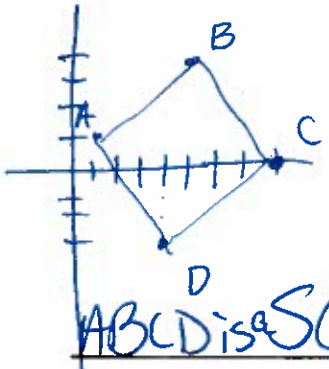
Key

5. Given the following point, use algebra to prove what quadrilateral it creates. Show all work. Write your conclusion in the form of a sentence, including your justification on the line below.

A(1, 1), B(5,4), C(8,0), D(4,-3)



$AB = \sqrt{(5-1)^2+(4-1)^2} = \sqrt{16+9} = \sqrt{25} = 5$

$BC = \sqrt{(8-5)^2+(0-4)^2} = \sqrt{9+16} = \sqrt{25} = 5$

$CD = \sqrt{(4-8)^2+(-3-0)^2} = \sqrt{16+9} = \sqrt{25} = 5$

$AD = \sqrt{(4-1)^2+(-3-1)^2} = \sqrt{9+16} = \sqrt{25} = 5$

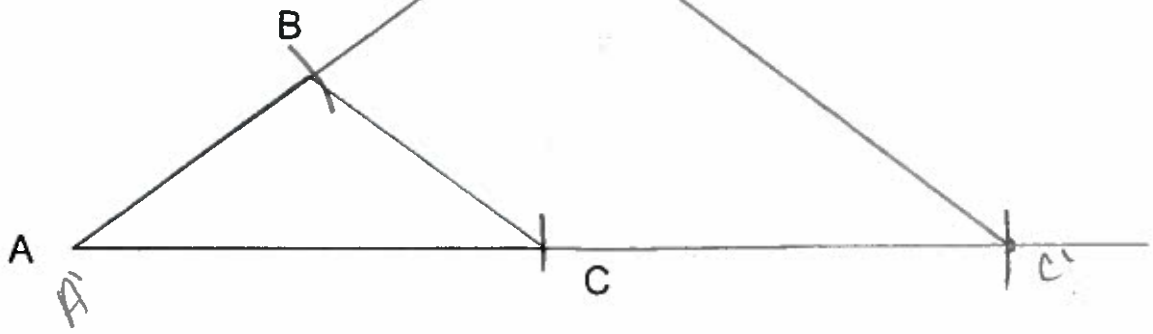
All sides ≅ At least Rhombus.

$m\overline{AB} = \frac{4-1}{5-1} = \frac{3}{4}$ $m\overline{BC} = \frac{0-4}{8-5} = \frac{-4}{3}$

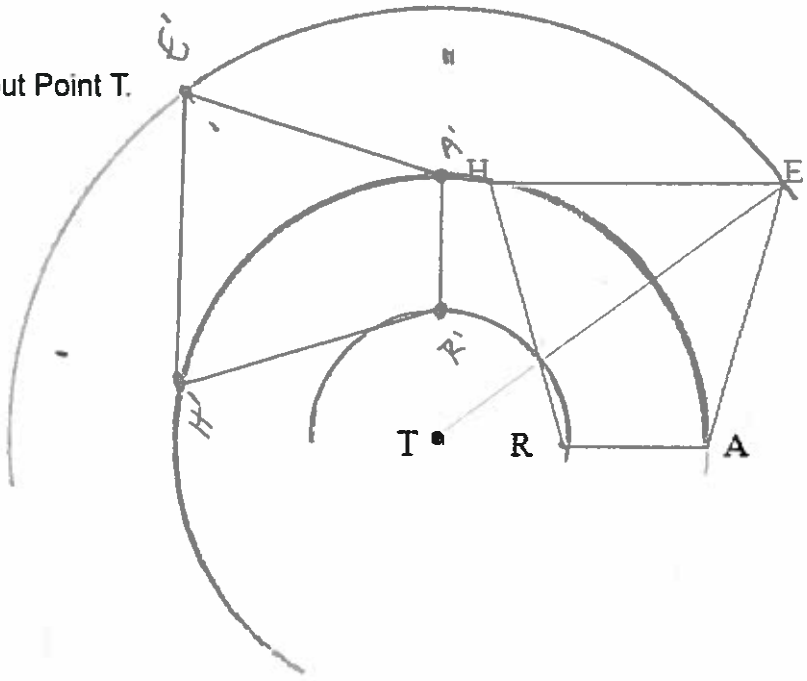
$\overline{AB} \perp \overline{BC}$ Right ∠

ABCD is a Square b/c all sides ≅ and Right angles.

