

4.3 Homework Key

I

$$\left. \begin{array}{l} \textcircled{1} AB \parallel DC \xrightarrow{\textcircled{A}} \textcircled{2} \angle ABD \cong \angle CDB \\ \textcircled{A} \textcircled{3} \angle A \cong \angle C \\ \textcircled{S} \textcircled{4} \overline{BD} \cong \overline{BD} \end{array} \right\} \rightarrow \textcircled{5} \triangle ABD \cong \triangle CDB \rightarrow \textcircled{6} \overline{AB} \cong \overline{CD}$$

- ① Given
- ② 2 || lines \rightarrow alt. int. \angle s \cong .
- ③ Given
- ④ Reflexive Prop.
- ⑤ AAS \cong AAS
- ⑥ CPCTC

II

$$\left. \begin{array}{l} \textcircled{1} \overline{WU} \parallel \overline{YV} \rightarrow \textcircled{2} \angle W \cong \angle ZYV \\ \textcircled{3} \overline{XU} \parallel \overline{ZV} \rightarrow \textcircled{4} \angle WXU \cong \angle Z \\ \textcircled{5} \overline{ZX} \cong \overline{YW} \rightarrow \textcircled{6} \overline{ZY} \cong \overline{WX} \end{array} \right\} \rightarrow \textcircled{7} \triangle WXU \cong \triangle ZYV$$

⑧ $\overline{VY} \cong \overline{UW}$

- ① Given
- ② 2 || lines \rightarrow alt. int. \angle s \cong .
- ③ Given
- ④ 2 || lines \rightarrow alt. int. \angle s \cong
- ⑤ Given
- ⑥ Common Segment Thm
- ⑦ ASA \cong ASA
- ⑧ CPCTC

III

$$\left. \begin{array}{l} \textcircled{1} \overline{AB} \cong \overline{CB} \\ \textcircled{2} \angle 1 \cong \angle 2 \\ \textcircled{3} \overline{BM} \cong \overline{BM} \end{array} \right\} \rightarrow \textcircled{4} \triangle ABM \cong \triangle CBM \rightarrow \textcircled{5} \overline{AM} \cong \overline{CM} \rightarrow \textcircled{6} \triangle AMC \text{ is isosceles.}$$

- ① Given
- ② Given
- ③ Reflexive Prop
- ④ SAS \cong SAS
- ⑤ CPCTC
- ⑥ Def of isosceles Δ .
If 2 sides of a Δ are \cong , then it is an isosceles Δ .

IV

$$\left. \begin{array}{l} \textcircled{1} \overline{KM} \cong \overline{KN} \\ \overline{LM} \cong \overline{LN} \\ \textcircled{2} \overline{LK} \cong \overline{LK} \end{array} \right\} \rightarrow \textcircled{3} \triangle LKM \cong \triangle LKN \rightarrow \textcircled{4} \angle MLK \cong \angle NLK$$

✓ $\textcircled{5} OL$ bisects $\angle MLN$

$\textcircled{1}$ Given

$\textcircled{4}$ CPCTC

$\textcircled{2}$ Reflexive Prop

$\textcircled{5}$ Def of \angle bisector

$\textcircled{3}$ SSS \cong SSS

(If a ray \div an \angle into 2 \cong parts,
then it is a bisector.)

V

$$\left. \begin{array}{l} \textcircled{1} M \text{ is midpt of } \overline{AB}. \rightarrow \textcircled{2} \overline{AM} \cong \overline{MB} \\ \textcircled{3} \overline{AD} \parallel \overline{ME} \rightarrow \textcircled{4} \angle A \cong \angle EMB \\ \textcircled{5} \overline{AD} \cong \overline{ME} \end{array} \right\} \rightarrow \textcircled{6} \triangle DAM \cong \triangle EMB$$

✓ $\textcircled{7} \angle AMD \cong \angle B \rightarrow \textcircled{8} \overline{MD} \parallel \overline{BE}$

$\textcircled{1}$ Given

$\textcircled{5}$ Given

$\textcircled{2}$ Def of midpt

$\textcircled{6}$ SAS \cong SAS

$\textcircled{3}$ Given

$\textcircled{7}$ CPCTC

$\textcircled{4}$ 2 \parallel lines \rightarrow corresp. \angle s \cong .

$\textcircled{8}$ If corresp. \angle s $\cong \rightarrow$ 2 \parallel lines.

VI

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

$$\left. \begin{array}{l} \textcircled{5} \overline{AC} \cong \overline{DB} \\ \textcircled{6} \overline{AB} \cong \overline{DC} \\ \textcircled{7} \overline{GB} \cong \overline{FC} \end{array} \right\} \rightarrow \textcircled{8} \triangle DCF \cong \triangle ABG \rightarrow \textcircled{9} \overline{AG} \cong \overline{DF}$$

$\textcircled{1}$ Def of linear pair

$\textcircled{5}$ Given

$\textcircled{2}$ linear pair postulate

$\textcircled{6}$ Common Segments Thm

$\textcircled{3}$ Given

$\textcircled{7}$ Given

$\textcircled{4}$ Congruent Supplements Thm

$\textcircled{8}$ SAS \cong SAS

$\textcircled{9}$ CPCTC

$$\textcircled{\text{VI}} \left. \begin{array}{l} \textcircled{1} \overline{BD} \cong \overline{CE} \rightarrow \textcircled{2} \overline{BC} \cong \overline{ED} \\ \textcircled{3} \overline{AB} \parallel \overline{EF} \rightarrow \textcircled{4} \angle B \cong \angle E \\ \textcircled{5} \overline{AB} \cong \overline{FE} \end{array} \right\} \rightarrow \textcircled{6} \triangle ABC \cong \triangle FED \rightarrow \textcircled{7} \overline{AC} \cong \overline{FD}$$

