GEOMETRY WORKSHEET---BEGINNING PROOFS

I Given: $\frac{2x-9}{5}=1$ Prove: $x=7$

$\frac{2x-9}{5}=1$	GIVEN
$2x-9=5$	MULTIPLICATION
$2x=14$	ADDITION
$x=7$	DIVISION

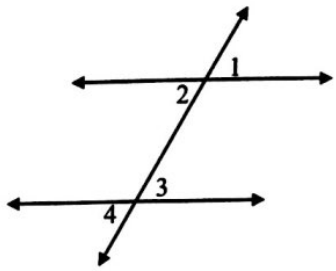
} PROPERTY OF EQUALITY

II. Given: $AC=BD$
Prove: $AB=CD$

1. $AC=BD$	1. GIVEN
2. $AC=(AB+BC)$ $BD=(BC+CD)$	2. SEG ADD POST
3. $AB+BC=BC+CD$	3. SUBSTITUTION (SUBBED STEP 2 INTO STEP 1)
4. $AB=CD$	4. SUBTRACTION PROPERTY OF = (SUBTRACTED BC ON BOTH SIDES

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

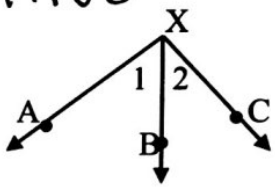
1. $m\angle 1=m\angle 2;\ m\angle 3=m\angle 4$	1. GIVEN
2. $m\angle 1+m\angle 3=m\angle 2+m\angle 4$	2. ADDITION PROP OF = (ADDED $\angle 3$ TO LEFT & $\angle 4$ TO RIGHT WHICH ARE =)
3. $m\angle 1+m\angle 3=(m\angle ABC)$ $m\angle 2+m\angle 4=(m\angle DEF)$	3. ANGLE ADDITION POSTULATE
4. $m\angle ABC=m\angle DEF$	4. SUBSTITUTION (SUBBED STEP 3 INTO STEP 2)



IV. Given: $\angle 2 \cong \angle 3$

Prove: $\angle 1 \cong \angle 4$

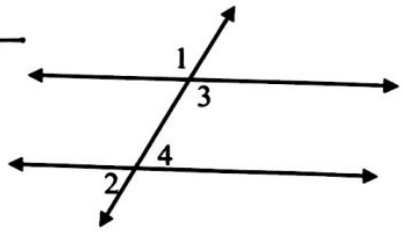
1. $\angle 1 \cong \angle 2$	1. VERT $\angle$s $\cong$
2. $\angle 2 \cong \angle 3$	2. GIVEN
3. $\angle 3 \cong \angle 4$	3. VERT $\angle$s $\cong$
4. $\angle 1 \cong \angle 4$	4. TRANSITIVE



V. Given: $\angle 1$ and $\angle 2$ are complementary

Prove: $\overrightarrow{XA} \perp \overrightarrow{XC}$

1. $\angle 1$ and $\angle 2$ are complementary	1. GIVEN
2. $m\angle 1 + m\angle 2 =$ 90	2. DEF OF COMP. $\angle$s
3. $m\angle AXC = m\angle 1 + m\angle 2$	3. ANGLE ADDITION POSTULATE
4. $m\angle AXC =$ 90	4. TRANSITIVE
5. $\angle AXC$ is a right angle	5. DEF OF RT $\angle$.
6. $\overrightarrow{XA} \perp \overrightarrow{XC}$	6. DEF OF $\perp$



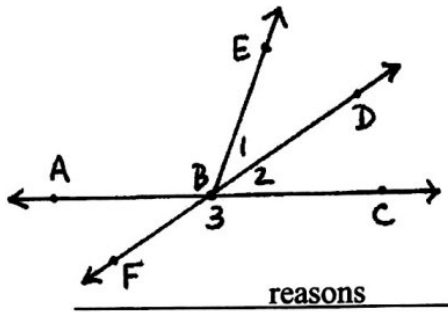
VI. Given: $\angle 1$ and $\angle 2$ are supplementary

Prove: $\angle 3$ and $\angle 4$ are supplementary

1. $\angle 1$ and $\angle 2$ are supp	1. Given
2. $m\angle 1 + m\angle 2 = 180$	2. Def. of supplementary angles
3. $\angle 1 \cong \angle 3$, $\angle 2 \cong \angle 4$	3. Vertical angles are congruent
4. $m\angle 1 = m\angle 3$, $m\angle 2 = m\angle 4$	4. Def. of congruent angles
5. $m\angle 3 + m\angle 4 = 180$	5. Substitution
6. $\angle 3$ and $\angle 4$ are supp	6. Def. of supp $\angle$s

VII. Given: $\overline{BD}$ bisects <EBC

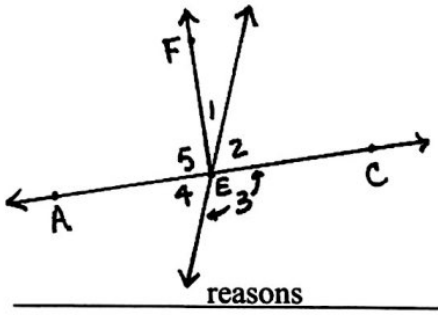
Prove: <1 and <3 are supplementary



statements	reasons
1. $\overline{BD}$ bisects <EBC	1. GIVEN
2. <1 ≅ <2	2. DEF OF BISECT
3. <2 and <3 form a linear pair	3. LINEAR PAIR POSTULATE
4. m<2 + m<3 = 180	4. DEF OF SUPP or LIN. PAIR
5. m<1 = m<2	5. CONGRUENT ∠s THEOREM
6. m<1 + m<3 = 180	6. SUBSTITUTION
7. <1 and <3 are supplementary	7. DEF OF SUPP.

VIII. Given: <FEC is a right angle

Prove: <1 and <4 are complementary



statements	reasons
1. <FEC is a right angle	1. GIVEN
2. m<FEC = 90	2. DEF OF RT ∠.
3. m<FEC = m<1 + m<2	3. ANGLE ADDITION POST.
4. m<1 + m<2 = 90	4. SUBSTITUTION
5. <2 ≅ <4	5. VERT ∠s ≅ THEOREM
6. m<2 = m<4	6. DEF OF ≅ ANGLES
7. m<1 + m<4 = 90	7. SUBSTITUTION (STEP 7 → STEP 4
8. <1 and <4 are complementary	8 DEF OF COMP ∠s.