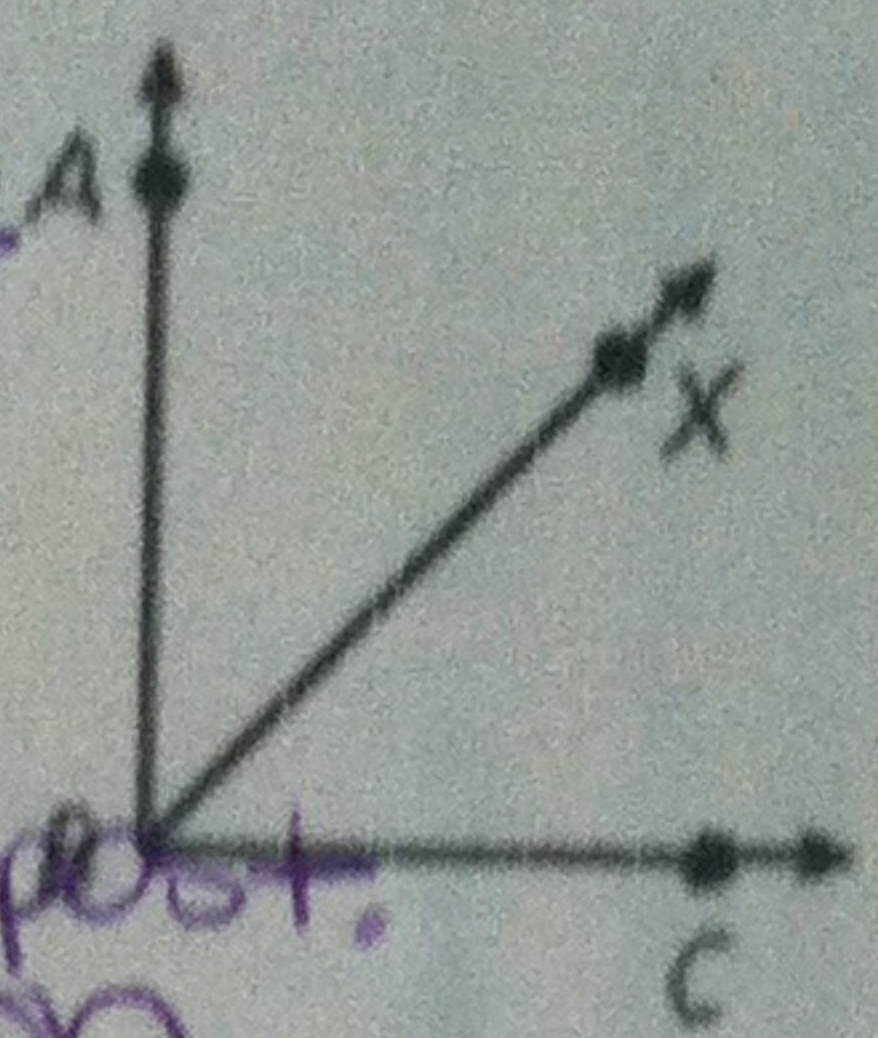


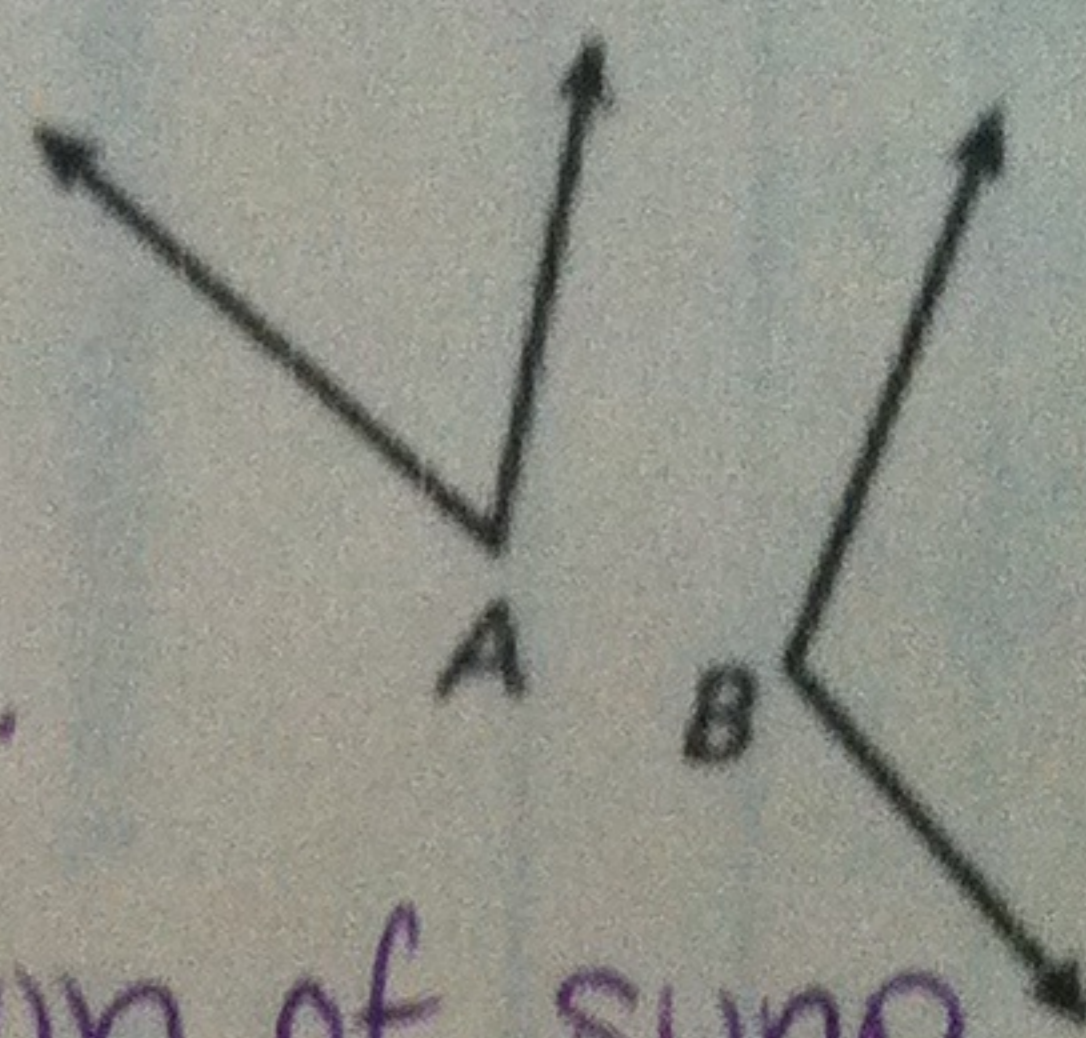
Write a justification for each step, given that \overline{BX} bisects $\angle ABC$ and $m\angle XBC = 45^\circ$.

1. \overline{BX} bisects $\angle ABC$. Given
2. $\angle ABX \cong \angle XBC$ Def of a bisector
3. $m\angle ABX = m\angle XBC$ Def of \cong
4. $m\angle XBC = 45^\circ$ Given
5. $m\angle ABX = 45^\circ$ transitive
6. $m\angle ABX + m\angle XBC = m\angle ABC$ add post.
7. $45^\circ + 45^\circ = m\angle ABC$ substitution.
8. $90^\circ = m\angle ABC$ simplify
9. $\angle ABC$ is a right angle. def of a right \angle



3. Write a justification for each step, given that $m\angle A = 60^\circ$ and $m\angle B = 2m\angle A$.

1. $m\angle A = 60^\circ, m\angle B = 2m\angle A$ Given
2. $m\angle B = 2(60^\circ)$ substitution
3. $m\angle B = 120^\circ$ simplify
4. $m\angle A + m\angle B = 60^\circ + 120^\circ$ add post.
5. $m\angle A + m\angle B = 180^\circ$ simplify
6. $\angle A$ and $\angle B$ are supplementary. definition of supp.

