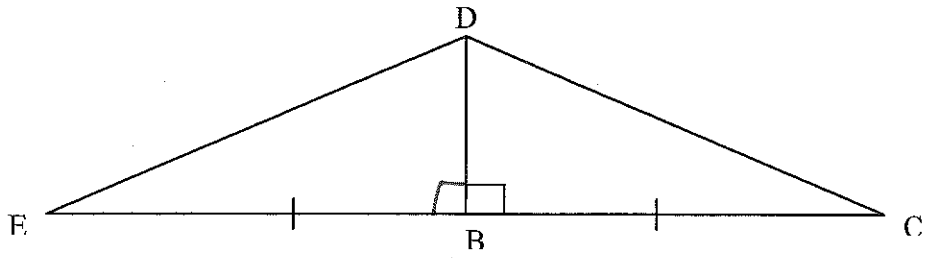


Given:
$DT \parallel AR$
$\angle D \cong \angle R$
Prove: $\overline{DA} \cong \overline{TR}$

Statement	Proof
DT // AR	Given
$\angle D \cong \angle R$	~~Definition of Linear Pair~~ Given
$\angle RAT \cong \angle DTA$	Alternate Interior Angles
$\overline{TA} \cong \overline{AT}$	Reflexive Property
$\Delta DTA \cong \Delta RAT$	By AAS
$\overline{DA} \cong \overline{TR}$	CPCTC

Name: _____ Date: _____

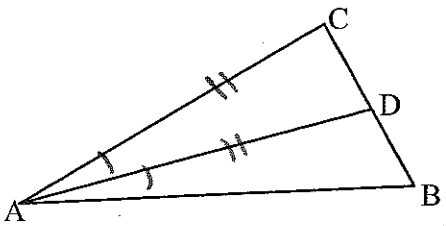
3.) Let segment DB be the perpendicular bisector of ΔCDE.



Show $\overline{ED} \cong \overline{CD}$.

Statement	Proof
$\overline{EB} \cong \overline{BC}$	Definition of segment Bisector
$\angle DBE = 90$	Definition of Perpendicular
$\overline{DB} \cong \overline{DB}$	Reflexive Property
$\Delta EBD \cong \Delta CBD$	By SAS
$\overline{ED} \cong \overline{CD}$	CPCTC

4.) Let segment AD be the angle bisector of ∠CAB



Show ΔCAD ≅ ΔDAB if and only if ΔABC is isosceles. Write a paragraph proof.

By definition of isosceles, then $\overline{AB} \cong \overline{AC}$.

Furthermore, $\angle CAD \cong \angle BAD$, *by* def. of ∠ bisector. *By the reflexive property of congruence,* $\overline{AD} \cong \overline{AD}$.

Therefore, $\Delta CAD \cong \Delta BAD$ *by SAS Theorem.*

Now suppose ΔCAD ≅ ΔDAB. Then ΔABC is isosceles, by _____.