

Name: key

Date:

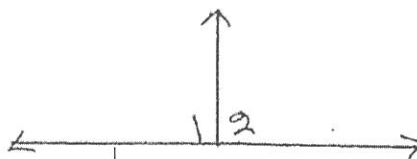
Period:

HW #2-12



Given: $\angle 1 \cong \angle 2$

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



Statements

Reasons

① $\angle 1 \cong \angle 2$

② $m\angle 1 = m\angle 2$

③ $\angle 1$ and $\angle 2$ are a linear pair

④ $m\angle 1 + m\angle 2 = 180^\circ$

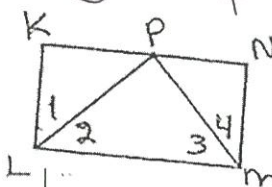
⑤ $m\angle 1 + m\angle 1 = 180^\circ$

⑥ $2m\angle 1 = 180^\circ$

2. Given: $\angle KLM$ and $\angle NML$ are right angles

$\angle 2 \cong \angle 3$

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



Statements

Reasons

① $\angle KLM$ and $\angle NML$ are right $\angle$ s

② $m\angle KLM = 90^\circ$ and $m\angle NML = 90^\circ$

③ $m\angle 1 + m\angle 2 = m\angle KLM$

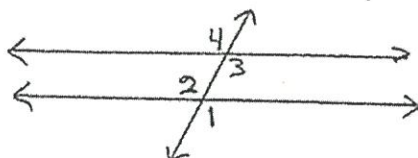
$m\angle 3 + m\angle 4 = m\angle NML$

④ $m\angle 1 + m\angle 2 = 90^\circ$

$m\angle 3 + m\angle 4 = 90^\circ$

3. Given: $\angle 2 \cong \angle 4$

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



Statements

Reasons

① $\angle 2 \cong \angle 4$

② $\angle 4 \cong \angle 3$

③ $\angle 2 \cong \angle 3$

④ $\angle 1 \cong \angle 2$

⑤ $\angle 1 \cong \angle 3$

① given

② vert. $\angle$ s are $\cong$

③ Trans prop. $\cong$

④ vert. $\angle$ s are $\cong$

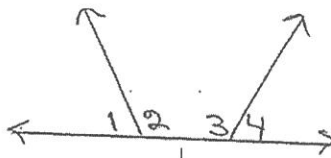
⑤ Trans. prop. $\cong$

① Statements	Reasons
⑦ $m\angle 1 = 90^\circ$	⑦ div. prop. =
⑧ $m\angle 2 = 90^\circ$	⑧ subst. prop. =
⑨ $\angle 1$ and $\angle 2$ are right $\angle$ s	⑨ def. of a right $\angle$

② S	R
⑤ $m\angle 1 + m\angle 2 = m\angle 3 + m\angle 4$	⑤ Trans. prop. =
⑥ $\angle 2 \cong \angle 3$	⑥ given
⑦ $m\angle 2 = m\angle 3$	⑦ $\cong \rightarrow =$
⑧ $m\angle 1 + m\angle 3 = m\angle 3 + m\angle 4$	⑧ subst. prop. =
⑨ $m\angle 1 = m\angle 4$	⑨ subtract. prop. =
⑩ $\angle 1 \cong \angle 4$	⑩ $= \rightarrow \cong$

4. Given: $m\angle 1 + m\angle 3 = 180^\circ$

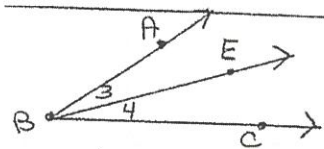
Prove: $\angle 1 \cong \angle 4$



Statements	Reasons
① $m\angle 1 + m\angle 3 = 180^\circ$	① given
② $\angle 1$ and $\angle 3$ are supp	② def. of supp $\angle$ s
③ $\angle 3$ and $\angle 4$ are supp	③ linear pair post.
④ $\angle 1 \cong \angle 4$	④ $\cong$ supps thm

5. Given: $m\angle ABC = 40^\circ$ and $m\angle 3 = 20^\circ$

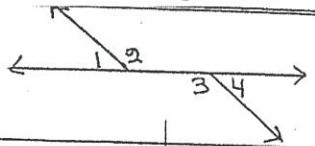
Prove: $\overrightarrow{BE}$ bisects $\angle ABC$



Statements	Reasons
① $m\angle ABC = 40^\circ$ and $m\angle 3 = 20^\circ$	① given
② $m\angle ABC = m\angle 4 + m\angle 3$	② angle addl. post.
③ $40 = m\angle 4 + 20$	③ subst. prop. =
④ $20 = m\angle 4$	④ subtract. prop. =
⑤ $m\angle 3 = m\angle 4$	⑤ Trans. prop. =
⑥ $\angle 3 \cong \angle 4$	⑥ $= \rightarrow \cong$
⑦ $\overrightarrow{BE}$ bisects $\angle ABC$	⑦ def. of an $\angle$ bisector

6. Given: $\angle 1$ and $\angle 3$ are supplementary

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



Statements	Reasons
① $\angle 1$ and $\angle 3$ are supp	① given
② $\angle 3$ and $\angle 4$ are supp	② linear pair post.
③ $\angle 1 \cong \angle 4$	③ $\cong$ supps thm