Name: Key Date:

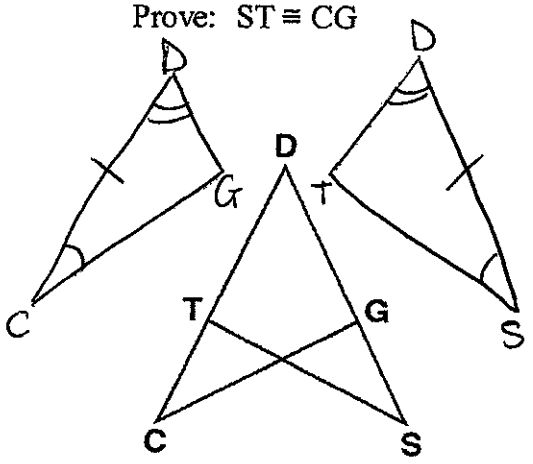
*Overlapping △s MUST have a common side or angle

Congruent Triangle Proofs Day 4 (Overlapping) (Reflexive)

1.

Given: $\overline{DTC} \cong \overline{DGS}$
$\angle C \cong \angle S$

Prove: $\overline{ST} \cong \overline{CG}$



S	R
① $\overline{DTC} \cong \overline{DGS}$	① Given
② $\angle C \cong \angle S$	② Given
③ $\angle D \cong \angle D$	③ Reflexive Property
④ $\triangle DGC \cong \triangle DTS$	④ ASA ≅ ASA
⑤ $\overline{ST} \cong \overline{CG}$	⑤ Corresponding Parts of Congruent Triangles are Congruent

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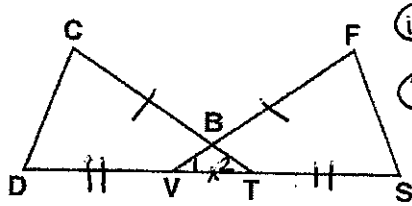
2.

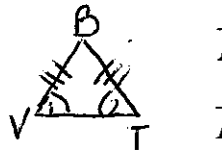


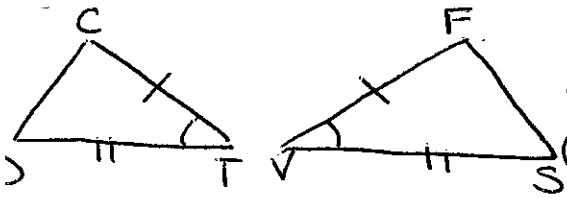
Given: $\overline{CT} \cong \overline{FV}$

$\overline{DV} \cong \overline{ST}$

$\overline{BT} \cong \overline{BV}$

Prove: $\overline{CD} \cong \overline{FS}$

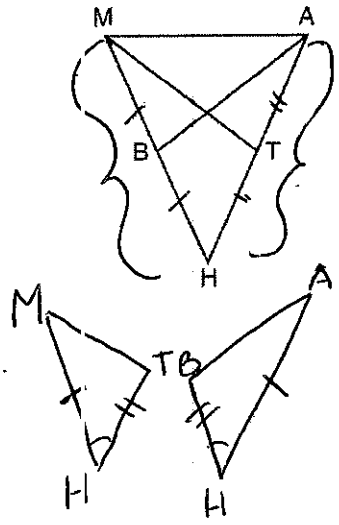




S	R
① $\overline{CT} \cong \overline{FV}$	① Given
② $\overline{DV} \cong \overline{ST}$	② Given
③ $\overline{VT} \cong \overline{VT}$	③ Reflexive
④ $\overline{DV} \cong \overline{ST}$	④ Addition Postulate
+ $\overline{VT} \cong \overline{VT}$	
$\overline{DT} \cong \overline{SV}$	
⑤ $\overline{BT} \cong \overline{BV}$	⑤ Given
⑥ $\angle 1 \cong \angle 2$	⑥ In a △ if 2 sides are ≅ then the angles opposite them are ≅
⑦ $\triangle CTD \cong \triangle FVS$	⑦ SAS ≅ SAS
⑧ $\overline{CD} \cong \overline{FS}$	⑧ Corresponding Parts of ≅ △s are ≅

3. In the diagram of ΔMAH belc $\overline{MH} \cong \overline{AH}$ and medians $\overline{AB}$ and $\overline{MT}$ are drawn.

