

Unit 6 Lesson 3

Triangle Congruence Proofs

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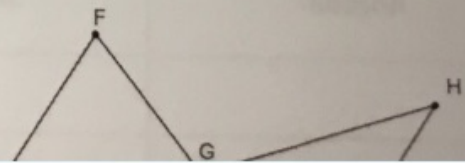
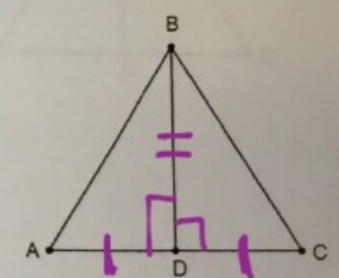
EX 1) Given: $\overline{AC} \perp \overline{BD}$
 $\overline{AD} \cong \overline{DC}$
Prove: $\triangle ABD \cong \triangle CBD$


Given $\overline{AC} \perp \overline{BD}$ Given $\overline{AD} \cong \overline{DC}$ Reflexive Prop \cong $\overline{BD} \cong \overline{BD}$

Def of \perp lines
 $\angle ADB$ and $\angle CDB$ are right

Thm of Right \angle 's
 $\angle ADB \cong \angle CDB$

By SAS \cong
 $\triangle ABD \cong \triangle CBD$



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EX 2) **Given:** $\angle E \cong \angle H$
 G is the midpoint of \overline{EH}
Prove: $\triangle GFE \cong \triangle GIH$

Given $\angle E \cong \angle H$ **Given** G is the midpoint of \overline{EH}

$\angle FGE \cong \angle IGH$ *vert \angle 's \cong*

$\overline{EG} \cong \overline{HG}$ *By Def of midpoint*

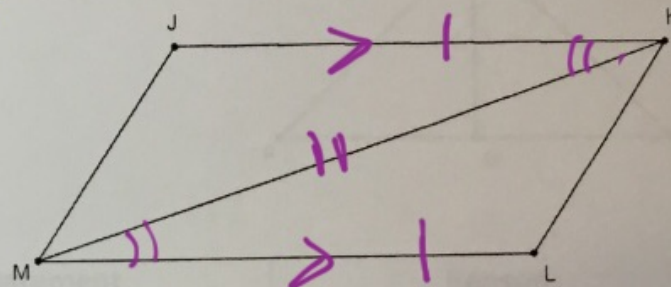
$\triangle GFE \cong \triangle GIH$ *ASA \cong*

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EX 3) **Given:** $\overline{JK} \parallel \overline{ML}$
 $\overline{JK} \cong \overline{ML}$

Prove: $\angle J \cong \angle L$



Given
 $\overline{JK} \parallel \overline{ML}$

Given
 $\overline{JK} \cong \overline{ML}$

Reflexive Prop \cong
 $\overline{MK} \cong \overline{MK}$

Alt int \angle 's \cong
 $\angle LMK \cong \angle JKM$

SAS \cong

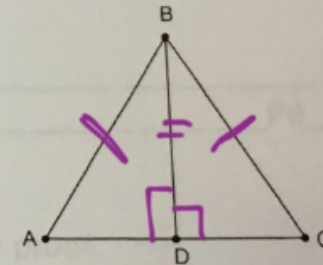
$\triangle JMK \cong \triangle LKM$

CPCTC

$\angle J \cong \angle L$



EX 4) Given: $\overline{AC} \perp \overline{BD}$
 $\overline{AB} \cong \overline{BC}$
Prove: $\triangle ABD \cong \triangle CBD$



Given $\overline{AC} \perp \overline{BD}$ Given $\overline{AB} \cong \overline{BC}$ Reflexive prop \cong $\overline{BD} \cong \overline{BD}$

Def of \perp lines
 $\angle ADB$ and $\angle CDB$ are right

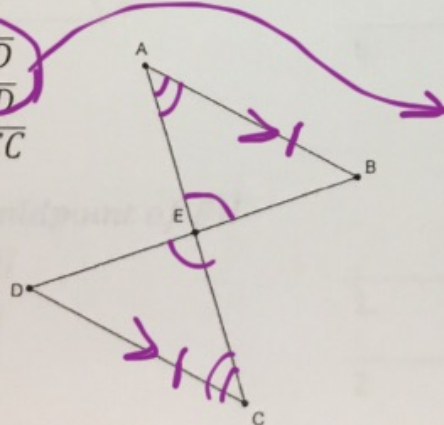
Def of right Δ
 $\triangle ABD$ + $\triangle CBD$ are right

$\triangle ABD \cong \triangle CBD$

By HL \cong

Make a two-column proof to complete the following.

EX 5) Given: $\overline{AB} \parallel \overline{CD}$
 $\overline{AB} \cong \overline{CD}$
 Prove: $\overline{AE} \cong \overline{EC}$



Statement	Reason
1. $\overline{AB} \parallel \overline{CD}$ $\overline{AB} \cong \overline{CD}$	GIVEN
2. $\angle DEC \cong \angle BEA$	vert \angle 's \cong
3. $\angle A \cong \angle C$	Alt int \angle 's \cong
4. $\triangle DEC \cong \triangle BEA$	By AAS \cong
5. $\overline{AE} \cong \overline{EC}$	CPCTC

Statement

Reason

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Statement	Reason
1.	EX 6) Given: \overline{IG} bisects $\angle FIH$ $\overline{IF} \cong \overline{IH}$
2.	Given: $\overline{IG} \cong \overline{IG}$ Reflexive Prop \cong
3.	$\angle FIG \cong \angle HIG$ By Def of \angle bisector
4.	$\triangle FIG \cong \triangle HIG$ SAS \cong
5.	$\angle F \cong \angle H$ CPCTC

Prove: $\angle F \cong \angle H$

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EX 7) Given: $\overline{KL} \parallel \overline{JM}$
 $\overline{KJ} \parallel \overline{LM}$
 Prove: $\overline{KJ} \cong \overline{LM}$

Statement	Reason
1. $\overline{KM} \cong \overline{KM}$	GIVEN
2. $\angle JKM \cong \angle LMK$	Reflexive Prop \cong
3. $\angle LKM \cong \angle JMK$	Def of Alt int \angle 's
4. $\triangle JKM \cong \triangle LMK$	Def of Alt int \angle 's
5. $\overline{KJ} \cong \overline{LM}$	ASA \cong
6. $\overline{KJ} \cong \overline{LM}$	CPCTC

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HW: 19-21

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