

Name: Kely

Date: \_\_\_\_\_

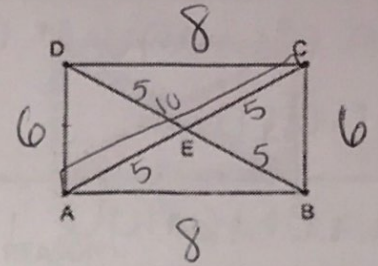
UNIT 4

LESSON 7

AIM: HOW DO WE COMPLETE RECTANGLE PROOFS?

Do Now: In rectangle ABCD,  $CB = 6$ ,  $AB = 8$ ,  $AC = 10$ . Find

- a)  $AD = 6$
  - b)  $CD = 8$
  - c)  $EC = 5$
  - d)  $AE = 5$
  - e)  $DE = 5$
  - f)  $EB = 5$
  - g)  $DB = 10 \rightarrow$  diagonals  $\cong$
- } opp. sides  $\cong$   
} diagonals bisect



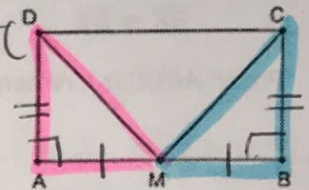
PROOFS USING RECTANGLE PROPERTIES:

1. Given: ABCD is a rectangle

M is the midpoint of  $\overline{AB}$

Prove:  $\overline{DM} \cong \overline{CM} \rightarrow$  CPCTC

Plan: ①  $\triangle ADM \cong \triangle BCM$  by SAS  
②  $\overline{DM} \cong \overline{CM}$  by CPCTC



STATEMENT

REASON

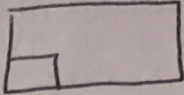
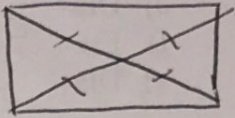
① ABCD is a rectangle M is the midpoint of $\overline{AB}$	① Given
② $\overline{AM} \cong \overline{MB} \checkmark$ ⑤	② a midpoint creates 2 $\cong$ segments
③ $\angle A \cong \angle B \checkmark$ ④	③ Rectangles have 4 $\cong$ right $\angle$ 's
④ $\overline{AD} \cong \overline{BC} \checkmark$ ③	④ opp. sides of a rectangle are $\cong$
⑤ $\triangle ADM \cong \triangle BCM$	⑤ SAS $\cong$ SAS
⑥ $\overline{DM} \cong \overline{CM}$	⑥ CPCTC



**PROOFS PROVING A QUADRILATERAL IS A RECTANGLE:**

**YOU ALWAYS HAVE TO HAVE A PARALLELOGRAM FIRST!**

Which means if you do not have a parallelogram given to you, you need to prove that first!

REASON	DIAGRAM
A rectangle is a $\square$ with one right $\angle$	
A rectangle is a $\square$ with $\cong$ diagonals	

2. Given:  $\angle ABC$  is a right angle

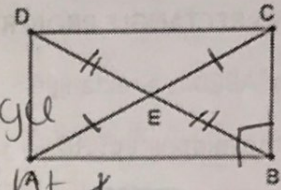
$\overline{BE}$  is the median to  $\overline{AC}$

$\overline{BE} \cong \overline{DE}$

Prove:  $ABCD$  is a rectangle

Plan: ①  $ABCD$  is a  $\square$  b/c diagonals bisect

②  $ABCD$  is a rectangle b/c  $\square$  with 1 right  $\angle$



STATEMENT

REASON

①  $\angle ABC$  is a right  $\angle$   
 $\overline{BE}$  is the median to  $\overline{AC}$   
 $\overline{BE} \cong \overline{DE}$

① Given

②  $\overline{AE} \cong \overline{EC}$  ✓

② a median creates 2  $\cong$  segments

③  $ABCD$  is a  $\square$

③ Diagonals bisect each other

④  $ABCD$  is a rectangle

④ A rectangle is a  $\square$  with one right  $\angle$



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UNIT 4

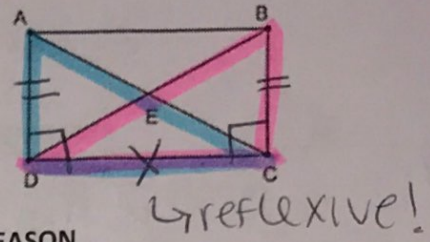
LESSON 7

HOMEWORK

1.) Given: ABCD is a rectangle

Prove:  $\triangle ADC \cong \triangle BCD$  (\*HINT! - Look for a reflexive piece!)

PLAN: SAS



STATEMENT

REASON

① ABCD is a rectangle

① Given

②  $\overline{AD} \cong \overline{BC}$  ✓ (S)

② Opp-sides of a rect. are  $\cong$

③  $\angle ADC \cong \angle BCD$  ✓ (A)

③ A rectangle has 4  $\cong$  right  $\angle$ 's

④  $\overline{DC} \cong \overline{DC}$  ✓ (S)

④ Reflexive property

⑤  $\triangle ADC \cong \triangle BCD$

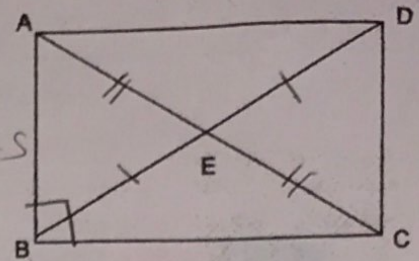
⑤ SAS  $\cong$  SAS

2.) Given: E is the midpoint of  $\overline{AC}$  &  $\overline{BD}$  and  $\overline{AB} \perp \overline{BC}$

Prove: ABCD is a rectangle.

PLAN: ① ABCD is a  $\square$  b/c diagonals bisect

② ABCD is a rectangle b/c  $\square$  with one right  $\angle$



STATEMENT

REASON

① E is the midpoint of  $\overline{AC}$  and  $\overline{BD}$   
 $\overline{AB} \perp \overline{BC}$

① Given

②  $\overline{AE} \cong \overline{EC}$   
 $\overline{BE} \cong \overline{ED}$

② A midpoint creates 2  $\cong$  segments

③ ABCD is a  $\square$

③ Diagonals bisect each other

④  $\angle ABC$  is a right  $\angle$

④  $\perp$  lines form right  $\angle$ 's

⑤ ABCD is a rectangle

⑤ A rectangle is a  $\square$  with one right  $\angle$