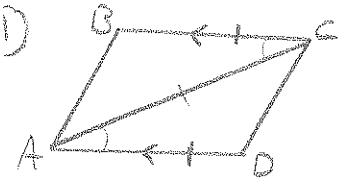
Adv. Geometry Ch. 4 Rev.

Name Key

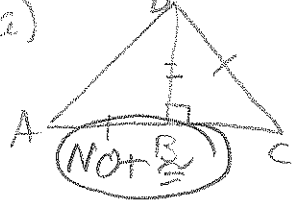
1) 

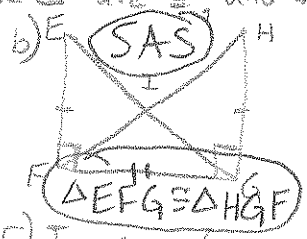
- What reason are these $\triangle$'s $\cong$? SAS
- Write the congruence statement $\triangle ABC \cong \triangle CDA$

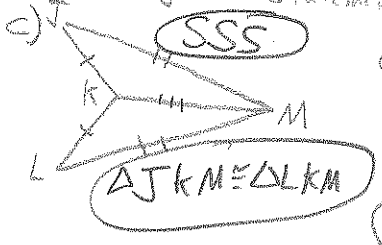
$A \to C$, $B \to D$, $C \to A$

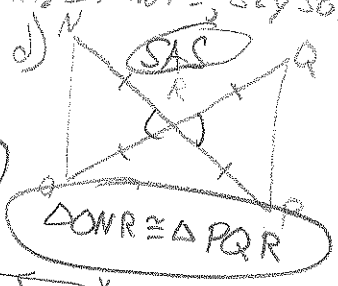
- $\overline{AB} \cong \overline{CD}$
- $\angle ABC \cong \angle CDA$
- $\overline{DA} \cong \overline{BC}$

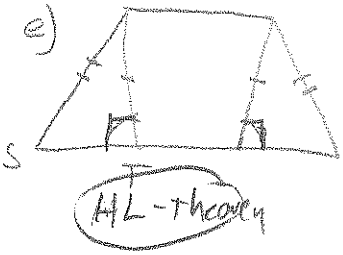
2) Give the reason these $\triangle$'s are $\cong$, and write the congruence statement. If not $\cong$, say so.

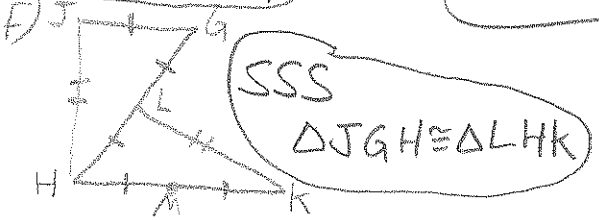
a) 

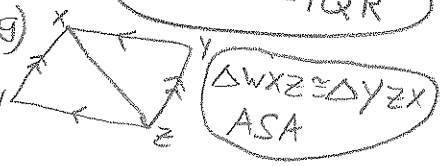
b) 

c) 

d) 

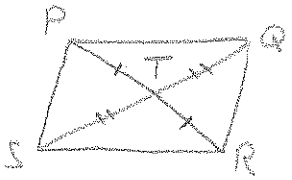
e) 

f) 

g) 

3) Given: T is the midpoint of $\overline{PR}$ & of $\overline{SQ}$

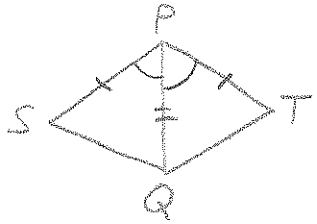
Prove: $\overline{PS} \cong \overline{RQ}$



Statements	Reasons
① T is Midpoint of $\overline{PR}$ & $\overline{SQ}$	① Given
② $\overline{PT} \cong \overline{RT}$; $\overline{ST} \cong \overline{QT}$	② Def. of Midpoint
③ $\angle PTS \cong \angle RTQ$	③ Vertical $\angle$'s $\cong$
④ $\triangle PTS \cong \triangle RTQ$	④ SAS
⑤ $\overline{PS} \cong \overline{RQ}$	⑤ CPCTC

4) Given: $\overline{PQ}$ bisects $\angle SPT$; $\overline{SP} \cong \overline{TP}$