- | | |
|--|-------------------|
| ① Given | ⑤ Given |
| ② Common segments form | ⑥ SAS \cong SAS |
| ③ Given | ⑦ CPCTC |
| ④ 2 \parallel lines \rightarrow alt. int. \angle s \cong . | |

$$\textcircled{\text{VII}} \left. \begin{array}{l} \textcircled{1} Q \text{ midpt } \overline{PR} \rightarrow \textcircled{2} PQ = \frac{1}{2} PR \\ \textcircled{3} \overline{PR} \cong \overline{US} \rightarrow \textcircled{4} PR = US \rightarrow \textcircled{5} \frac{1}{2} PR = \frac{1}{2} US \end{array} \right\} \rightarrow \textcircled{6} PQ = \frac{1}{2} US$$

$$\left. \begin{array}{l} \textcircled{7} T \text{ midpt } \overline{US} \rightarrow \textcircled{8} TS = \frac{1}{2} US \end{array} \right\} \rightarrow \textcircled{9} PQ = TS$$

$$\left. \begin{array}{l} \textcircled{10} \overline{PQ} \cong \overline{TS} \\ \textcircled{11} \overline{PR} \parallel \overline{US} \rightarrow \textcircled{12} \angle PQW \cong \angle STV \\ \textcircled{13} \overline{QW} \cong \overline{TV} \end{array} \right\} \rightarrow \textcircled{14} \triangle PQW \cong \triangle STV$$

$$\textcircled{15} \overline{QW} \cong \overline{TV}$$

- | | |
|--------------------------|--|
| ① Given | ⑪ Given |
| ② Midpoint Theorem | ⑫ 2 \parallel lines \rightarrow alt. int. \angle s \cong . |
| ③ Given | ⑬ Given |
| ④ Def. of \cong segmts | ⑭ SAS \cong SAS |
| ⑤ Division prop | ⑮ CPCTC |
| ⑥ Transitive prop. | |
| ⑦ Given | |
| ⑧ Midpoint theorem | |
| ⑨ Transitive prop | |
| ⑩ Def of \cong segmts | |

(IX) ① $\overline{RV} \perp \overline{PT}$

\hookrightarrow ② $\sphericalangle 1$ comp $\sphericalangle 7$
 $\sphericalangle 2$ comp $\sphericalangle 8$ } \rightarrow ④ $\sphericalangle 7 \cong \sphericalangle 8$
③ $\sphericalangle 1 \cong \sphericalangle 2$

⑤ R midpt. $\overline{QS} \rightarrow$ ⑥ $\overline{QR} \cong \overline{RS}$

⑦ $\sphericalangle 3$ & $\sphericalangle 5$ linear pr. } \rightarrow ⑧ $\sphericalangle 3$ supp $\sphericalangle 5$
 $\sphericalangle 4$ & $\sphericalangle 6$ linear pr. } \rightarrow ⑩ $\sphericalangle 5 \cong \sphericalangle 6$
⑨ $\sphericalangle 3 \cong \sphericalangle 4$

\rightarrow ⑪ $\triangle QWR \cong \triangle ASU$

\downarrow
(X) ⑫ $\overline{WQ} \cong \overline{US}$

① Given

② Ext sides of adj acute \sphericalangle s $\perp \rightarrow$ Compl. \sphericalangle s

③ Given

④ \cong complements thm

⑤ Given

⑥ Def of midpt

⑦ Def of linear pair

⑧ lin. pair postulate

⑨ Given

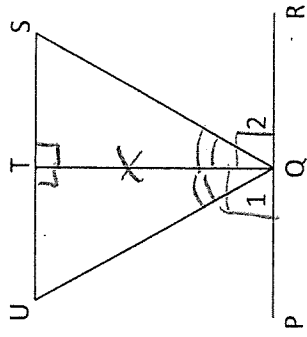
⑩ \cong supplements thm

⑪ ASA \cong ASA

⑫ CPCTC

10 Given: $\overline{TQ} \perp \overline{PR}$; $\overline{TQ} \perp \overline{US}$
 $\angle 1 \cong \angle 2$

Prove: $\overline{QU} \cong \overline{QS}$



- 1 $\overline{TQ} \perp \overline{PR} \rightarrow$ 2 $\angle UQT$ compl. $\angle 1$
- 3 $\angle SAT$ compl. $\angle 2$
- 4 $\angle UQT \cong \angle SAT$
- 5 $\overline{TQ} \perp \overline{US} \rightarrow$ 6 $\angle UTQ$ & $\angle STQ$ are right.
- 7 $\angle UQT \cong \angle SAT$
- 8 $\overline{TQ} \cong \overline{TQ}$
- 9 $\triangle UTQ \cong \triangle STQ \rightarrow$ 10 $\overline{QU} \cong \overline{QS}$

- 1 Given
- 2 If ext. sides of acute, adj. \angle s are $\perp \rightarrow$ \angle s are complementary.
- 3 Given
- 4 \cong complements form
- 5 Given
- 6 \perp lines form Rt. \angle s
- 7 All right \angle s \cong .
- 8 Reflexive property
- 9 ASA \cong ASA
- 10 CPCTC