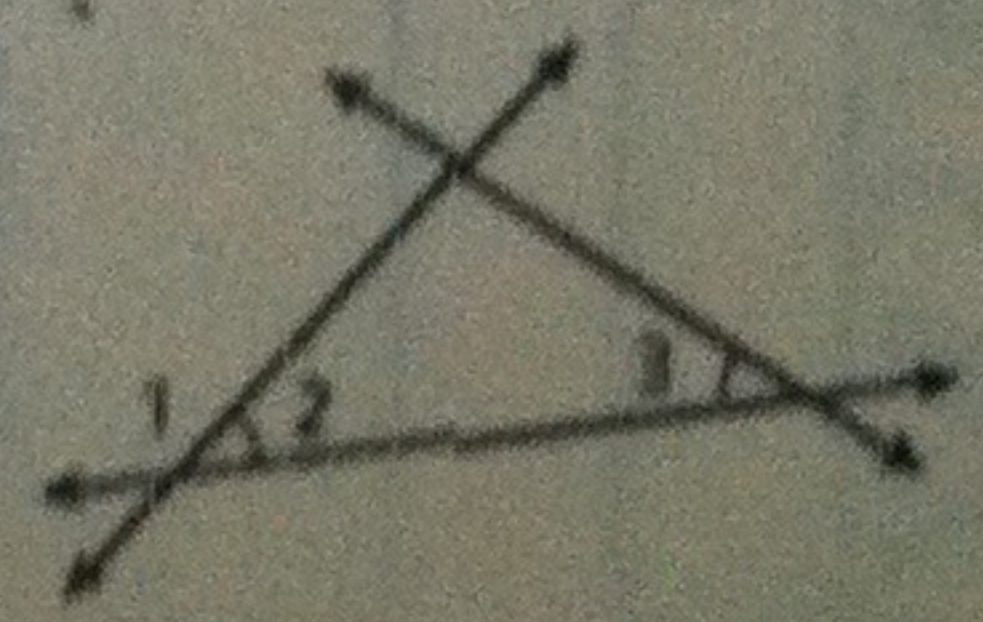


Fill in the blanks to complete the two-column proof.

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

Prove: $\angle 1$ and $\angle 3$ are supplementary.

Proof:



Statements	Reasons
1. $\angle 2 \cong \angle 3$	1. Given
2. $m\angle 2 = m\angle 3$	2. a. $\underline{\hspace{1cm}}$? def of \cong
3. b. $\underline{\hspace{1cm}}$? $\angle 1, \angle 2$ linear pair	3. Lin. Pair Thm.
4. $m\angle 1 + m\angle 2 = 180^\circ$	4. Def. of supp. \angle
5. $m\angle 1 + m\angle 3 = 180^\circ$	5. c. $\underline{\hspace{1cm}}$? substitution Steps 2, 4
6. d. $\underline{\hspace{1cm}}$ and $\angle 3$ are supp.	6. Def. of supp. \angle

Given

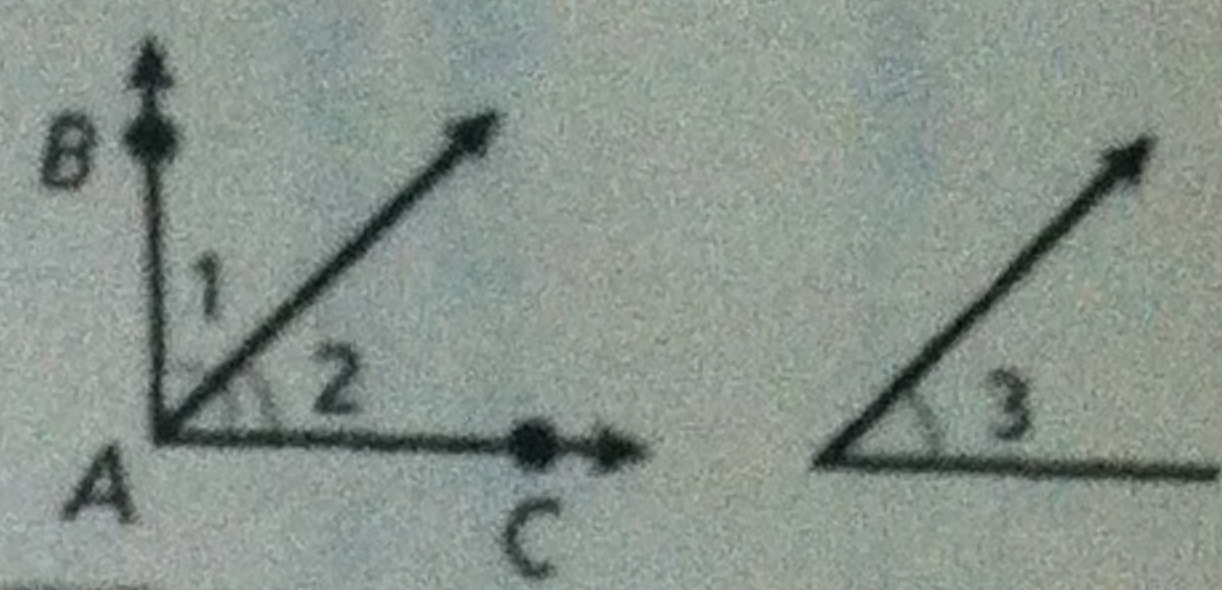
Prove

Proof

1.
2.
3.
4.
5.
6.
7.

= 45°.

