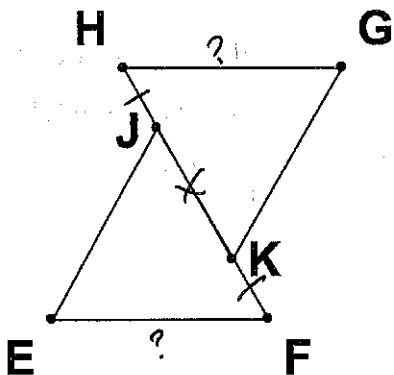


HW #21

Write the proofs out in full. You may choose to write these in two-column or paragraph form.

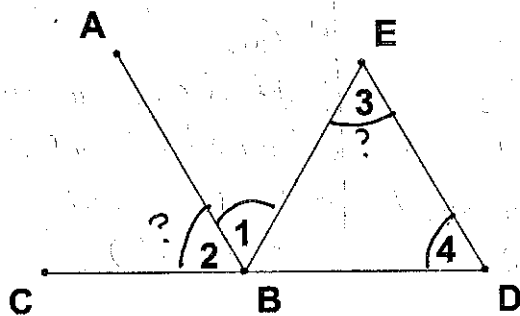
1)



Given: $\overline{HJ} \cong \overline{KF}$
 $\overline{HG} \cong \overline{HK}$
 $\overline{JF} \cong \overline{EF}$
 Prove: $\overline{HG} \cong \overline{EF}$

Statements	Reasons
1. $\overline{HJ} \cong \overline{KF}$	1. Given.
2. $\overline{JK} \cong \overline{JK}$	2. Reflexive Property.
3. $\overline{HJ} + \overline{JK} \cong \overline{KF} + \overline{JK}$ -or- $\overline{HK} \cong \overline{JF}$	3. Addition Postulate (1, 2).
4. $\overline{HG} \cong \overline{HK}$	4. Given.
5. $\overline{HG} \cong \overline{JF}$	5. Transitive Property. (3, 4).
6. $\overline{JF} \cong \overline{EF}$	6. Given.
7. $\overline{HG} \cong \overline{EF}$	7. Transitive Property. (5, 6).

2)

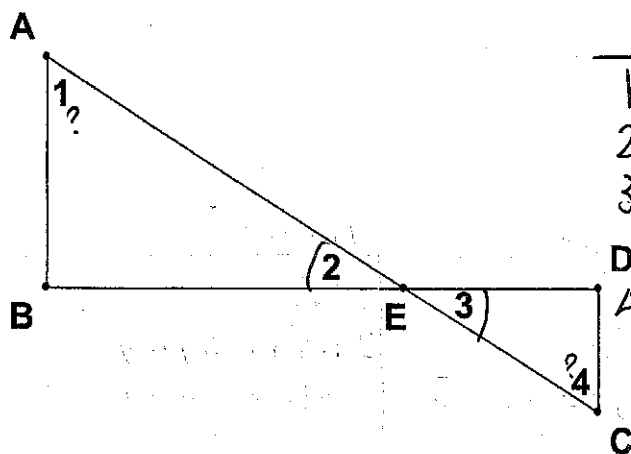


Given: \overline{BA} bisects $\angle CBE$
 $\angle 1 \cong \angle 3$
 $\angle 2 \cong \angle 4$
 Prove: $\angle 3 \cong \angle 2$

Statements	Reasons
1. \overline{BA} bisects $\angle CBE$	1. Given.
2. $\angle 1 \cong \angle 2$	2. Definition of angle bisector. (1)
3. $\angle 1 \cong \angle 3$	3. Given.
4. $\angle 2 \cong \angle 3$	4. Transitive Property. (2, 3)

* Note: Not all the givens were used.
 This is a rare occurrence, and generally means the problem setter didn't take a shorter solution into account. Boo!!!
 Hiss!!

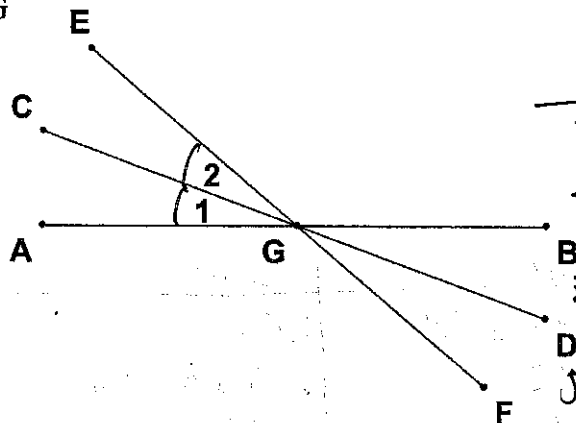
3)



Statements	Reasons
1. \overline{AC} and \overline{BD} intersect at E.	1. Given.
2. $\angle 2 \cong \angle 3$	2. Vertical angles are congruent. (1)
3. $\angle 1$ is complementary to $\angle 2$, $\angle 3$ is complementary to $\angle 4$	3. Given.
4. $\angle 1 \cong \angle 4$	4. If two angles are complementary to congruent angles, then they are congruent. (2, 3)

Given: \overline{AC} and \overline{BD} intersect at E.
 $\angle 1$ is complementary to $\angle 2$
 $\angle 3$ is complementary to $\angle 4$
 Prove: $\angle 1 \cong \angle 4$

4) G



Statements	Reasons
1. \overrightarrow{AGB} , \overrightarrow{CGD} , \overrightarrow{EGF}	1. Given.
2. $\angle 2$ is supplementary to $\angle EGD$.	2. If two angles form a linear pair, then they are supplementary. (1)
3. $m\angle 2 + m\angle EGD = 180^\circ$	3. Def. of supplementary. (2)
4. $\angle 1 \cong \angle 2$	4. Given.
5. $m\angle 1 = m\angle 2$	5. Def. of congruence. (4)
6. $m\angle 1 + m\angle EGD = 180^\circ$	6. Substitution Postulate (3, 5).
7. $\angle 1$ is supplementary to $\angle EGD$.	7. Def. of supplementary angles. (6)

Given: \overline{AGB} , \overline{CGD} , and \overline{EGF}
 $\angle 1 \cong \angle 2$
 Prove: $\angle 1$ is supplementary to $\angle EGD$