Prove: $\overline{MT} \cong \overline{AB}$

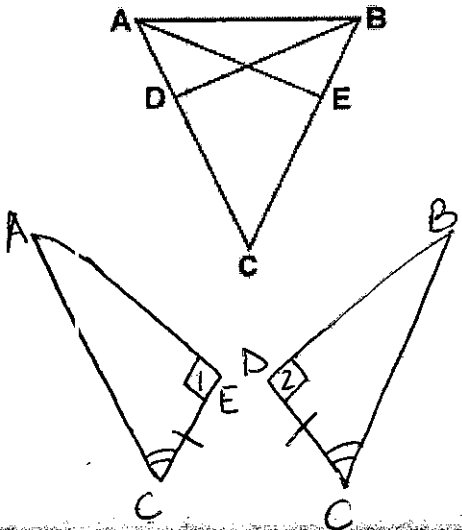


S	R
1) $\overline{MH} \cong \overline{AH}$	1) Given
2) Medians $\overline{AB}$ & $\overline{MT}$	2) Given
3) B & T are midpoints	3) A median connects a vertex of a Δ to the midpoint on its opposite side
4) $\overline{MB} \cong \overline{HB}$	4) A midpoint divides a segment into 2 $\cong$ segment
5) $\overline{MT} \cong \overline{HB}$	5) Halves of $\cong$ segments are $\cong$
6) $\angle H \cong \angle H$	6) Reflexive Property
7) $\Delta MHT \cong \Delta AHB$	7) SAS $\cong$ SAS
8) $\overline{MT} \cong \overline{AB}$	8) Corresponding Parts of Congruent Triangles are Congruent

4.

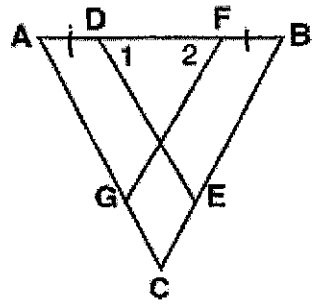
Given: $\overline{CD} \cong \overline{CE}$
$\overline{AE} \perp \overline{BC}$
$\overline{BD} \perp \overline{AC}$

Prove: $\overline{AE} \cong \overline{BD}$



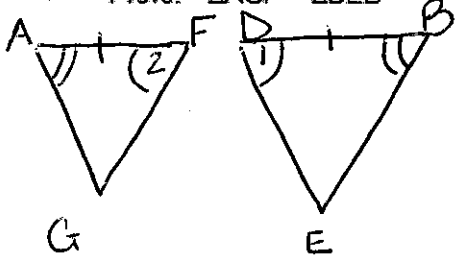
S	R
1) $\overline{CD} \cong \overline{CE}$	1) Given
2) $\overline{AE} \perp \overline{BC}$, $\overline{BD} \perp \overline{AC}$	2) Given
3) $\angle 1$ & $\angle 2$ are right $\angle$s	3) $\perp$ lines form right $\angle$s
4) $\angle 1 \cong \angle 2$	4) All right $\angle$s are $\cong$
5) $\angle C \cong \angle C$	5) Reflexive Property
6) $\Delta CED \cong \Delta CDB$	6) ASA $\cong$ ASA
7) $\overline{AE} \cong \overline{BD}$	7) Corresponding Parts of Congruent Triangle are Congruent

5.



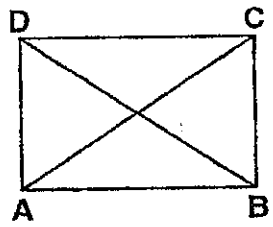
Given: $\overline{ADFB}$
$\overline{AD} \cong \overline{FB}$
$\angle 1 \cong \angle 2$
$\angle A \cong \angle B$

Prove: $\triangle AGF \cong \triangle DEB$



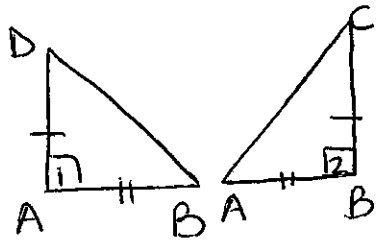
S	R
① $\overline{ADFB}$, $\overline{AD} \cong \overline{FB}$	① Given
② $\overline{FD} \cong \overline{FD}$	② Reflexive
③ $\overline{AD} \cong \overline{FB}$ $+\overline{FD} \cong \overline{FD}$ $\overline{AF} \cong \overline{BD}$	③ Addition Postulate
④ $\angle 1 \cong \angle 2$	④ Given
⑤ $\angle A \cong \angle B$	⑤ Given
⑥ $\triangle AGF \cong \triangle BED$	⑥ ASA $\cong$ ASA

6.



