AMDG

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Note Title Advanced Geometry - 3.5: Overlapping Triangles Date 10/13/2015

Objective

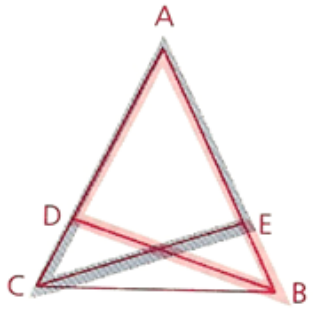
After studying this section, you will be able to

- Use overlapping triangles in proofs

Problem 1

Given: $\overline{AC} \cong \overline{AB}$, $\overline{AE} \cong \overline{AD}$

Conclusion: $\overline{CE} \cong \overline{BD}$



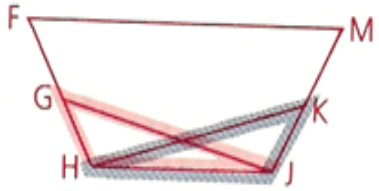
Proof

Statements	Reasons
1 $\overline{AC} \cong \overline{AB}$	1
2 $\overline{AE} \cong \overline{AD}$	2
3 $\angle A \cong \angle A$	3
4 $\triangle ADB \cong \triangle AEC$	4
5 $\overline{CE} \cong \overline{BD}$	5

Problem 2

Given: $\overline{FH} \cong \overline{MJ}$;
G *is the midpt. of* $\overline{FH}$.
K *is the midpt. of* $\overline{MJ}$.
$\angle GHJ \cong \angle KJH$

Prove: $\overline{GJ} \cong \overline{HK}$



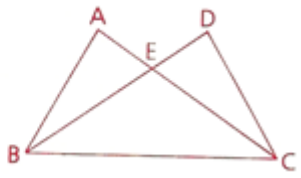
Proof

Statements	Reasons
1 $\overline{FH} \cong \overline{MJ}$	1
2 G is the midpt. of $\overline{FH}$.	2
3 K is the midpt. of $\overline{MJ}$.	3
4 $\overline{GH} \cong \overline{KJ}$	4
5 $\angle GHJ \cong \angle KJH$	5
6 $\overline{HJ} \cong \overline{HJ}$	6
7 $\triangle GHJ \cong \triangle KJH$	7
8 $\overline{GJ} \cong \overline{HK}$	8

Problem Set A

1 Given: $\overline{AB} \cong \overline{DC}$, $\overline{AC} \cong \overline{DB}$

Prove: $\triangle ABC \cong \triangle DCB$



2 Given: $\angle FGH$ is a right $\angle$. $\angle JHG$ is a right $\angle$. $\overline{FG} \cong \overline{JH}$

Prove: $\triangle FGH \cong \triangle JHG$