**Activity 2.3.3a Proving the Isosceles Triangle Theorem**

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

Given ∆*ABC* with *AB* = *BC*

Prove *m*$∠$*ABC= m*$∠$*ACB*

*Step 1*. Reflect ∆*ABC* over line $\overleftrightarrow{AC}$.

1. What is another name for point *A*? \_\_\_\_\_\_
2. What is another name for point *C*? \_\_\_\_\_\_

*Step 2*. In ∆*ABC* and ∆*ACB*’

 3. *AB* = *AC* Why? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 4. *AB* = *AB*’ Why? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 5. *AC = AB’* Why? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 6. *m*$∠$*BAC*= *m*$∠$*CAB’* Why? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Step 3.* From lines 3, 4, and 6 above we can prove that ∆*ABC* and ∆*ACB’* are congruent, by the \_\_\_\_\_\_\_ Congruence Theorem.

*Step 4. m*$∠$*ABC* = *m*$∠$*ACB’* since corresponding parts of congruent triangles are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

*Step 5. m*$∠$*ACB’* = *m*$∠$*ACB* since reflections preserve \_\_\_\_\_\_\_\_\_\_\_\_\_measure.

*Step 6. m*$∠$*ABC* = *m*$∠$*ACB* by the \_\_\_\_\_\_\_\_\_\_\_ property of equality.