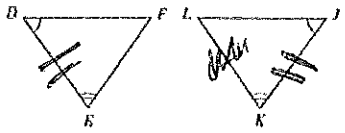
Station 1 Chapter 4 review **(4.1-4.3, 4.6)** Name ANSW.

1. Label and state what additional information the triangles need to be congruent for the given reason. Then, complete the triangle congruence statements.

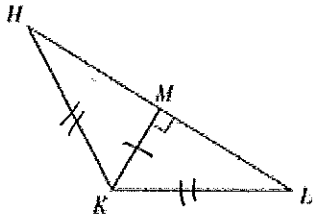
a. **ASA**



$\overline{DE} \cong \overline{JK}$

$\Delta DFE \cong \Delta$ JLK

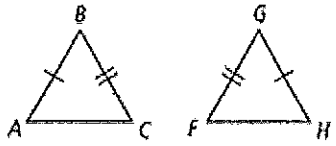
b. **HL**



$\overline{HK} \cong \overline{LK}$

$\Delta HMK \cong \Delta$ LMK

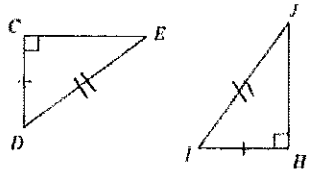
c. **SSS**



$\overline{AC} \cong \overline{HF}$

$\Delta ABC \cong \Delta$ HGF

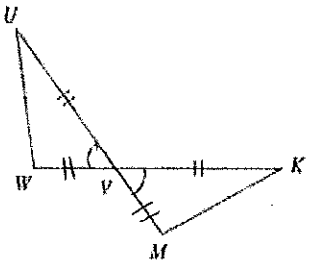
d. **HL**



$\overline{DE} \cong \overline{IJ}$

$\Delta CDE \cong \Delta$ HIJ

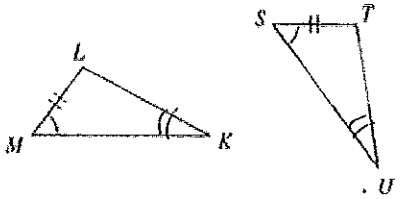
e. **SAS**



$\overline{WV} \cong \overline{MV}$

$\Delta UWV \cong \Delta$ KMV

f. **AAS**

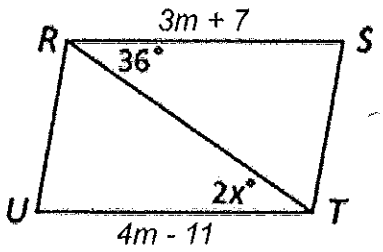


$\angle K \cong \angle U$

$\Delta MLK \cong \Delta$ STU

2. Find the values of the missing variables, given the following triangle congruence statements.

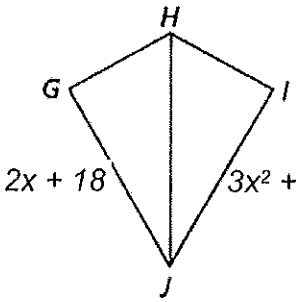
a. $\Delta RST \cong \Delta TUR$



$3m + 7 = 4m - 11$
$-3m \quad +11 \quad -3m \quad +11$
$18 = m$

$2x = 36$
$x = 18°$

b. $\Delta GHJ \cong \Delta IHJ$



$2x + 18 = 3x^2 + 2$
$-2x \quad -18 \quad -2x - 18$
$0 = 3x^2 - 2x - 16$

×	$3x^2$	$-8x$
2	$6x$	-16

$48x^2$
$6x \quad -8x$
$-2x$

$3x - 8$

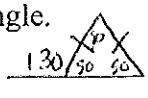
$x + 2 = 0$
$x = -2$

$(x+2)(3x-8) = 0$

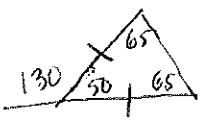
$3x - 8 = 0$
$3x = 8$
$x = 8/3$

$x = -2 \quad x = 8/3$

3. An exterior angle of an isosceles triangle has the measure 130 degrees. Find two possible sets of measures for the three angles of the triangle.



