**Activity 2.3.4b Proving the Isosceles Triangle Converse**

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**Fill in the blanks in this proof.**

Given ∆*ABC* with *m*$∠$*ABC= m*$∠$*ACB*

Prove *AB* = *AC*

*Step 1*. Draw any line $\overleftrightarrow{DE}$ in the plane of the triangle and reflect ∆*ABC* over $\overleftrightarrow{DE}$.

*Step 2a*. In ∆*ABC* and ∆*A’C’B*’

 *m*$∠$*ABC= m*$∠$*ACB* Why? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 *m*$∠$*ABC= m*$∠$*A’B’C’* Why? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Therefore *m*$∠$*ACB= m*$∠$*A’B’C’* Why? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Step 2b*. In ∆*ABC* and ∆*A’C’B*’

 *m*$∠$*ACB= m*$∠$*ABC* Why? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 *m*$∠$*ACB= m*$∠$*A’C’B’* Why? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Therefore *m*$∠$*ABC= m*$∠$*A’C’B’* Why? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 *Step* 2c. *BC = B’C’* Why? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Step 3.* From steps 2a, 2b, and 2c we can prove that ∆*ABC* and ∆*A’C’B’* are congruent, by the \_\_\_\_\_\_\_ Congruence Theorem.

*Step 4. AB = A’C’* since corresponding parts of congruent triangles are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.



Step 5. *AC = A’C’.* Why? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Step 6. Therefore *AB = AC.* Why? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_