6. Dilate the triangle below to a scale factor of 2 with the center of A.

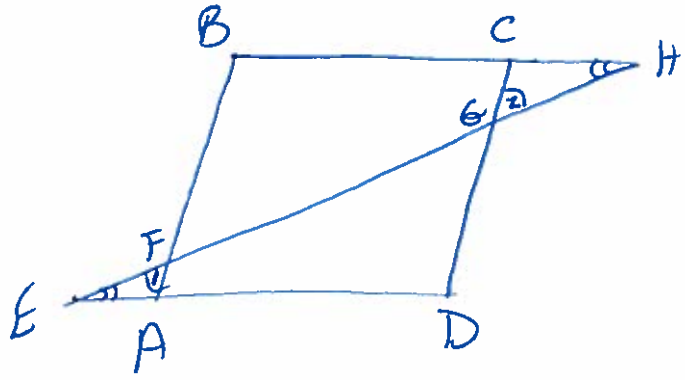


7. Rotate the figure below 90 degrees about Point T.



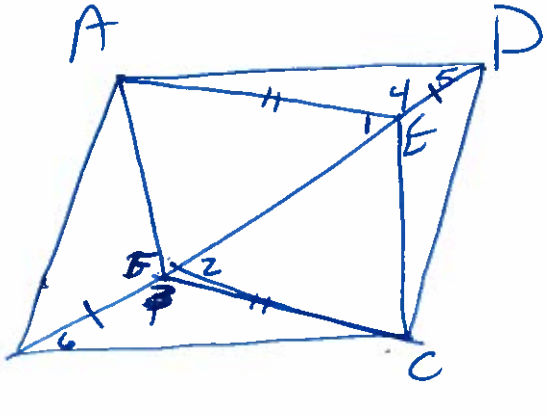
Proof Page Key

(1.) Given: $\triangle EFA \cong \triangle HGC$
Prove: ABCD is $\square$



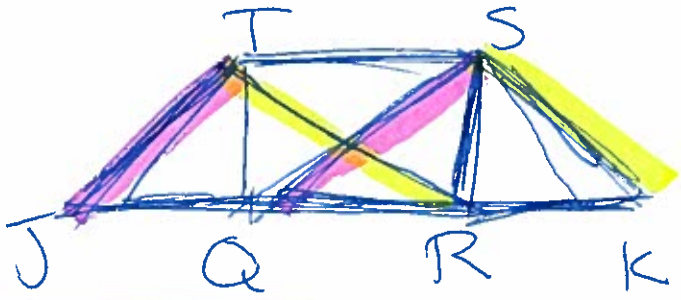
1) $\triangle EFA \cong \triangle HGC$	1) Given
2) $\angle 4 \cong \angle 2$, $\angle E \cong \angle H$	2) CPCTC
3) $\overleftrightarrow{AB} \parallel \overleftrightarrow{DC}$	3) If Alt. Ext. $\angle$'s $\cong$, then lines $\parallel$.
4.) $\overleftrightarrow{BC} \parallel \overleftrightarrow{AD}$	4.) If Alt Int $\angle$'s $\cong$, then lines $\parallel$.
5.) ABCD is $\square$	5) If both pairs opp sides $\parallel$, then $\square$.

(2) Given: $\triangle AEF \cong \triangle CFE$, $\overline{BF} \cong \overline{DE}$
Prove ABCD is $\square$
* There are multiple ways to do this one *



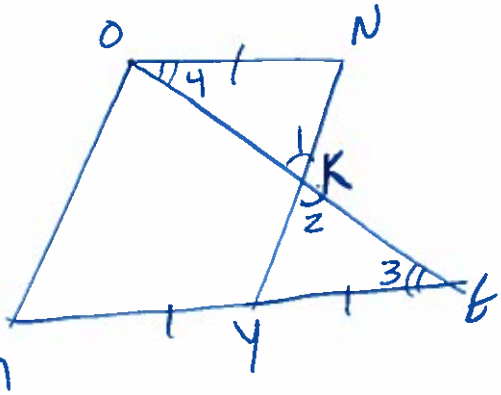
1) $\triangle AEF \cong \triangle CFE$; $\overline{BF} \cong \overline{DE}$	1) Given
2) $\overline{AE} \cong \overline{FC}$	2) CPCTC
3) $\angle 1 \cong \angle 2$	3) CPCTC
4.) $\angle 1$ supp $\angle 4$ $\angle 2$ supp $\angle 3$	4) Linear Pair Postulate
5.) $\angle 3 \cong \angle 4$	5) $\cong$ Supplements Thm.
6.) $\triangle BFC \cong \triangle DEA$	6.) SAS $\cong$
7.) $\overline{AD} \cong \overline{BC}$; $\angle 5 \cong \angle 6$	7.) CPCTC
8.) $\overline{AD} \parallel \overline{BC}$	8.) If Alt. Int. $\angle$'s $\cong$, then lines $\parallel$.
9.) ABCD is a $\square$	9.) If one pair of opposite sides $\cong$ + $\parallel$, then $\square$.

(3.) Given Rectangle QRST and Parallelogram RKST
Prove $\triangle QSK$ is Isosceles



~~Given~~ Rectangle QRST & $\square$ RKST	1) Given
2) $\overline{TR} \cong \overline{SK}$, $\overline{JT} \cong \overline{QS}$	2) if $\square$, opp sides $\cong$
3) $\overline{TR} \cong \overline{QS}$	3.) If Rectangle, then diagonals $\cong$.
4.) $\overline{QS} \cong \overline{SK}$	4.) Transitive Prop. $\cong$
5.) $\triangle QSK$ is Isosceles	5.) If $\triangle$ has 2 $\cong$ sides, then it is Isosceles.

(4.) Given: MONY is a $\square$ & Y is the midpoint of $\overline{ME}$.
Prove: K is the midpoint of $\overline{NY}$



MONY is a $\square$, Y midpt of $\overline{ME}$	1) Given
1) $\overline{MY} \cong \overline{YE}$	2) Defn. midpt M
3) $\overline{ON} \cong \overline{MY}$	3) If $\square$, opp sides $\cong$
4.) $\overline{YE} \cong \overline{ON}$	4.) Transitive prop $\cong$
5.) $\angle 1 \cong \angle 2$	5.) Vert. $\angle$'s $\cong$
6.) $\overleftrightarrow{ON} \parallel \overleftrightarrow{MY}$	6.) If $\square$, opp sides $\parallel$.
7.) $\angle 3 \cong \angle 4$	7.) If lines $\parallel$, Alt. Int. $\angle$s $\cong$.
8.) $\triangle ONK \cong \triangle EYK$	8.) AAS $\cong$
9.) $\overline{NK} \cong \overline{KY}$	9) CPCTC
10.) K is midpt of $\overline{NY}$	10.) Defn. midpt.