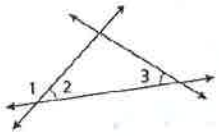
Key

Additional Proofs Practice: Segments and Angles

1) Given: $\angle 2 \cong \angle 3$
Prove: $\angle 1$ and $\angle 3$ are supplementary.



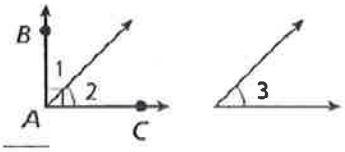
Statements	Reasons
1) $\angle 2 \cong \angle 3$	1) Given
2) $\angle 1$ and $\angle 2$ are a linear pair	2) def. of linear pair
3) $\angle 1$ & $\angle 2$ are suppl.	3) supplement theorem
4) $m\angle 1 + m\angle 2 = 180$	4) def. of suppl.
5) $m\angle 1 + m\angle 3 = 180$	5) substitution
6) $\angle 1$ and $\angle 3$ are supp.	6) suppl. thm. or def. of supp.

2)

Given: $\measuredangle 1$ is supplementary to $\measuredangle 2$, $\measuredangle 3$ is supplementary to $\measuredangle 4$, and $\measuredangle 2 \cong \measuredangle 4$
Prove: $\measuredangle 1 \cong \measuredangle 3$

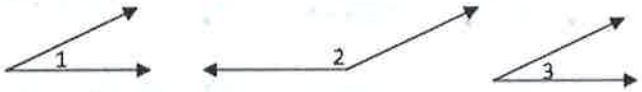
Statements	Reasons
1) $\angle 1$ & $\angle 2$ are supplementary $\angle 3$ & $\angle 4$ are supplementary	1) Given
2) $m\angle 1 + m\angle 2 = 180$ $m\angle 3 + m\angle 4 = 180$	2) def. of supplementary
3) $m\angle 1 + m\angle 2 = m\angle 3 + m\angle 4$	3) substitution / transitive
4) $\angle 2 \cong \angle 4$	4) Given
5) $m\angle 2 = m\angle 4$	5) def. of $\cong$
6) $m\angle 1 + m\angle 4 = m\angle 3 + m\angle 4$	6) substitution prop.
7) $m\angle 1 = m\angle 3$	7) subtraction prop.
8) $\angle 1 \cong \angle 3$	8) def. of $\cong$

3) Given: $\angle BAC$ is a right angle. $\angle 2 \cong \angle 3$
Prove: $\angle 1$ and $\angle 3$ are complementary.



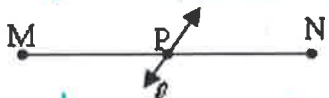
Statements	Reasons
1) $\angle BAC$ is a right $\angle$	1) Given
2) $m\angle BAC = 90°$	2) def. of rt. $\angle$
3) $m\angle 1 + m\angle 2 = m\angle BAC$	3) Angle Addition
4) $m\angle 1 + m\angle 2 = 90$	4) substitution
5) $\angle 2 \cong \angle 3$	5) Given
6) $m\angle 2 = m\angle 3$	6) def. of $\cong$
7) $m\angle 1 + m\angle 3 = 90$	7) substitution
8) $\angle 1$ & $\angle 3$ are comp.	def of comp $\angle$s / comp thm.

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



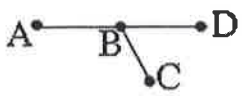
Statements	Reasons
1) $\angle 1$ & $\angle 2$ are Supp. $\angle 1 \cong \angle 3$	1) Given
2) $m\angle 1 + m\angle 2 = 180$	2) def. of Supp.
3) $m\angle 1 = m\angle 3$	3) def. of $\cong$
4) $m\angle 3 + m\angle 2 = 180$	4) substitution
5) $\angle 3$ and $\angle 2$ are supplementary	5) def. of Supp. OR Supp. thm.

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



Statements	Reasons
1) ℓ bisects $\overline{MN}$ at P	1) Given
2) $\overline{MP} \cong \overline{PN}$	2) def. of bisector
3) $MP = PN$	3) def. of $\cong$

6) Given: AB = BC
BC = BD
Prove: B is the midpoint of $\overline{AD}$

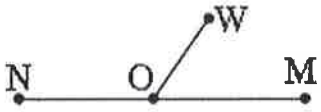


Statements	Reasons
1) AB = BC BC = BD	1) Given
2) AB = BD	2) transitive prop.
3) $\overline{AB} \cong \overline{BD}$	3) def. of $\cong$
4) B is the midpoint of $\overline{AD}$	4) def. of midpoint

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

Statements	Reasons
1) $\overline{RT} \cong \overline{SU}$	1) Given
2) RT = SU	2) def. of $\cong$
3) RS + ST = RT ST + TU = SU	3) Segment addition postulate
4) RS + ST = ST + TU	4) substitution
5) RS = TU	5) Subtraction

8)



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

Statements	Reasons
1) O is the midpoint of $\overline{MN}$.	1) Given
2) $\overline{ON} \cong \overline{OM}$	2) def. of midpoint
3) ON = OM	3) def. of $\cong$
4) OM = OW	4) Given
5) ON = OW	5) transitive property
6) OW = ON	6) Symmetric property

9)

Given: AB = CD
Prove: AC = BD

Statements	Reasons
1) AB = CD	1) Given
2) AB + BC = CD + BC	2) addition property
3) AB + BC = AC CD + BC = BD	3) Segment addition postulate
4) AC = BD	4) Substitution