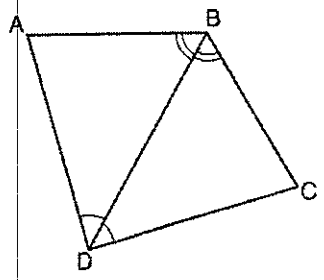
Given: $\overline{DA} \cong \overline{CB}$
$\overline{DA} \perp \overline{AB}$
$\overline{CB} \perp \overline{AB}$

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



S	R
① $\overline{DA} \cong \overline{CB}$	① Given
② $\overline{DA} \perp \overline{AB}$, $\overline{CB} \perp \overline{AB}$	② Given
③ $\angle 1$ & $\angle 2$ are right $\angle$s	③ $\perp$ lines form right $\angle$s
④ $\angle 1 \cong \angle 2$	④ All right $\angle$s are $\cong$
⑤ $\overline{AB} \cong \overline{AB}$	⑤ Reflexive Property
⑥ $\triangle DAB \cong \triangle CBA$	⑥ SAS $\cong$ SAS
⑦ $\overline{BD} \cong \overline{AC}$	⑦ Corresponding Parts of Congruent Triangles are Congruent

7. The diagram below shows a pair of co ;ru ent triangles, with $\angle ADB \cong \angle CDB$ and $\angle ABD \cong \angle CBD$.



Which statement must be true?

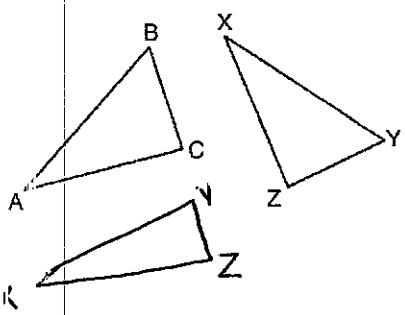
1) $\angle ADB \cong \angle CBD$

2) $\angle ABC \cong \angle ADC$

3) $\overline{AB} \cong \overline{CD}$

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

8. In the diagram below, $\triangle ABC \cong \triangle XYZ$



Which two statements identify co es ponding congruent parts for these triangles? CPCTC

1) $\overline{AB} \cong \overline{XY}$ and $\angle C \cong \angle Y$

2) $\overline{AB} \cong \overline{YZ}$ and $\angle C \cong \angle X$

3) $\overline{BC} \cong \overline{XY}$ and $\angle A \cong \angle Y$

4) $\overline{BC} \cong \overline{YZ}$ and $\angle A \cong \angle X$

9. If $\triangle JKL \cong \triangle MNO$, which statement is always true? CPCTC

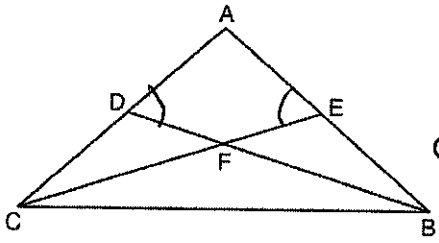
1) $\angle KLJ \cong \angle NMO$

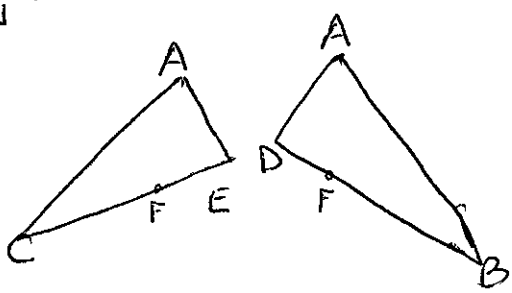
2) $\angle KJL \cong \angle MON$

3) $\overline{JL} \cong \overline{MO}$

4) $\overline{JK} \cong \overline{ON}$

10. In $\triangle ABC$ shown below with $\overline{ADC}$, $\overline{AEB}$, $\overline{CFE}$, and $\overline{BFD}$, $\triangle ACE \cong \triangle ABD$.





Which statement must be true?

1) $\angle ACF \cong \angle BCF$

2) $\angle DAE \cong \angle DFE$

3) $\angle BCD \cong \angle ABD$

4) $\angle AEF \cong \angle ADF$