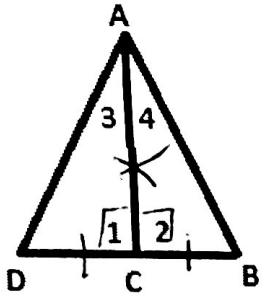
Name: _____
Date: _____
Class: _____

Geometry
Unit 8
HW 8-4

Using the given information and the diagram write a proof that shows the "Prove" statement is true.

1)

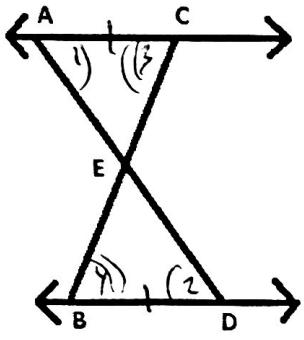


Given: $\overline{AC}$ is a median
$\overline{AC} \perp \overline{BD}$

Prove: $\triangle ACD \cong \triangle ACB$

$\overline{AC}$ is a median → given
$\overline{DC} \cong \overline{CB}$ → median cuts opp side in $2 \cong$ parts
$\overline{AC} \perp \overline{BD}$ → given
$m\angle 1 = 90$
$m\angle 2 = 90$ → ⊥ creates rt ∠'s
$\angle 1 \cong \angle 2$ → both 90°
$\overline{AC} \cong \overline{AC}$ → anything $\cong$ to itself
$\triangle ACD \cong \triangle ACB$ → SAS

2)



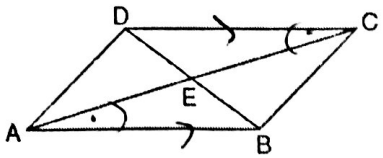
Given: $\overline{AC} \parallel \overline{BD}$
$\overline{AC} \cong \overline{BD}$

Prove: E is the midpoint of $\overline{CB}$

$\overline{AC} \parallel \overline{BD}$ → given
$\angle 1 \cong \angle 2$
$\angle 3 \cong \angle 4$ → alt int ∠'s $\cong$ when lines ∥
$\overline{AC} \cong \overline{BD}$ → given
$\triangle ACE \cong \triangle DBE$ → AsA
$\overline{CE} \cong \overline{EB}$ → CPCTC
E is mdpt of $\overline{CB}$ → it splits segment in $2 \cong$ parts

$\overline{CE} \cong \overline{EB}$? / ~~$\overline{AE} \cong \overline{DE}$~~ ? $\cong \triangle$s ?

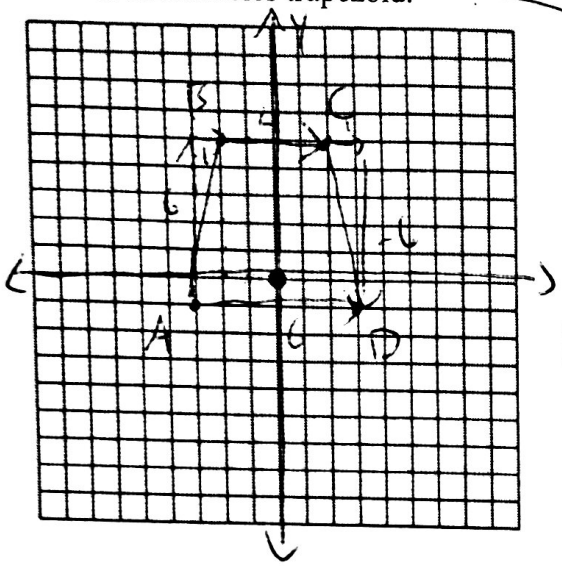
3) In parallelogram $ABCD$ shown below, diagonals $\overline{AC}$ and $\overline{BD}$ intersect at E.



Prove: $\angle ACD \cong \angle CAB$

$ABCD$ is a □ → given
$\overline{DC} \parallel \overline{AB}$ → opp sides of □ are $\cong$
$\angle ACD \cong \angle CAB$ → alt int ∠'s $\cong$ when lines ∥

4) Quadrilateral ABCD has points A (-3, -1), B (-2, 5), C (2, 5), and D (~~1, 1~~ 3, -1) Prove ABCD is an isosceles trapezoid.



one set ∥
one set ≅

slope
$\overline{BC} \rightarrow \frac{0}{4}$
$\overline{AD} \rightarrow \frac{0}{6}$
∥

distance
$2 \cong$
$BA \cong DC \rightarrow 1^2 + 6^2 = x^2$
$\sqrt{37} = x$

Based on my calculations ABCD is an isos trapezoid b/c it has 1 set of ∥ sides (same slope) and one set of ≅ sides (same distance)

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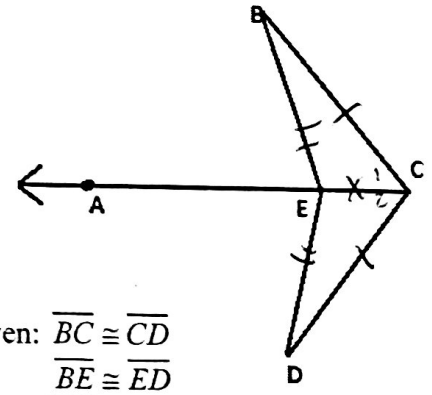
5)



Given: $\overline{BC} \cong \overline{CD}$
$\overline{BE} \cong \overline{ED}$
Prove: $\overline{AC}$ bisects <BCD

↑
$\angle 1 \cong \angle 2$?
$\cong \triangle s$?

$\overline{BC} \cong \overline{CD}$ → given
$\overline{BE} \cong \overline{ED}$ → given
$\overline{CE} \cong \overline{CE}$ → anything ≅ to itself
$\triangle BCE \cong \triangle DCE$ → SSS
$\angle 1 \cong \angle 2$ → CPCTC
$\overline{AC}$ bisects $\angle BCD$ → it splits it $\angle$ in 2 ≅ parts