50°, 50°, 80°



50°, 65°, 65°

Go to next page

(scroll down for more "Stations" answers)

Station 2

Name ANSWERS Class _____ Date _____

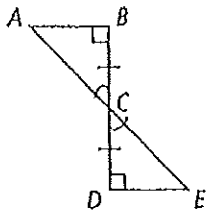
4-4 Practice (continued) Form G

Using Corresponding Parts of Congruent Triangles

5. Complete the proof.

Given: $\overline{BD} \perp \overline{AB}$, $\overline{BD} \perp \overline{DE}$, $\overline{BC} \cong \overline{DC}$

Prove: $\angle A \cong \angle E$

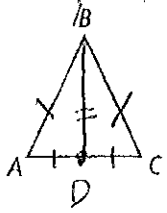


Statements	Reasons
1) $\overline{BD} \perp \overline{AB}$, $\overline{BD} \perp \overline{DE}$	1) ? Given
2) $\angle CDE$ and $\angle CBA$ are right angles.	2) Definition of right angles
3) $\angle CDE \cong \angle CBA$	3) ? Right ∠'s Thm
4) ? $\angle ACB \cong \angle ECD$	4) Vertical angles are congruent.
5) $\overline{BC} \cong \overline{DC}$	5) ? Given
6) ? $\triangle ACB \cong \triangle ECD$	6) ? ASA
7) $\angle A \cong \angle E$	7) ? Corresp. parts of $\cong \triangle$'s are $\cong$

6. **Construction** Use a construction to prove that the two base angles of an isosceles triangle are congruent.

Given: Isosceles $\triangle ABC$ with base $\overline{AC}$

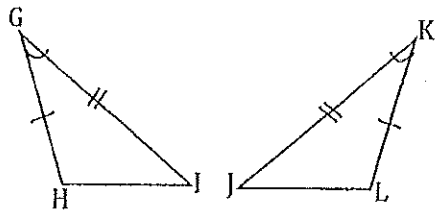
Prove: $\angle A \cong \angle C$



Statements	Reasons
1) $\triangle ABC$ is isosceles.	1) ? Given
2) $\overline{AB} \cong \overline{CB}$	2) Definition of isosceles triangle.
3) Construct the midpoint of $\overline{AC}$ and call it D. Construct $\overline{DB}$.	3) Construction
4) ? $\overline{AD} \cong \overline{CD}$	4) Definition of midpoint
5) $\overline{BD} \cong \overline{BD}$	5) ? Reflexive
6) $\triangle ABD \cong \triangle CBD$	6) ? SSS
7) ? $\angle A \cong \angle C$	7) ? CPCTC

Fill in the missing information in each proof.

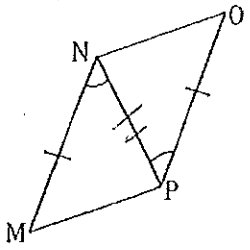
4. Given: $\overline{GH}\cong\overline{KL}$, $\angle G\cong\angle K$, and $\overline{GI}\cong\overline{KJ}$



Prove: $\overline{HI}\cong\overline{LJ}$

Statements	Reasons
1. $\overline{GH}\cong\overline{KL}$	1. Given
2. $\angle G\cong\angle K$	2. Given
3. $\overline{GI}\cong\overline{KJ}$	3. Given
4. $\triangle GHI\cong\triangle KLJ$	4. SAS
5. $\overline{HI}\cong\overline{LJ}$	5. Corr. pts. $\cong$ Δs $\cong$ (CPCTC)

