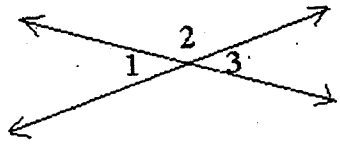
Geo H Name KEY date_____

Begin Proofs: Day 4 Homework

Complete each of the proofs in flow proof form like we did in class. Your tools are all of the definitions, properties, postulates, and theorems we have covered in class thus far. Be sure to cite the reasons in a column format.

① Given: $m\angle 1 + m\angle 2 = 180$
$m\angle 2 + m\angle 3 = 180$

Conclusion: $m\angle 1 = m\angle 3$



① $m\angle 1 + m\angle 2 = 180$, $m\angle 2 + m\angle 3 = 180$ → ② $m\angle 1 + m\angle 2 = m\angle 2 + m\angle 3$ → ③ $m\angle 1 = m\angle 3$

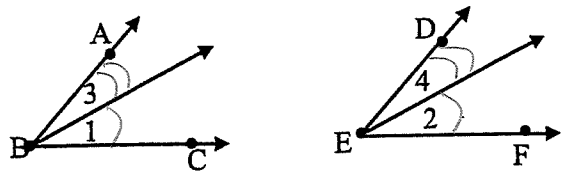
① Given
② Substitution Prop.
③ Subtraction Prop.

② Given: $AC = BD$
Prove: $AB = CD$
(Do not use common segment theorem.)

① $AC = BD$
② $AB + BC = AC$, $BC + CD = BD$ → ③ $AB + BC = BC + CD$ → ④ $AB = CD$

① Given
② Segment Add. Post.
③ Substitution Prop.
④ Subtraction Prop.

③



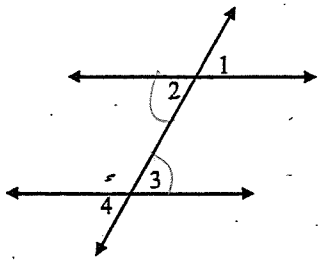
Given: $m\angle 1 = m\angle 2$; $m\angle 3 = m\angle 4$
Prove: $m\angle ABC = m\angle DEF$

① $m\measuredangle 1 = m\measuredangle 2$, $m\measuredangle 3 = m\measuredangle 4$ → ② $m\measuredangle 1 + m\measuredangle 3 = m\measuredangle 2 + m\measuredangle 4$

③ $m\measuredangle 1 + m\measuredangle 3 = m\measuredangle ABC$, $m\measuredangle 2 + m\measuredangle 4 = m\measuredangle DEF$

② and ③ → ④ $m\measuredangle ABC = m\measuredangle DEF$

① Given
② Addition Prop.
③ Angle Add. Post.
④ Substitution Post.



(IV) Given: $\angle 2 \cong \angle 3$
Prove: $\angle 1 \cong \angle 4$

① $\measuredangle 1 \cong \measuredangle 2$, ② $\measuredangle 2 \cong \measuredangle 3$ → ③ $\measuredangle 1 \cong \measuredangle 3$, ④ $\measuredangle 3 \cong \measuredangle 4$ → ⑤ $\measuredangle 1 \cong \measuredangle 4$

① Vertical $\measuredangle$s $\cong$.
② Given
③ Transitive Prop. (NOT substitution prop)
④ Vertical $\measuredangle$s $\cong$.
⑤ Transitive Prop.