

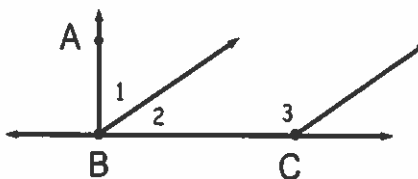
Geometry: Please clear your desk except for...

1. Assignments #17
2. SNB - Write a proof for the following.



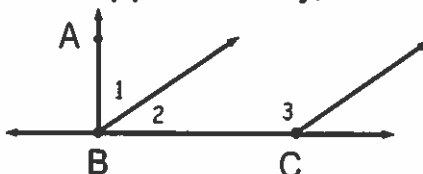
Given: $\angle 2$ and $\angle 3$ are supplementary, $m\angle 1 = 50^\circ$, $m\angle 3 = 140^\circ$

Prove: $\overline{AB} \perp \overline{BC}$



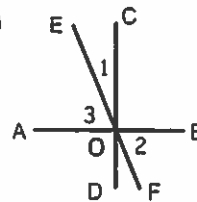
Given: $\angle 2$ and $\angle 3$ are supplementary, $m\angle 1 = 50^\circ$, $m\angle 3 = 140^\circ$

Prove: $\overline{AB} \perp \overline{BC}$



Statements	Reasons
1. $\angle 2$ and $\angle 3$ are supplementary, $m\angle 1 = 50^\circ$, $m\angle 3 = 140^\circ$	Given
2. $m\angle 2 + m\angle 3 = 180^\circ$	Def. of supp. \angle s
3. $m\angle 2 = 40^\circ$	Subtr. Prop. $\angle = (2-1)$
4. $m\angle ABC = m\angle 1 + m\angle 2$	\angle Add. Post.
5. $m\angle ABC = 50^\circ + 40^\circ$	Subst. Prop. $\angle = (1, 3 \rightarrow 4)$
6. $m\angle ABC = 90^\circ$	Dist. Prop.
7. $\overline{AB} \perp \overline{BC}$	Def. of \perp

If two adjacent angles are complementary, then their exterior sides are perpendicular.



Given: $\angle 1$ and $\angle 3$ are complementary

Prove: $\overline{AO} \perp \overline{CO}$

Statements	Reasons
① $\angle 1$ and $\angle 3$ are complementary	① Given
② $m\angle 1 + m\angle 3 = 90^\circ$	② Def. of comp. \angle s
③ $m\angle AOC = m\angle 1 + m\angle 3$	③ \angle Add. Post.
④ $m\angle AOC = 90^\circ$	④ Trans. Prop. of =
⑤ $\overline{AO} \perp \overline{CO}$	⑤ Def. of \perp

Comp. Adj. \angle s \rightarrow Ext. sides \perp

Adj. Comp. \angle s \leftrightarrow Ext. sides \perp

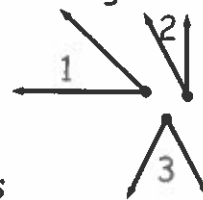
The Congruent Complements Theorem

If two angles are complementary to the same angle (or to congruent angles), then the two angles are congruent.

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

$\angle 2$ and $\angle 3$ are complementary

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

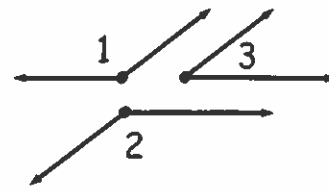


Statements	Reasons
1. $\angle 1$ and $\angle 2$ are complementary $\angle 2$ and $\angle 3$ are complementary	Given
2. $m\angle 1 + m\angle 2 = 90^\circ$ $m\angle 2 + m\angle 3 = 90^\circ$	Def. of comp. \angle s
3. $m\angle 1 + m\angle 2 = m\angle 2 + m\angle 3$	Trans. Prop. of =
4. $m\angle 2 = m\angle 2$	Reflexive Prop. of =
5. $m\angle 1 = m\angle 3$	Subtr. Prop. of = (3-4)
6. $\angle 1 \cong \angle 3$	Def. of $\cong \angle$ s

Congruent Supplements Converse

If two angles are congruent, then they are supplementary to the same angle (or to congruent angles).

Given: $\angle 1 \cong \angle 2$, $\angle 1$ and $\angle 3$ are supplementary



Prove: $\angle 2$ and $\angle 3$ are supplementary

Statements	Reasons
1. $\angle 1 \cong \angle 2$, $\angle 1$ and $\angle 3$ are supplementary	Given
2. $m\angle 1 = m\angle 2$	Def. of \cong \angle s
3. $m\angle 1 + m\angle 3 = 180^\circ$	Def. of Supp. \angle s
4. $m\angle 2 + m\angle 3 = 180^\circ$	Subst. Prop. of $=$ ($2 \rightarrow 3$)
5. $\angle 2$ and $\angle 3$ are supplementary	Def. of Supp. \angle s

Assignment #18

Part I: p. 60 Mixed Review #1-7

Part II: p. 62 CE #1-6 and #7-10 (2-column proofs)

Prove the Congruent Complements Converse and the Congruent Supplements Theorem in your SNB.