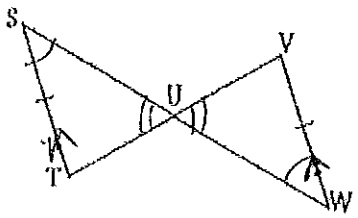
5. Given: $\angle MNP\cong\angle OPN$, and $\overline{MN}\cong\overline{OP}$



Prove: $\overline{MP}\cong\overline{NO}$

Statements	Reasons
1. $\angle MNP\cong\angle OPN$	1. Given
2. $\overline{MN}\cong\overline{OP}$	2. Given
3. $\overline{NP}\cong\overline{NP}$	3. Reflexive
4. $\triangle MNP\cong\triangle OPN$	4. SAS
5. $\overline{MP}\cong\overline{NO}$	5. CPCTC

6. Given: $\overline{ST}\|\overline{WV}$, and $\overline{ST}\cong\overline{VW}$

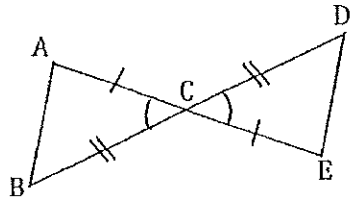


Prove: $\overline{SU}\cong\angle WU$

Statements	Reasons
1. $\overline{ST}\|\|\overline{WV}$	1. Given
2. $\overline{ST}\cong\overline{VW}$	2. Given
3. $\angle S\cong\angle W$	3. Alternate Interior $\angle$ Thm
4. $\angle SUT\cong\angle WUV$	4. Vert. $\angle$ Thm
5. $\triangle SUT\cong\triangle WUV$	5. AAS
6. $\overline{SU}\cong\overline{WU}$	6. Corr. pts. $\cong$ Δs $\cong$ (CPCTC)

(or $\angle T\cong\angle V$)

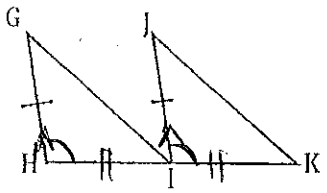
7. Given: $\overline{AC}\cong\overline{CE}$, $\overline{DC}\cong\overline{BC}$



Prove: $\angle B\cong\angle D$

Statements	Reasons
1. $\overline{AC}\cong\overline{CE}$	1. Given
2. $\overline{DC}\cong\overline{BC}$	2. Given
3. $\angle ACB\cong\angle DCE$	3. Vert. $\angle$ Thm
4. $\triangle ABC\cong\triangle DEF$	4. SAS
5. $\angle B\cong\angle D$	5. Corr. pts. $\cong$ Δs $\cong$ (CPCTC)

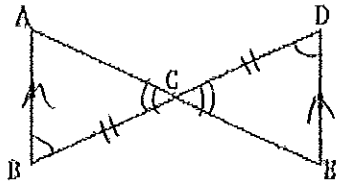
8. Given: $\overline{GH}\|\overline{JI}$, I is the midpoint of $\overline{HK}$ and $\overline{GH}\cong\overline{JI}$



Prove: $\angle G\cong\angle J$

Statements	Reasons
1. $\overline{GH}\|\|\overline{JI}$	1. Given
2. I is the midpoint of $\overline{HK}$	2. Given
3. $\overline{GH}\cong\overline{JI}$	3. Given
4. $\overline{HI}\cong\overline{IK}$	4. Defn. midpt
5. $\angle H\cong\angle JIK$	5. Corresponding $\angle$ Thm
6. $\triangle GHI\cong\triangle JIK$	6. SAS
7. $\angle G\cong\angle J$	7. Corr. pts. $\cong$ Δs $\cong$ (CPCTC)

