Geometry Proof Supplemental

1.) Given: AC = AB + AB
Prove: AB = BC

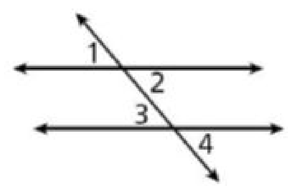
<u>Statement</u> <u>Reason</u>

AB + AB = AC

AB + BC = AC

AB + BC = AB + AB

BC = AB



2.) Given: ∠1 ≅ ∠4
Prove: ∠2 ≅ ∠3

<u>Statement</u> <u>Reason</u>

∠1 ≅ ∠2

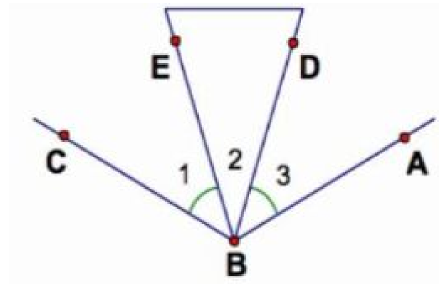
∠3 ≅ ∠4

∠1 ≅ ∠4

∠2 ≅ ∠3

3.) Given: ∠1 ≅ ∠3

Prove: m∠EBA ≅ m∠DBC



Statement	Reason
∠CBE + ∠EBD ≅ ∠CBD	
∠EBD + ∠ DBA ≅ ∠EBA	
∠CBE ≅ ∠DBA	
∠EBD ≅ ∠CBD - ∠CBE	
∠EBD ≅ ∠EBA - ∠DBA	
∠CBD - ∠CBE ≅ ∠EBA - ∠DBA	
∠CBD - ∠DBA ≅ ∠EBA - ∠DBA	
∠CBD ≅ ∠EBA	

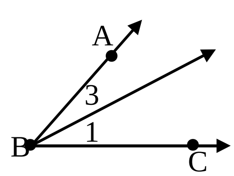
GEOMETRY WORKSHEET---BEGINNING PROOFS

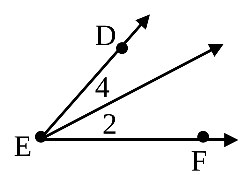
I Given: $\frac{2x-9}{5}=1$ Prove: $x=7$

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

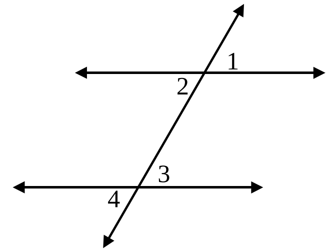
1. AC = BD	1.
2. AC = AB + BC BD = BC + CD	2.
3. AB + BC = BC + CD	3.
4. AB = CD	4.

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





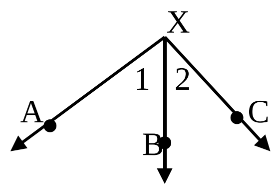
1. $m\angle 1 = m\angle 2$; $m\angle 3 = m\angle 4$	1.
2. $m\angle 1 + m\angle 3 = m\angle 2 + m\angle 4$	2.
3. $m\angle 1 + m$ 3 = $m\angle ABC$ $m\angle 2 + m\angle 4 = m\angle DEF$	3.
4. $m\angle ABC = m\angle DEF$	4.



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

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

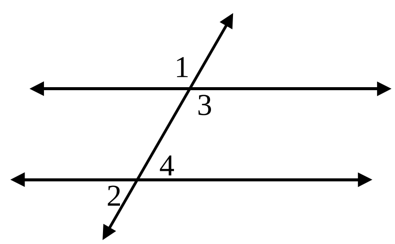
1. $\angle 1 \cong \angle 2$	1.
2. $\angle 2 \cong \angle 3$	2.
3. $\angle 3 \cong \angle 4$	3.
4. $\angle 1 \cong \angle 4$	4.