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



Proof:

Statements	Reasons
1. $\angle BAC$ is a right angle.	1. Given
2. $m\angle BAC = 90^\circ$	2. a. <u>?</u> definition right \angle
3. b. <u>?</u> $\angle 1 + \angle 2 = \angle BAC$	3. \angle Add. Post.
4. $m\angle 1 + m\angle 2 = 90^\circ$	4. Subst. Steps 2, 3
5. $\angle 2 \cong \angle 3$	5. Given
6. c. <u>?</u> $\angle 2 = \angle 3$	6. Def. of $\cong \angle$
7. $m\angle 1 + m\angle 3 = 90^\circ$	7. d. <u>SUBST.</u> Steps 4, 6
8. e. <u>?</u>	8. Def. of comp. \angle

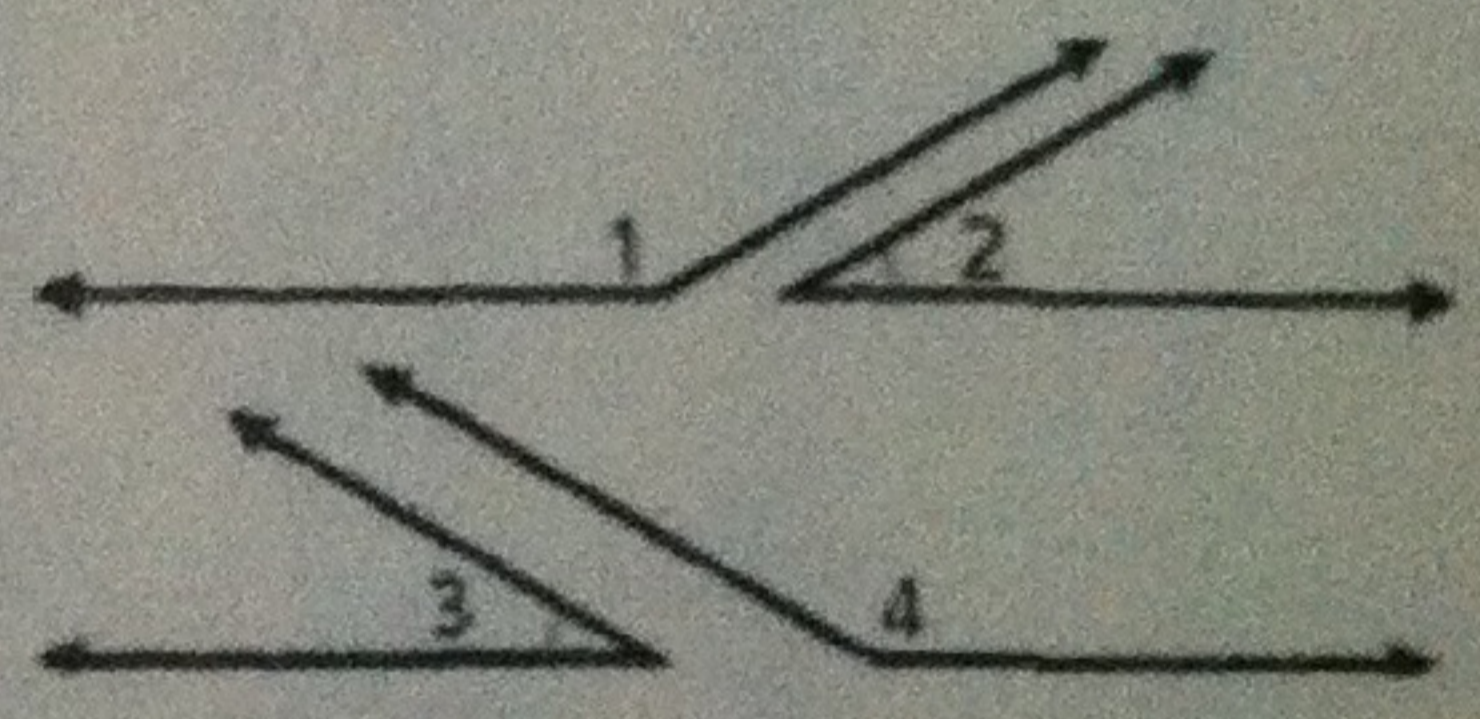
$\angle 1$ and $\angle 3$ are comp.

$m\angle A$.

Given: $\angle 1$ and $\angle 2$ are supplementary, and
 $\angle 3$ and $\angle 4$ are supplementary.

$\angle 2 \cong \angle 3$

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



Proof:

Statements	Reasons
1. $\angle 1$ and $\angle 2$ are supplementary. $\angle 3$ and $\angle 4$ are supplementary.	1. Given
2. a. <u>?</u> $\angle 1 + \angle 2 = 180, \angle 3 + \angle 4 = 180$	2. Def. of supp. \angle
3. $m\angle 1 + m\angle 2 = m\angle 3 + m\angle 4$	3. b. <u>?</u> transitive prop =
4. $\angle 2 \cong \angle 3$	4. Given
5. $m\angle 2 = m\angle 3$	5. Def. of $\cong \angle$
6. c. <u>?</u> $m\angle 1 = m\angle 4$	6. Subtr. Prop. of = Steps 3, 5
7. $\angle 1 \cong \angle 4$	7. d. <u>?</u> def of $\cong \angle$'s