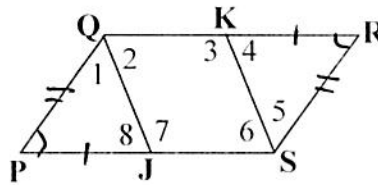


Proofs of Parallelograms  
Pre-AP Geometry Homework

Name Key  
Period \_\_\_\_\_ Date \_\_\_\_\_

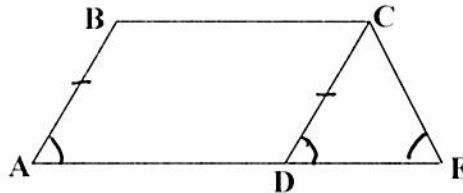
Do the following proofs on a separate sheet of paper and staple together.

1. Given: PQRS is a  $\square$   
 $\overline{PJ} \cong \overline{RK}$   
 Prove:  $\overline{QJ} \cong \overline{SK}$



| S                                                  | R                                         |
|----------------------------------------------------|-------------------------------------------|
| 1. PQRS is a $\square$                             | 1. Given                                  |
| 2. $\overline{PJ} \cong \overline{RK}$             | 2. Given                                  |
| 3. $\overline{PQ} \cong \overline{RS}$             | 3. Prop. of $\square$ - opp sides $\cong$ |
| 4. <del><math>\angle P \cong \angle R</math></del> | 4. " " - opp $\angle$ 's $\cong$          |
| 5. $\triangle PQJ \cong \triangle RSK$             | 5. SAS                                    |
| 6. $\overline{QJ} \cong \overline{SK}$             | 6. CPCTC                                  |

2. Given: ABCD is a  $\square$   
 $\angle A \cong \angle E$   
 Prove:  $\triangle DCE$  is isosceles



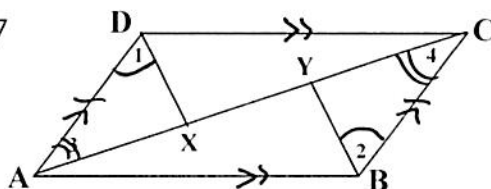
| S                                                            | R                                                                         |
|--------------------------------------------------------------|---------------------------------------------------------------------------|
| 1. ABCD is a $\square$                                       | 1. Given                                                                  |
| 2. $\angle A \cong \angle E$                                 | 2. Given                                                                  |
| 3. <del><math>\overline{BA} \cong \overline{ED}</math></del> | 3. <del>prop of <math>\square</math> - opp sides <math>\cong</math></del> |
| 4. $\angle A$ is supp to $\angle ADC$                        | 4. Prop. of $\square$ - consecutive $\angle$ 's supp.                     |
| 5. $\angle CDE$ is supp to $\angle ADC$                      | 5. Linear pair                                                            |
| 6. $\angle A \cong \angle CDE$                               | 6. $\cong$ supp. theorem                                                  |
| 7. $\angle CDE \cong \angle E$                               | 7. Transitive                                                             |
| 8. $\triangle DCE$ is isosceles                              | 8. prop of isosceles $\triangle$ - two $\angle$ 's $\cong$                |

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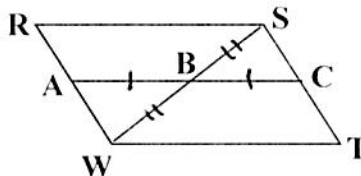
3. Given: ABCD is a  $\square$

Prove:  $\angle 1 \cong \angle 2$   
 $\overline{DX} \cong \overline{BY}$



| S                                          | R                                            |
|--------------------------------------------|----------------------------------------------|
| 1. ABCD is a $\square$                     | 1. Given                                     |
| 2. $\angle 1 \cong \angle 2$               | 2. Given                                     |
| 3. $\overline{DA} \cong \overline{BC}$     | 3. prop of $\square$ - opp sides $\cong$     |
| 4. $\overline{DA} \parallel \overline{BC}$ | 4. prop of $\square$ - opp sides $\parallel$ |
| 5. $\angle 3 \cong \angle 4$               | 5. Alt. int. $\angle$ 's                     |
| 6. $\triangle ADX \cong \triangle CBY$     | 6. ASA                                       |
| 7. $\overline{DX} \cong \overline{BY}$     | 7. CPCTC                                     |