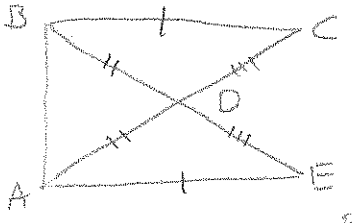
Prove: $\angle SQP \cong \angle TQP$

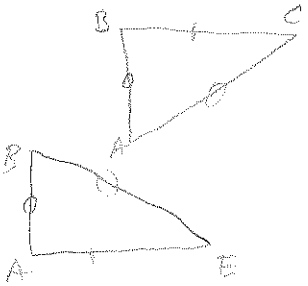


Statements	Reasons
① $\overline{PQ}$ bisects $\angle SPT$; $\overline{SP} \cong \overline{TP}$	① Given
② $\angle SPQ \cong \angle TPQ$	② Def. of angle bisector
③ $\overline{PQ} \cong \overline{PQ}$	③ Reflexive
④ $\triangle SPQ \cong \triangle TPQ$	④ SAS
⑤ $\angle SQP \cong \angle TQP$	⑤ CPCTC

5) Given: $\overline{BC} \cong \overline{AE}$; $\overline{AD} \cong \overline{BD}$; $\overline{DE} \cong \overline{DC}$

Prove: $\triangle ABC \cong \triangle BAE$

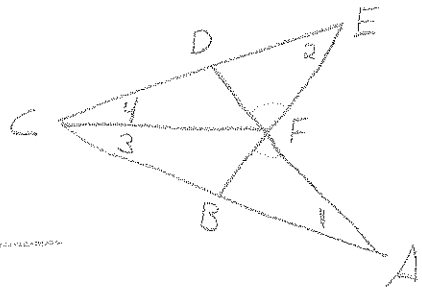


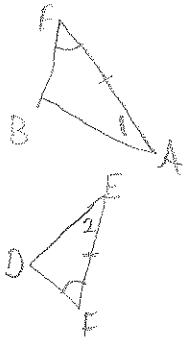


Statement	Reason
① $\overline{BC} \cong \overline{AE}$; $\overline{AD} \cong \overline{BD}$; $\overline{DE} \cong \overline{DC}$	① Given
② $\overline{BD} + \overline{DE} = \overline{BE}$ $\overline{CD} + \overline{DA} = \overline{CA}$	② Segment Addition Postulate
③ $\overline{BE} \cong \overline{AC}$	③ Substitution / Transitive
④ $\overline{AB} \cong \overline{BA}$	④ Reflexive
⑤ $\triangle ABC \cong \triangle BAE$	⑤ SSS

6) Given: $\angle 1 \cong \angle 2$; $\angle 3 \cong \angle 4$

Prove: $\triangle AFB \cong \triangle EFD$





Statements	Reasons
① $\angle 1 \cong \angle 2$; $\angle 3 \cong \angle 4$	① Given
② $\overline{CF} \cong \overline{CF}$	② Reflexive
③ $\triangle ECF \cong \triangle ACF$	③ AAS
④ $\overline{EF} \cong \overline{AF}$	④ CPCTC
⑤ $\angle DFE \cong \angle BFA$	⑤ Vertical $\angle$'s $\cong$
⑥ $\triangle AFB \cong \triangle EFD$	⑥ ASA

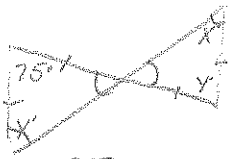
7) Solve for x & y

a)

$X = 60$

$Y = 60$

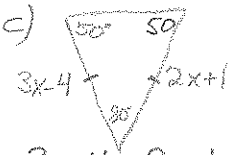
b)



$x = \frac{105}{2} = 52.5$

$Y = 75$

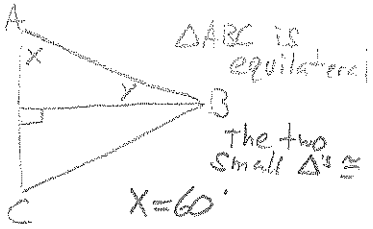
c)



$3x - 4 = 2x + 1$

$x = 5$

d)



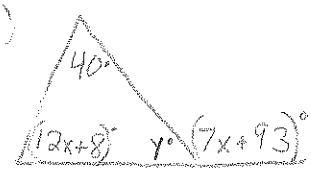
$\triangle ABC$ is equilateral

The two small $\triangle$'s $\cong$

$X = 60°$

$Y = 30°$

e)



$7x + 93 = 12x + 8 + 40$

$45 = 5x$

$9 = x$ $\quad y = 24$

9) Solve for the variables. $\triangle ABC$ is shifted right 4 & down 2 to $\triangle DEF$

$(x, y) \to (x+4, y-2)$

$A(3, -2)$ $\quad B(1, 1)$ $\quad C(2d+3, e-5)$

$D(a, -4)$ $\quad E(b+3, c-1)$ $\quad F(d-1, 6)$

$2d + 3 + 4 = d - 1$

$2d + 7 = d - 1$

$d = -8$

$a = 1$

$b + 3 = 5$ $\quad b = 2$

$c - 1 = 1$ $\quad c = 0$

$e - 5 - 2 = 6$

$e - 7 = 6$ $\quad e = 13$