Name: Key Date: ______________

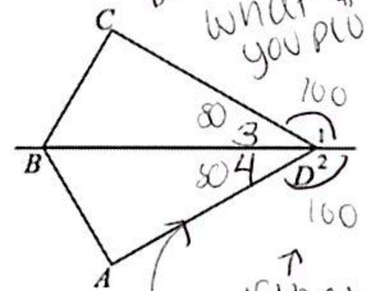
UNIT 3 **LESSON 9**

AIM: HOW DO WE USE CPCTC? (DAY 2)

Do Now: If $\measuredangle 1 \cong \measuredangle 2$, what can you conclude about $\measuredangle CDB$ and $\measuredangle ADB$?

STATEMENT	REASON
$\measuredangle 1 \cong \measuredangle 2$	Given
$\measuredangle 1 + \measuredangle 3 = 180$ $\measuredangle 2 + \measuredangle 4 = 180$	Linear pairs are supplementary
$\measuredangle 3 \cong \measuredangle 4$	supplements of $\cong$ $\measuredangle$'s are $\cong$

Does not matter what #'s you plugin!



then these $\measuredangle$'s are $\cong$

if these $\measuredangle$'s are $\cong$

EXAMPLE #1:

Given: $\measuredangle 1 \cong \measuredangle 2$ and $\overline{CD} \cong \overline{AD}$ → ∡ FIX!

Prove: $\overline{BD}$ bisects $\measuredangle$ ~~CB~~ A

(2) → $\measuredangle CBD \cong \measuredangle ABD$ → CPCTC!

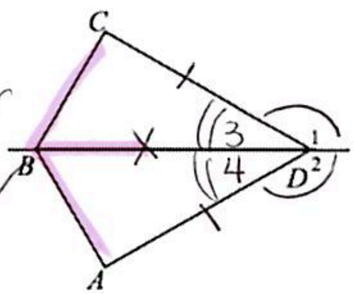
(1) → $\Delta BCD \cong \Delta BAD$

cannot check off b/c not in Δ!

S ✓

A ✓

S ✓



STATEMENT	REASON
① $\measuredangle 1 \cong \measuredangle 2$ and $\overline{CD} \cong \overline{AD}$ ✓ (S)	① Given
② $\measuredangle 1 + \measuredangle 3 = 180$ $\measuredangle 2 + \measuredangle 4 = 180$	② Linear pairs are supplementary
③ $\measuredangle 3 \cong \measuredangle 4$ ✓ (A)	③ supplements of $\cong$ $\measuredangle$'s are $\cong$
④ $\overline{BD} \cong \overline{BD}$ ✓ (S)	④ Reflexive Property
⑤ $\Delta CBD \cong \Delta ABD$	⑤ SAS $\cong$ SAS
⑥ $\measuredangle CBD \cong \measuredangle ABD$	⑥ CPCTC
⑦ $\overline{BD}$ bisects $\measuredangle CBA$	⑦ A bisector creates 2 $\cong$ $\measuredangle$'s

EXAMPLE #2:

Given: $\overline{CB}$ is the altitude to $\overline{DA}$

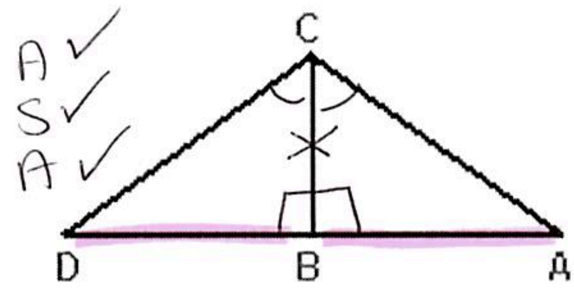
$\overline{CB}$ bisects $\measuredangle ACD$

Prove: B *is the midpoint of* $\overline{DA}$

(3)

(2) ↳ $\overline{DB} \cong \overline{BA} \rightarrow$ CPCTC

(1) ↳ $\triangle ABC \cong \triangle DBC$



STATEMENT	REASON
(1) $\overline{CB}$ is the altitude to $\overline{DA}$ $\overline{CB}$ bisects $\measuredangle ACD$	(1) Given
(2) $\measuredangle DCB \cong \measuredangle ACB$ ✓ (A)	(2) A bisector creates 2 $\cong$ $\measuredangle$'s
(3) $\overline{CB} \cong \overline{CB}$ ✓ (S)	(3) Reflexive property
(4) $\measuredangle CBD \cong \measuredangle CBA$ ✓ (A)	(4) altitudes create 2 $\cong$ right $\measuredangle$'s
5) $\triangle ABC \cong \triangle DBC$	(5) ASA $\cong$ ASA
(6) $\overline{DB} \cong \overline{BA}$	(6) CPCTC
7) B is the midpoint of $\overline{DA}$	(7) A midpoint creates 2 $\cong$ segments

EXAMPLE #3:

Given: $\angle KGE \cong \angle KEG$, $\overline{GL} \perp \overline{LD}$, $\overline{ED} \perp \overline{DL}$ and K is the midpoint of $\overline{LD}$