4. Given: RSTW is a  $\square$   
A, B & C are midpoints  
of the lines they lie on  
Prove:  $\triangle ABW \cong \triangle CBS$

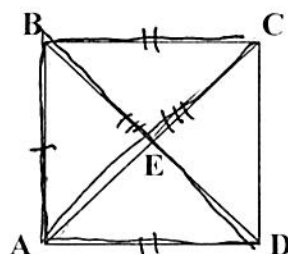


| S                                                            | R                                                                         |
|--------------------------------------------------------------|---------------------------------------------------------------------------|
| 1. RSTW is a $\square$                                       | 1. Given                                                                  |
| 2. A, B, C are midpoints                                     | 2. Given                                                                  |
| 3. $\overline{AB} \cong \overline{CB}$                       | 3. def. midpoint                                                          |
| 4. $\overline{WB} \cong \overline{SB}$                       | 4. " "                                                                    |
| <del>5. <math>\overline{RW} \cong \overline{ST}</math></del> | <del>5. prop of <math>\square</math> - opp sides <math>\cong</math></del> |
| 6. $\angle ABW \cong \angle CBS$                             | 6. vert. $\angle$ 's                                                      |
| 7. $\triangle ABW \cong \triangle CBS$                       | 7. SAS                                                                    |

Proofs of Parallelograms  
Pre-AP Geometry Homework

Name \_\_\_\_\_  
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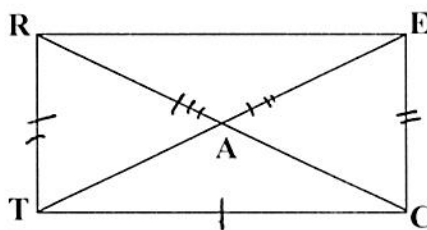
5. Given:  $ABCD$  is a square with diagonals  $\overline{AC}$  and  $\overline{BD}$  intersecting at  $E$   
Prove:  $\triangle DAB \cong \triangle CBA$



\* could also  
do SAS, ASA  
AAS or HL.

| S                                                                                                | R                                     |
|--------------------------------------------------------------------------------------------------|---------------------------------------|
| 1. $ABCD$ is a square<br>w/ diagonals $\overline{AC}$ and<br>$\overline{BD}$ intersecting at $E$ | 1. Given                              |
| 2. $\overline{DA} \cong \overline{CB}$                                                           | 2. prop of square - all sides $\cong$ |
| 3. $\overline{AB} \cong \overline{BA}$                                                           | 3. Reflexive                          |
| 4. $\overline{DB} \cong \overline{CA}$                                                           | 4. prop of square - diagonals $\cong$ |
| 5. $\triangle DAB \cong \triangle CBA$                                                           | 5. SSS                                |

6. Given:  $RECT$  is a rectangle with diagonals  $\overline{RC}$  and  $\overline{ET}$  intersecting at  $A$   
Prove:  $\triangle RCT \cong \triangle ETC$



\* could also  
do SAS, ASA  
AAS, or HL.

| S                                                                                                 | R                                    |
|---------------------------------------------------------------------------------------------------|--------------------------------------|
| 1. $RECT$ is a rectangle<br>w/ diagonals $\overline{RC}$ + $\overline{ET}$<br>intersecting at $A$ | 1. Given                             |
| 2. $\overline{TC} \cong \overline{CT}$                                                            | 2. Reflexive                         |
| 3. $\overline{RT} \cong \overline{EC}$                                                            | 3. prop of rect. - opp sides $\cong$ |
| 4. $\overline{RC} \cong \overline{ET}$                                                            | 4. prop of rect. - diagonals $\cong$ |
| 5. $\triangle RCT \cong \triangle ETC$                                                            | 5. SSS                               |