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

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

1. $\angle 1$ and $\angle 2$ are complementary	1.
2. $m\angle 1 + m\angle 2 =$ ______	2.
3. $m\angle AXC = m\angle 1 + m\angle 2$	3.
4. $m\angle AXC =$ ______	4.
5. $\angle AXC$ is a right angle	5.
6.	6.



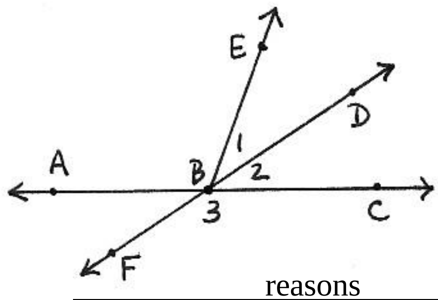
VI. Given: $\angle 1$ and $\angle 2$ are supplementary

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

1.	1. Given
2.	2. Def. of supplementary angles
3.	3. Vertical angles are congruent
4.	4. Def. of congruent angles
5.	5. Substitution
6.	6. Def. of ________________

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

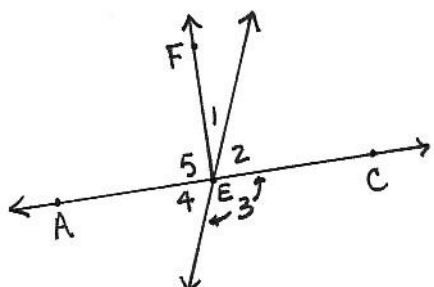
Prove: <1 and <3 are supplementary



statements	reasons
1. $\overrightarrow{BD}$ bisects <EBC	1.
2. <1 ≅ <2	2.
3. <2 and <3 form a linear pair	3.
4. m<2 + m<3 = 180	4.
5. m<1 = m<2	5.
6. m<1 + m<3 = 180	6.
7. <1 and <3 are supplementary	7.

VIII. Given: <FEC is a right angle

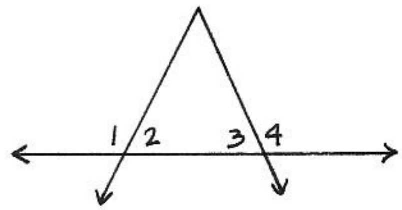
Prove: <1 and <4 are complementary



statements	reasons
1. <FEC is a right angle	1.
2. m<FEC = 90	2.
3. m<FEC = m<1 + m<2	3.
4. m<1 + m<2 = 90	4.
5. <2 ≅ <4	5.
6. m<2 = m<4	6.
7. m<1 + m<4 = 90	7.
8. <1 and <4 are complementary	8

IX. Given: <2 ≅ <3

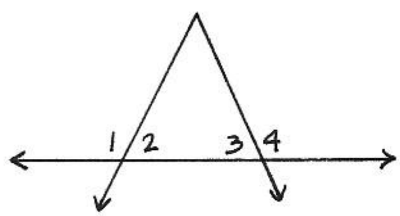
Prove: <1 ≅ <4



statements	reasons
1. <1 and <2 form a linear pair <3 and <4 form a linear pair	1.
2. <1 and <2 are supp. <4 and <3 are supp.	2.
3. <2 ≅ <3	3.
4. <1 ≅ <4	4.

X. Given: <2 ≅ <3

Prove: <1 ≅ <4

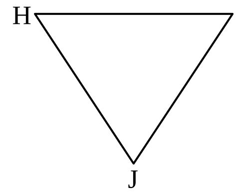


statements	reasons
1. <1 and <2 form a linear pair <3 and <4 form a linear pair	1.
2. m<1 + m<2 = 180 m<3 + m<4 = 180	2.
3. m<1 + m<2 = m<3 + m<4	3.
4. <2 ≅ <3	4.
5. m<2 = m<3	5.
6. m<1 = m<4	6.
7. <1 ≅ <4	7.

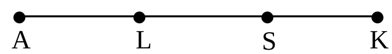
Name: ______________________________ Segment and Angle Proofs Worksheet

Write a two column proof to prove the statement.