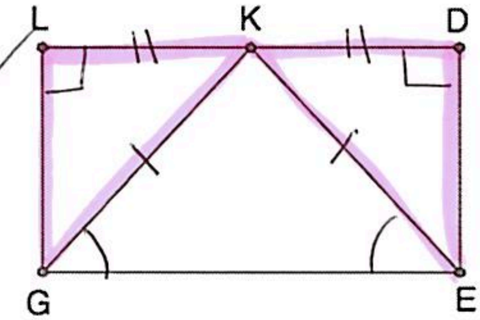
Prove: $\overline{LG} \cong \overline{DE}$ → CPCTC

→ $\triangle LGK \cong \triangle DEK$

Right Δ ✓

H ✓

L ✓



not in Δ's cannot check off!

STATEMENT	REASON
① $\angle KGE \cong \angle KEG$, $\overline{GL} \perp \overline{LD}$, $\overline{ED} \perp \overline{DL}$ and K is the midpoint of $\overline{LD}$	① Given
② $\angle L$ and $\angle D$ are right $\angle$s	② ⊥ lines form right $\angle$'s
③ $\triangle LGK$ and $\triangle DEK$ are right Δ's ✓	③ Right Δ's have one right $\angle$
④ Δ KGE is an isosceles Δ	④ isosceles Δ's have 2 ≅ base $\angle$'s
⑤ $\overline{KG} \cong \overline{KE}$ ✓ (H)	⑤ isosceles Δ's have 2 ≅ sides
⑥ $\overline{LK} \cong \overline{KD}$ ✓ (L)	⑥ A midpoint creates 2 ≅ segments
⑦ $\triangle LGK \cong \triangle DEK$	⑦ HL ≅ HL
⑧ $\overline{LG} \cong \overline{DE}$	⑧ CPCTC

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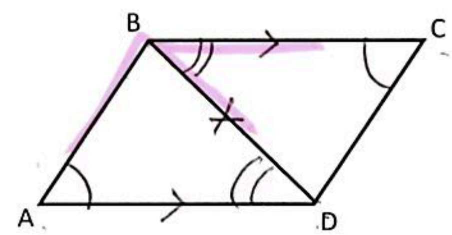
UNIT 3 **LESSON 9**

HOMEWORK

1. Given: $\overline{BC} \parallel \overline{AD}$ and $\angle A \cong \angle C$
   Prove: ~~$\overline{BC} \cong \overline{AD}$~~ *FIX!*

③ $\overline{BD}$ bisects ∡ABC → definition Ⓐ ✓
② ↳ ∡ABD ≅ ∡CBD → CPCTC Ⓐ ✓
① ↳ △ABD ≅ △CDB → AAS Ⓢ ✓



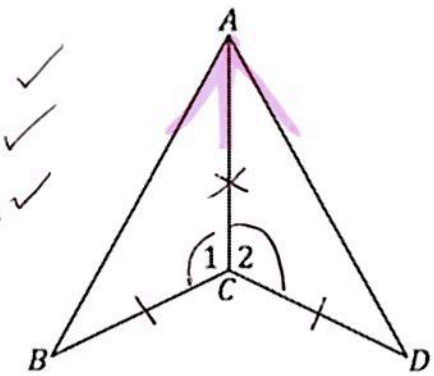
STATEMENT	REASON
① $\overline{BC} \parallel \overline{AD}$ and ∡A ≅ ∡C ✓ Ⓐ	① Given
② ∡DBC ≅ ∡ADB ✓ Ⓐ	② alt. int. ∡'s are ≅
③ $\overline{BD} \cong \overline{BD}$ ✓ Ⓢ	③ Reflexive Property
④ △ABD ≅ △CDB	④ AAS ≅ AAS
⑤ ∡ABD ≅ ∡CBD	⑤ CPCTC
⑥ $\overline{BD}$ bisects ∡ABC	⑥ A bisector creates 2 ≅ ∡'s

2. Given: $\angle 1 \cong \angle 2$ and $\overline{BC} \cong \overline{DC}$
   Prove: $\overline{AC}$ *bisects* $\measuredangle BAD$

(2) ↳ $\measuredangle BAC \cong \measuredangle DAC \rightarrow$ CPCTC

(1) ↳ $\Delta BAC \cong \Delta DAC$

S ✓
A ✓
S ✓



STATEMENT	REASON
(1) $\measuredangle 1 \cong \measuredangle 2$ ✓ and $\overline{BC} \cong \overline{DC}$ ✓	(1) Given
(2) $\overline{AC} \cong \overline{AC}$ ✓	(2) Reflexive Property
(3) $\Delta BAC \cong \Delta DAC$	(3) SAS ≅ SAS
(4) $\measuredangle BAC \cong \measuredangle DAC$	(4) CPCTC
(5) $\overline{AC}$ bisects $\measuredangle BAD$	(5) A bisector creates 2 ≅ $\measuredangle$'s