9. Given: $\overline{AB}\|\overline{DE}$, $\overline{AE}$ bisects $\overline{BD}$



Prove: $\overline{AC}\cong\overline{EC}$

Statements	Reasons
1. $\overline{AB}\|\|\overline{DE}$	1. Given
2. $\overline{AE}$ bisects $\overline{BD}$	2. Given
3. $\angle ABC\cong\angle EDC$	3. Alt. int. $\angle$ Thm
4. $\angle ACB\cong\angle DCE$	4. Vert. $\angle$ Thm
5. $\overline{BC}\cong\overline{DC}$	5. Def of Bisect
6. $\triangle ABC\cong\triangle EDC$	6. ASA
7. $\overline{AC}\cong\overline{EC}$	7. Corr. pts. $\cong$ Δs $\cong$ (CPCTC)

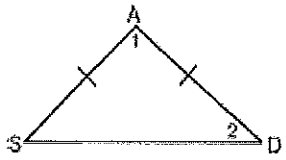
~~10. Given: PM\|\|NO, MN\|\|PO,~~

Station 3

Name ANSWERS

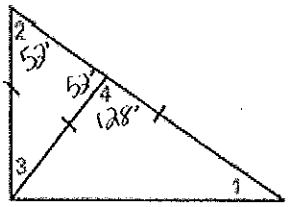
Isosceles Triangle Practice

1)



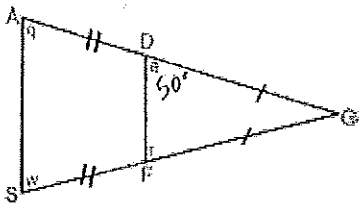
m<1 = 45°
m<2 = 67.5°

2)



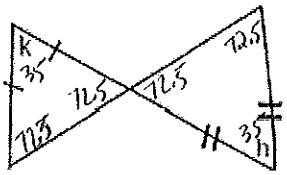
m<2 = 52°
m<3 = 76° m<4 = 128°
m<1 = 26°

3)



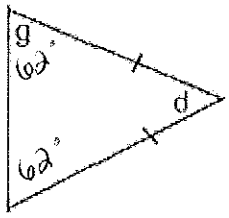
e = 50°
r = 80° q = 50° w = 50°

4)



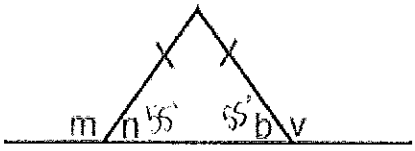
k = 35°
h = 35°

5)



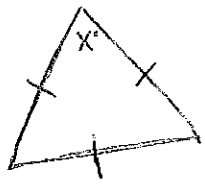
g = 62°
d = 56°

6)



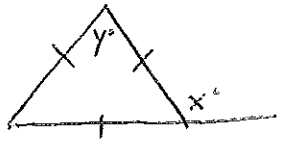
n = 55°
b = ~~125°~~ 55° m = 125° v = 125°

11)



x = 60°

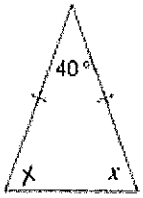
12)



x = _____

y = _____

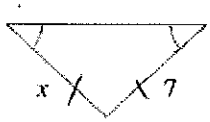
7)



2x + 40 = 180

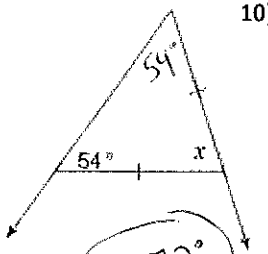
x = 70°

8)



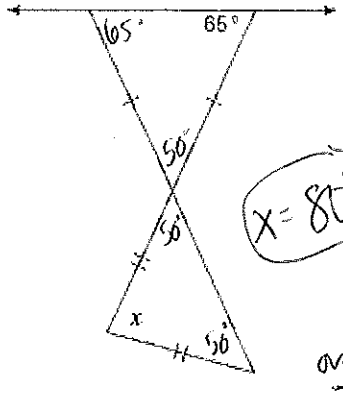
x = 7

9)