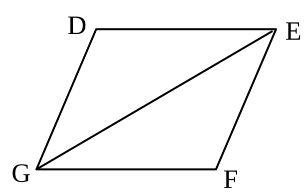
1) **Given:** **HI = 13**
IJ = 13
$\overline{IJ} \cong \overline{JH}$
Prove: $\overline{HI} \cong \overline{JH}$



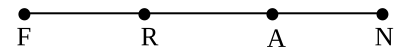
2) **Given:** **AL = SK**
Prove: **AS = LK**



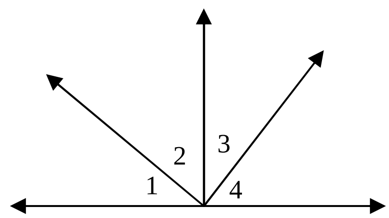
3) **Given:** **DG = 11**
GF = 11
$\overline{GF} \cong \overline{EF}$
Prove: $\overline{DG} \cong \overline{EF}$



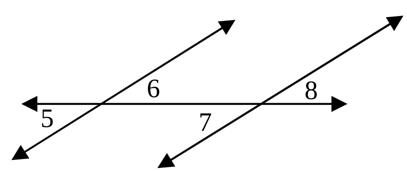
4) **Given:** $\overline{FR} \cong \overline{AN}$
Prove: $\overline{FA} \cong \overline{RN}$



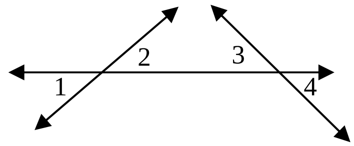
5) **Given:** $\angle 1$ **and** $\angle 2$ **are complementary.**
$\angle 1 \cong \angle 3$
$\angle 2 \cong \angle 4$
Prove: $\angle 3$ **and** $\angle 4$ **are complementary.**



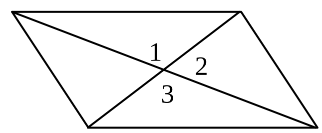
6) **Given:** $\angle 6 \cong \angle 7$
Prove: $\angle 5 \cong \angle 8$



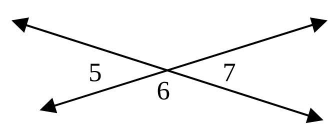
7) **Given:** $\angle 2 \cong \angle 3$
Prove: $\angle 1 \cong \angle 4$



8) **Given:** $\angle 1$ **and** $\angle 2$ **are a linear pair.**
$\angle 2$ **and** $\angle 3$ **are a linear pair.**
Prove: $\angle 1 \cong \angle 3$



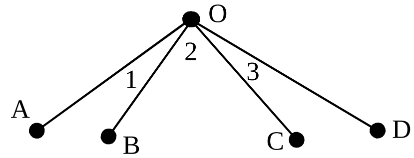
9) **Given:** $\angle 5$ **and** $\angle 6$ **are a linear pair.**
$\angle 6$ **and** $\angle 7$ **are a linear pair.**
Prove: $\angle 5 \cong \angle 7$



10) **Given:** $\overleftrightarrow{OA} \perp \overleftrightarrow{OC}$

$\overleftrightarrow{OB} \perp \overleftrightarrow{OD}$

Prove: $\angle 1 \cong \angle 3$

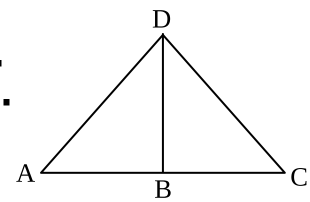


11) **Given:** $\angle A$ **is complementary to** $\angle ADB$**.**

$\angle C$ **is complementary to** $\angle CDB$**.**

$\overrightarrow{DB}$ **bisects** $\angle ADC$**.**

Prove: $\angle A \cong \angle C$



12) **Given:** $\angle 2$ **is supplementary to** $\angle 3$**.**

Prove: $\angle 1 \cong \angle 3$