

# Ch 2 Proof Practice - DAY 1 HOMEWORK KEY

Some of your proofs may be slightly different from the proofs here.

$$\textcircled{I} \quad \left. \begin{array}{l} \textcircled{1} \angle 2 \text{ \& } \angle 3 \text{ are vertical \(\angle\)'s.} \\ \textcircled{3} \angle 1 \cong \angle 2 \end{array} \right\} \rightarrow \left. \begin{array}{l} \textcircled{4} \angle 1 \cong \angle 3 \\ \textcircled{5} \angle 3 \cong \angle 4 \end{array} \right\} \rightarrow \textcircled{6} \angle 1 \cong \angle 4$$

- \textcircled{1} Def. of vertical \(\angle\)'s      \textcircled{3} Given      \textcircled{5} Given  
 \textcircled{2} Vertical \(\angle\)'s \(\cong\).      \textcircled{4} Transitive Prop.      \textcircled{6} Transitive Prop.

$$\textcircled{II} \quad \left. \begin{array}{l} \textcircled{1} \overline{BD} \cong \overline{AD} \\ \textcircled{3} AD + DC = AC \end{array} \right\} \rightarrow \textcircled{4} BD + DC = AC$$

- \textcircled{1} Given  
 \textcircled{2} Def. of \(\cong\) segments: \(\cong\) segs have = measures.  
 \textcircled{3} Segment Addition Postulate  
 \textcircled{4} Substitution Property

$$\textcircled{III} \quad \left. \begin{array}{l} \textcircled{1} \angle 1 \text{ \& } \angle 2 \text{ are linear pair.} \\ \textcircled{2} \angle 1 \text{ \& } \angle 2 \text{ are supple. \(\angle\)'s.} \\ \textcircled{4} \angle 1 \cong \angle 3 \end{array} \right\} \rightarrow \left. \begin{array}{l} \textcircled{3} m\angle 1 + m\angle 2 = 180 \\ \textcircled{5} m\angle 1 = m\angle 3 \end{array} \right\}$$

$$\rightarrow \textcircled{6} m\angle 3 + m\angle 2 = 180 \rightarrow \textcircled{7} \angle 2 \text{ supplementary } \angle 3$$

- \textcircled{1} Def. of linear pair      \textcircled{5} Def of \(\cong\) \(\angle\)'s: \(\cong\) \(\angle\)'s have = measure.  
 \textcircled{2} Linear pair postulate      \textcircled{6} Substitution  
 \textcircled{3} Def. of supple. \(\angle\)'s.      \textcircled{7} Def. of supplement. \(\angle\)'s:  
 \textcircled{4} Given      2 \(\angle\)'s that total 180.

$$\textcircled{\text{IV}} \left. \begin{array}{l} \textcircled{1} \angle 5 \cong \angle 6 \\ \textcircled{2} \angle 4 \cong \angle 5 \end{array} \right\} \rightarrow \left. \begin{array}{l} \textcircled{3} \angle 4 \cong \angle 6 \\ \textcircled{4} \angle 6 \cong \angle 7 \end{array} \right\} \rightarrow \textcircled{5} \angle 4 \cong \angle 7$$

- ① Given
- ② Vertical  $\angle$ s  $\cong$ .
- ③ Transitive Property
- ④ Vertical  $\angle$ s  $\cong$ .
- ⑤ Transitive property.

$$\textcircled{\text{V}} \left. \begin{array}{l} \textcircled{1} \angle 1 \text{ \& } \angle 2 \text{ are } \\ \text{linear pair} \end{array} \right\} \rightarrow \left. \begin{array}{l} \textcircled{2} \angle 1 \text{ supplements } \angle 2 \\ \textcircled{3} \angle 1 \text{ supplements } \angle 4 \end{array} \right\} \rightarrow \textcircled{4} \angle 2 \cong \angle 4$$

- ① Def. of linear pair
- ② linear pair postulate
- ③ Given
- ④ Congruent Supplements Theorem:  
2  $\angle$ s supp same  $\angle$   $\rightarrow$  2  $\angle$ s  $\cong$ .

$$\textcircled{\text{VI}} \left. \begin{array}{l} \textcircled{1} \overline{DB} \text{ bisects } \angle ADC. \\ \textcircled{2} \angle ADB \cong \angle CDB \\ \textcircled{3} \angle A \text{ complement } \angle ADB \\ \angle C \text{ complements } \angle CDB \end{array} \right\} \rightarrow \textcircled{4} \angle A \cong \angle C$$

- ① Given
- ② Def. of angle bisector
- ③ Given
- ④ Congruent complements thm:  
2  $\angle$ s compl.  $\cong$   $\angle$ s  $\rightarrow$  2  $\angle$ s  $\cong$ .

$$\textcircled{\text{VII}} \left. \begin{array}{l} \textcircled{1} M \text{ midpt of } \overline{AB} \\ \textcircled{2} \overline{AM} \cong \overline{MB} \\ \textcircled{3} \overline{AM} \cong \overline{CX} \\ \textcircled{5} X \text{ midpt } \overline{CD} \end{array} \right\} \rightarrow \left. \begin{array}{l} \textcircled{4} \overline{CX} \cong \overline{MB} \\ \textcircled{6} \overline{CX} \cong \overline{XD} \end{array} \right\} \rightarrow \textcircled{7} \overline{MB} \cong \overline{XD}$$

- ① Given
- ② Def. of midpoint
- ③ Given
- ④ Substitution Prop.
- ⑤ Given
- ⑥ Def. of midpoint: A pt that  $\div$  seg into 2  $\cong$  segs
- ⑦ Substitution Prop.