x = 72°

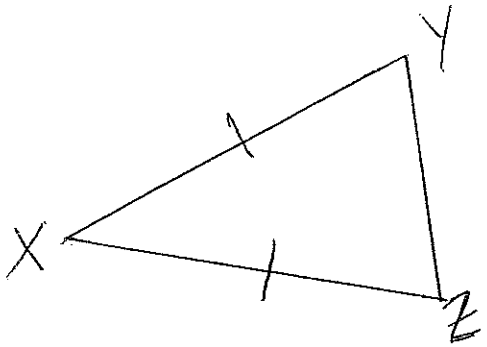
10)



x = 80°

over →

VOCABULARY

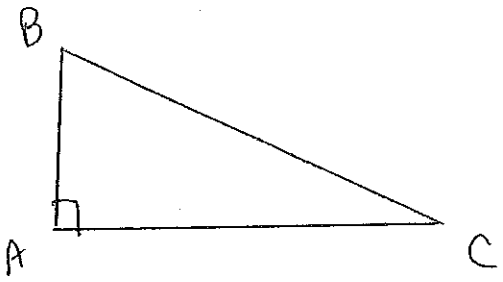


vertex angle $\angle X$

base $\overline{ZY}$

base angles $\angle Z$ and $\angle Y$

legs $\overline{XY}$ and $\overline{XZ}$



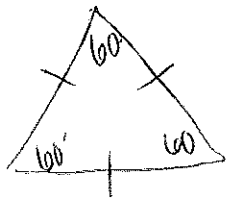
hypotenuse $\overline{BC}$

legs $\overline{BA}$ and $\overline{CA}$

$\triangle XYZ$ is a isosceles triangle.

$\triangle ABC$ is a right triangle

Draw and label an equilateral triangle.

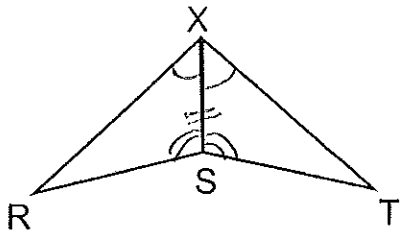


Station **4** Chapter 4 review **PROOFS** Name ANSWERS

1.

a. Given: $\overline{XS}$ bisects $\angle RXT$, $\angle RSX \cong \angle TSX$

Prove: $\Delta RSX \cong \Delta TSX$

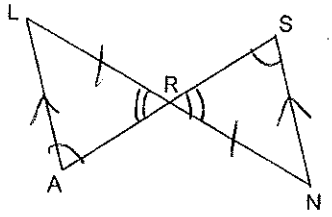


Statements	Reasons
1. $\overline{XS}$ bisects $\angle RXT$, $\angle RSX \cong \angle TSX$	1. Given
2. $\angle RXS \cong \angle TXS$	2. Defn. bisect
3. $\overline{XS} \cong \overline{XS}$	3. Reflexive Property
4. $\Delta RSX \cong \Delta TSX$	4. ASA

2.

Given: $\overline{LA} \parallel \overline{SN}$, $\overline{LR} \cong \overline{NR}$ b.

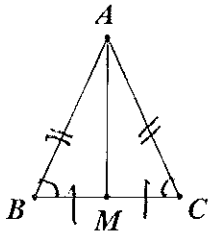
Prove: $\Delta LAR \cong \Delta NSR$



Statements	Reasons
1. $\overline{LA} \parallel \overline{SN}$	1. Given
2. $\angle S$ and $\angle A$ are alternate interior angles	2. Defn. alt. int. $\angle$s
3. $\angle S \cong \angle A$	3. Alt. int $\angle$ Thm
4. $\angle LRA$ and $\angle NRS$ are vertical angles	4. Defn. Vert. $\angle$s
5. $\angle LRA \cong \angle NRS$	5. Vertical Angles Theorem
6. $\overline{LR} \cong \overline{NR}$	6. Given
7. $\Delta LAR \cong \Delta NSR$	7. AAS

