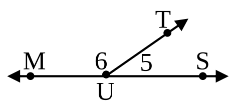
Geometry PreAP Worksheet Rev 2013 — Mathematician: ______________________
2-6: Geometric Proofs — Date: ___________________ Period ______

On a separate paper, write a two-column proof for each problem 1-5. Follow the plan provided for help.

1) Given: $\overline{RT} \cong \overline{SU}$
Prove: $RS = TU$

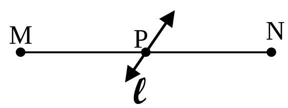
Plan: *Use the definition of congruent segments to write the given information in terms of lengths. Next use the Segment Addition Postulate to write RT in terms of RS + ST and SU as ST + TU. Substitute those into the given information and use the Subtraction Property of Equality to eliminate ST and leave RS = TU.*

2) Given: $m\measuredangle 5 = 47°$
Prove: $m\measuredangle 6 = 133°$



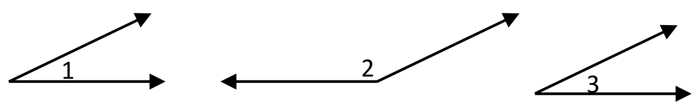
Plan: *Use the Linear Pair Theorem to show that $\measuredangle 5$ and $\measuredangle 6$ are supplementary. Then use the definition of supplementary angles to show that their measures add up to 180°. Finally use substitution and then subtraction to arrive at the "Prove" statement.*

3) Given: ℓ bisects $\overline{MN}$ at P
Prove: $MP = PN$



Plan: *Use the definition of bisect to show the two smaller segments are congruent. Then use the definition of congruence to show that their lengths are equal.*

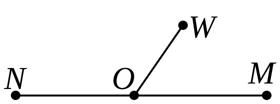
4) Given: $\measuredangle 1$ and $\measuredangle 2$ are supplementary;
$\measuredangle 1 \cong \measuredangle 3$
Prove: $\measuredangle 3$ and $\measuredangle 2$ are supplementary



Plan: *Use the definition of supplementary angles and congruent angles to write the given information in terms of angle measures. Next use substitution to show that $m\measuredangle 3 + m\measuredangle 2 = 180°$. Then use the definition of supplementary angles for the conclusion.*

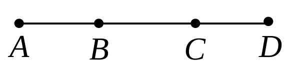
Write a two-column proof for the given.

1)



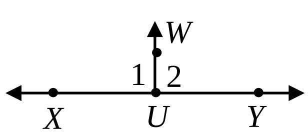
Given: O is the midpoint of $\overline{MN}$
$OM = OW$
Prove: $OW = ON$

2)



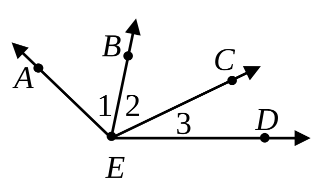
Given: $AB = CD$
Prove: $AC = BD$

3)



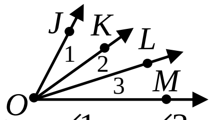
Given: $m\measuredangle 1 = 90°$
Prove: $m\measuredangle 2 = 90°$

4)



Given: $\measuredangle 1$ and $\measuredangle 2$ are complementary
$\measuredangle 3$ and $\measuredangle 2$ are complementary
Prove: $m\measuredangle 1 = m\measuredangle 3$

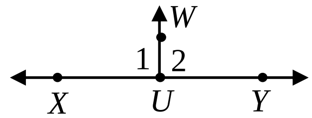
5)



Given: $m\measuredangle 1 = m\measuredangle 3$

Prove: $m\measuredangle JOL = m\measuredangle KOM$

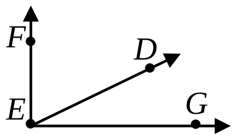
6)



Given: $m\measuredangle 1 = 90°$

Prove: $m\measuredangle 2 + 90 = 180$

7)

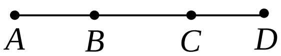


Given: $\overline{EF} \perp \overline{EG}$

D is in the interior of $\measuredangle FEG$

Prove: $\measuredangle FED$ and $\measuredangle DEG$ are complementary

8)



Given: $\overline{AB} \cong \overline{CD}$

Prove: $\overline{AC} \cong \overline{BD}$

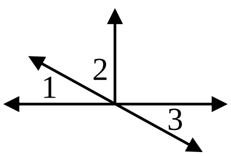
9)

Given: $\measuredangle 1$ and $\measuredangle 2$ are supplementary

$\measuredangle 1 \cong \measuredangle 2$

Prove: $\measuredangle 1$ and $\measuredangle 2$ are right angles

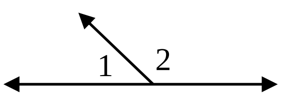
10)



Given: $\measuredangle 1$ and $\measuredangle 2$ are complementary

Prove: $\measuredangle 2$ and $\measuredangle 3$ are complementary

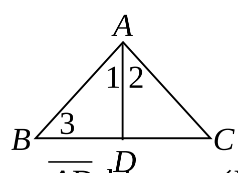
11)



Given: $m\measuredangle 2 = 2(m\measuredangle 1)$

Prove: $m\measuredangle 1 = 60°$

12)

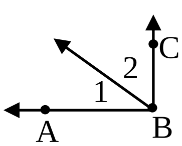


Given: $\overline{AD}$ bisects $\measuredangle BAC$

$\measuredangle 1 \cong \measuredangle 3$

Prove: $\measuredangle 2 \cong \measuredangle 3$

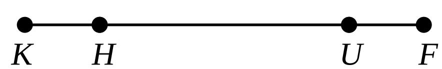
13)



Given: $\measuredangle ABC$ is a right angle

Prove: $\measuredangle 1$ and $\measuredangle 2$ are complementary

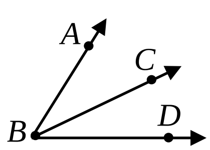
14)



Given: $KU = HF$

Prove: $\overline{KH} \cong \overline{UF}$

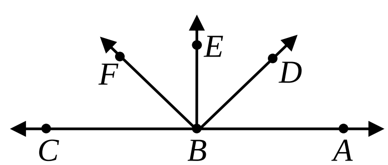
15)



Given: $m\measuredangle ABC = m\measuredangle CBD$

Prove: $\overrightarrow{BC}$ is the angle bisector of $\measuredangle ABD$

16)



Given: $m\measuredangle ABE = m\measuredangle CBE$

Prove: $\measuredangle ABD$ and $\measuredangle DBE$ are complementary