

Answer Key

Lesson 4.6

Practice Level C

1. $\triangle HGL \cong \triangle JKM$; AAS 2. $\triangle PQU \cong \triangle VPS$; AAS 3. $\triangle ABC \cong \triangle DEF$; ASA
4. Use the \cong angles in the linear pairs to show $\angle RZS \cong \angle UYT$. Show $\triangle RSZ \cong \triangle UTY$ by AAS, so $\overline{RZ} \cong \overline{YU}$ because they are corresponding parts.
5. Show $\angle FHG \cong \angle JHI$ because they are vertical. Show $\triangle FGH \cong \triangle JIH$ by AAS, so $\overline{FH} \cong \overline{JH}$ because they are corresponding parts.
6. Show $\angle ADE$ is a right \angle . Use SAS to show $\triangle ADE \cong \triangle CDE$, so by corresponding parts, $\angle AED \cong \angle CED$ and $\overline{AE} \cong \overline{CE}$. Use SAS to show $\triangle ABE \cong \triangle CBE$. So by corresponding parts, $\angle 1 \cong \angle 2$.
7. Show $\triangle HKL \cong \triangle HML$ by ASA, so by corresponding parts, $\angle HKL \cong \angle HML$ and $\overline{HK} \cong \overline{HM}$. Use the congruent angles in the linear pairs to show $\angle HMN \cong \angle HKJ$. By vertical angles, $\angle JHK \cong \angle NHM$. Show $\triangle HJK \cong \triangle HNM$ by ASA, so by corresponding parts, $\angle 1 \cong \angle 2$.
8. Use AAS to show $\triangle ABD \cong \triangle GFD$. Then by corresponding parts $\overline{BD} \cong \overline{FD}$. By vertical angles, $\angle ADB \cong \angle EDF$ and $\angle CDB \cong \angle GDF$. Show $\triangle GFD \cong \triangle EFD$ by AAS, so by corresponding parts $\angle EFG \cong \angle GFD$. Then because they are a \cong linear pair, $\angle EFG$ and $\angle GFD$ are right angles. Use corresponding parts to show $\angle ABD$ is a right angle and linear pair to show $\angle CBD$ is a right \angle . Show $\triangle ABD \cong \triangle CBD$ by SAS. Finally, show that by corresponding parts $\angle 1 \cong \angle 2$.
9. Use the Distance Formula to find the side lengths of the triangles. Use the SSS Congruence Postulate to show that $\triangle ABC \cong \triangle DEF$. Then use the fact that corresponding parts of congruent triangles are congruent to prove that $\angle C \cong \angle F$.
10. Use the Distance Formula to find the side lengths of the triangles. Use the SSS Congruence Postulate to show that $\triangle ABC \cong \triangle DEF$. Then use the fact that corresponding parts of congruent triangles are congruent to prove that $\angle C \cong \angle F$.

11.

| Statements | Reasons |
|--|---|
| 1. $\angle C \cong \angle G$, $\angle D \cong \angle F$, $\overline{CD} \cong \overline{GF}$ | 1. Given |
| 2. $\triangle CDH \cong \triangle GFJ$ | 2. ASA Congruence Postulate |
| 3. $\angle FJG \cong \angle DHC$ | 3. Corr. parts of $\cong \triangle$ are \cong . |
| 4. $\angle FJG$ and $\angle CJF$ are a linear pair, $\angle DHC$ and $\angle GHD$ are a linear pair. | 4. Definition of linear pair |
| 5. $\angle FJG$ and $\angle CJF$ are supplementary, $\angle DHC$ and $\angle GHD$ are supplementary. | 5. Linear Pair Post. |
| 6. $\angle CJF \cong \angle GHE$ | 6. Congruent Supplements Thm. |

12.

| Statements | Reasons |
|---|------------------------------|
| 1. $\overline{UT} \parallel \overline{VR}$, $\overline{QT} \parallel \overline{SR}$, $\overline{QU} \cong \overline{SV}$ | 1. Given |
| 2. $\angle QUT \cong \angle SVR$ | 2. Alt. Exterior Angles Thm. |

Answer Key

3. $\angle VRS \cong \angle UTQ$,
 $\angle RVQ \cong \angle TUS$
4. $\triangle QUT \cong \triangle SVR$
5. $\overline{TU} \cong \overline{RV}$
6. $QV = QU + UV$,
 $SU = SV + UV$
7. $QU = SV$
8. $QV = SV + UV$
9. $QV = SU$
10. $\overline{QV} \cong \overline{SU}$
11. $\triangle QRV \cong \triangle STU$
12. $\angle UTS \cong \angle VRQ$

3. Alt. Interior
Angles Thm.
4. ASA Congruence Post.
5. Corr. parts of $\cong \triangle$ are \cong .
6. Angle Addition
Post.
7. Def. of congruent angles
8. Subst. Prop. of Equality
9. Transitive Prop. of Equality
10. Def. of congruent segments
11. SAS Congruence Post.
12. Corr. parts of $\cong \triangle$ are \cong .

| Statements | Reasons |
|---|---|
| 1. $m\angle L = m\angle L_1$, $m\angle R = m\angle R_1$, $LR = L_1R_1$, h and h_1 are the heights of the \triangle . | 1. Given |
| 2. $\angle L \cong \angle L_1$, $\angle R \cong \angle R_1$ | 2. Def. of congruent angles |
| 3. $\overline{LR} \cong \overline{L_1R_1}$ | 3. Def. of congruent segments |
| 4. $\triangle LRO \cong \triangle L_1R_1O_1$ | 4. ASA Congruence Post. |
| 5. $h = h_1$ | 5. Corresponding parts of $\cong \triangle$ are \cong . |