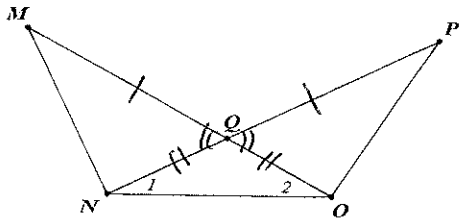
4.5 Isosceles Triangle PROOFS

3. Given: $\overline{AB} \cong \overline{AC}, M$ is the midpoint of $\overline{BC}$
Prove: $\overline{AM}$ bisects $\angle BAC$



Statements	Reasons
1. M is the midpoint of $\overline{BC}$	1. Given
2. $\overline{BM} \cong \overline{CM}$	2. Definition of midpoint
3. $\overline{AB} \cong \overline{AC}$	3. Given
4. $\angle B \cong \angle C$	4. Isosceles Triangle theorem
5. $\Delta BAM \cong \Delta CAM$	5. SAS
6. $\angle BAM \cong \angle CAM$	6. Corresponding parts of congruent triangles are congruent
7. $\overline{AM}$ bis. $\angle BAC$	7. Definition of bisect

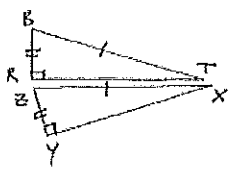
4. Given: $\overline{MQ} \cong \overline{PQ}, \angle 1 \cong \angle 2$
Prove: $\overline{MN} \cong \overline{PO}$



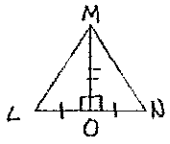
Statements	Reasons
1. $\overline{MQ} \cong \overline{PQ}, \angle 1 \cong \angle 2$	1. Given
2. $\overline{QN} \cong \overline{QO}$	2. Converse of Isos. Δ Thm
3. $\angle MQN \cong \angle PQO$	3. Vertical angles theorem
4. $\Delta MQN \cong \Delta PQO$	4. SAS
5. $\overline{MN} \cong \overline{PO}$	5. CPCTC (Corresp. parts of $\cong$ Δs are $\cong$)

Geometry: 4.6 HL Theorem Worksheet Name: ANSWERS Period: _____

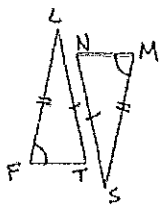
1.) Are the triangles congruent? If they are, give a reason. (SSS, SAS, ASA, AAS, or HL Theorem)

a) 

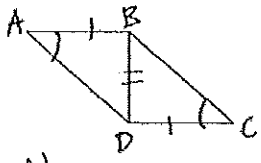
HL

b) 

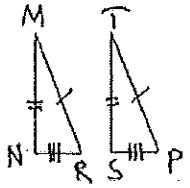
SAS

c) 

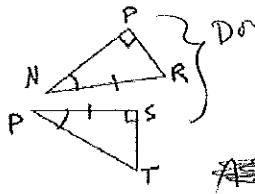
No
(No SSA)

d) 

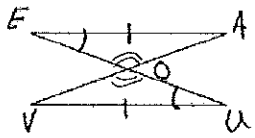
No (no SSA)

e) 

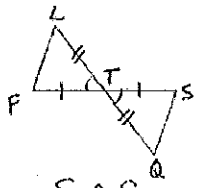
SSS

f) 

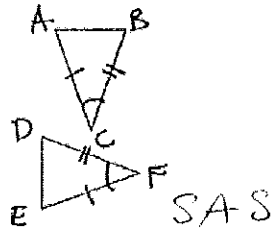
Don't match
No

g) 

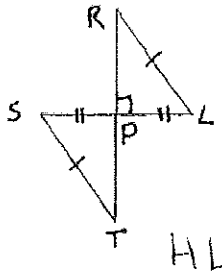
AAS

h) 

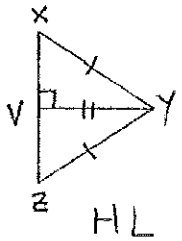
SAS

i) 

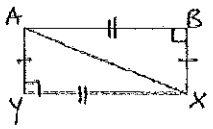
SAS

j) 

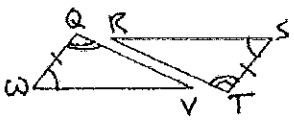
HL

k) 

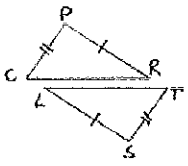
HL

l) 

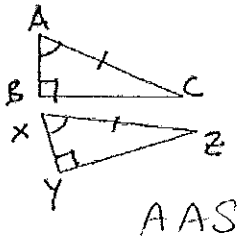
SAS

m) 

ASA

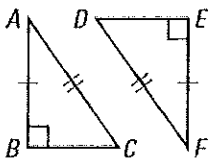
n) 

No

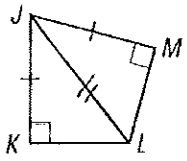
o) 

AAS

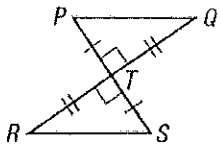
2.) **HL Congruence Theorem** Determine whether you can use the HL Congruence Theorem to show that the triangles are congruent. Explain your reasoning.

10. 

yes. HL

11. 

yes HL Reflexive

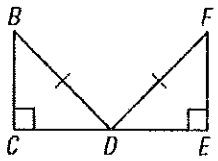
12. 

SAS, we don't know hypotenuse

PROOFS: 3.)**Logical Reasoning** Fill in the missing statements and reasons.

Given ▶ $\overline{BD} \cong \overline{FD}$
D is the midpoint of $\overline{CE}$.
$\angle BCD$ and $\angle FED$ are right angles.

Prove ▶ $\triangle BCD \cong \triangle FED$

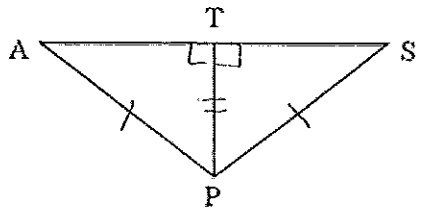


Statements	Reasons
1. $\overline{BD} \cong \overline{FD}$	1. Given
2. D is midpt of $\overline{CE}$	2. Given
3. $\overline{CD} \cong \overline{ED}$	3. Definition of midpoint
4. $\angle BCD$ and $\angle FED$ are right angles.	4. Given?
5. $\triangle BCD$ and $\triangle FED$ are right triangles.	5. Definition of right triangle
6. $\triangle BCD \cong \triangle FED$	6. HL ?

4.) PROOF:

Given: $\overline{TP} \perp \overline{AS}$, $\overline{AP} \cong \overline{SP}$

Prove: $\triangle ATP \cong \triangle STP$

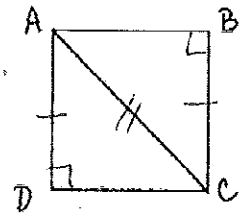


statements	reasons
1. $\overline{TP} \perp \overline{AS}$, $\overline{AP} \cong \overline{SP}$	1. Given
2. <ATP and <STP are right angles	2. Defn. ⊥
3. $\triangle ATP$ and $\triangle STP$ are right triangles	3. Defn. rt. $\triangle$'s
4. $\overline{TP} \cong \overline{TP}$	4. Reflexive
5. $\triangle ATP \cong \triangle STP$	5. HL

5.) PROOF:

Given: <D and <B are right angles, $\overline{AD} \cong \overline{CB}$

Prove: $\triangle ABC \cong \triangle CDA$



statements	reasons
1. <D and <B are right angles, $\overline{AD} \cong \overline{CB}$	1. Given
2. $\triangle ABC$ and $\triangle CDA$ are right triangles	2. Defn. rt. $\triangle$'s
3. $\overline{AC} \cong \overline{CA}$	3. Reflexive
4. $\triangle ABC \cong \triangle CDA$	4. HL