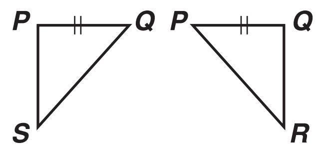
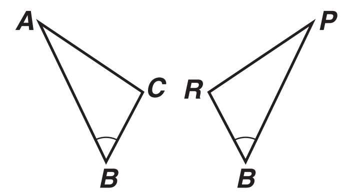
Answers for Lesson 4-7, pp. 243–245 Exercises

1. $\angle M$ **2.** $\overline{DF}$ **3.** $\overline{XY}$

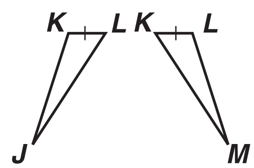
4.



5.



6



7. **a.** Given

b. Reflexive Prop. of $\cong$

c. Given

d. AAS

e. CPCTC

8. Plan: Two pairs of sides are $\cong$. The third sides are the same segment. Use SSS.

Proof: It is given that $\overline{RS} \cong \overline{UT}$ and $\overline{RT} \cong \overline{US}$. $\overline{ST} \cong \overline{ST}$ by the Reflex. Prop. of $\cong$. $\triangle RST \cong \triangle UTS$ by SSS.

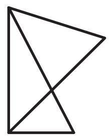
9. Plan: Two sides and two angles are $\cong$. The other included sides are the same segment. Use SAS.

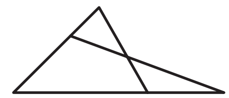
Proof: It is given that $\overline{QD} \cong \overline{UA}$ and $\angle QDA \cong \angle UAD$. $\overline{DA} \cong \overline{DA}$ by the Reflex. Prop. of $\cong$. $\triangle QDA \cong \triangle UAD$ by SAS.

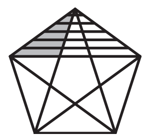
10. $\triangle QET \cong \triangle QEU$ by SAS if $\overline{QT} \cong \overline{QU}$. $\overline{QT}$ and $\overline{QU}$ are corr. parts of $\triangle QTB$ and $\triangle QUB$ which are $\cong$ by ASA.

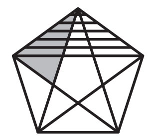
11. $\triangle ADC \cong \triangle EDG$ by ASA if $\angle A \cong \angle E$. $\angle A$ and $\angle E$ are corr. parts in $\triangle ADB$ and $\triangle EDF$, which are $\cong$ by SAS.

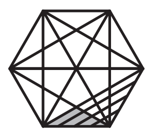
12–15. Answers may vary. Samples are given.

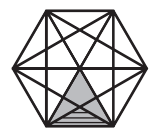
12. 

13. 

14. a. 

b. 

15. a. 

b. 

16. B

17. 1. $\overline{AC} \cong \overline{EC}; \overline{CB} \cong \overline{CD}$ (Given)

2. $\angle C \cong \angle C$ (Reflexive Prop. of $\cong$)

3. $\triangle ACD \cong \triangle ECB$ (SAS)

4. $\angle A \cong \angle E$ (CPCTC)

18. $\overline{PQ} \cong \overline{RQ}$ and $\angle PQT \cong \angle RQT$ by Def. of $\perp$ bisector. $\overline{QT} \cong \overline{QT}$ so $\triangle PQT \cong \triangle RQT$ by SAS. $\angle P \cong \angle R$ by CPCTC. $\overline{QT}$ bisects $\angle VQS$ so $\angle VQT \cong \angle SQT$ and $\angle PQT$ and $\angle RQT$ are both rt. $\angle$s. So $\angle VQP \cong \angle SQR$ since they are compl. of $\cong$ $\angle$s. $\triangle PQV \cong \triangle RQS$ by ASA so $\overline{QV} \cong \overline{QS}$ by CPCTC.

19. $m\angle 1 = 56; m\angle 2 = 56; m\angle 3 = 34; m\angle 4 = 90; m\angle 5 = 22; m\angle 6 = 34; m\angle 7 = 34; m\angle 8 = 68; m\angle 9 = 112$

20. $\triangle ABC \cong \triangle FCG$; ASA

21. $\overline{TD} \cong \overline{RO}$ if $\triangle TDI \cong \triangle ROE$ by AAS. $\angle TID \cong \angle REO$ if $\triangle TEI \cong \triangle RIE$. $\triangle TEI \cong \triangle RIE$ by SSS.

22. $\overline{AE} \cong \overline{DE}$ if $\triangle AEB \cong \triangle DEC$ by AAS. $\overline{AB} \cong \overline{DC}$ and $\angle A \cong \angle D$ since they are corr. parts of $\triangle ABC$ and $\triangle DCB$, which are $\cong$ by HL.

23. **a.** $\overline{AD} \cong \overline{BC}$; $\overline{AB} \cong \overline{DC}$; $\overline{AE} \cong \overline{EC}$; $\overline{DE} \cong \overline{EB}$

b. Use $\overline{DB} \cong \overline{DB}$ (refl.) and alt. int. $\angle$s to show $\triangle ADB \cong \triangle CBD$ (ASA). $\overline{AB} \cong \overline{DC}$ and $\overline{AD} \cong \overline{BC}$ (CPCTC). $\triangle AEB \cong \triangle CED$ (ASA) and $\triangle AED \cong \triangle CEB$ (ASA). Then $\overline{AE} \cong \overline{EC}$ and $\overline{DE} \cong \overline{EB}$ (CPCTC).

24. $\triangle ACE \cong \triangle BCD$ by ASA; $\overline{AC} \cong \overline{BC}$, $\angle A \cong \angle B$ (Given) $\angle C \cong \angle C$ (Reflexive Prop. of $\cong$) $\triangle ACE \cong \triangle BCD$ (ASA)

25. $\triangle WYX \cong \triangle ZXY$ by HL; $\overline{WY} \perp \overline{YX}$, $\overline{ZX} \perp \overline{YX}$, $\overline{WX} \cong \overline{ZY}$ (Given) $\angle WYX$ and $\angle ZXY$ are rt. $\angle$s (Def. of $\perp$) $\overline{XY} \cong \overline{XY}$ (Reflexive Prop. of $\cong$) $\triangle WYX \cong \triangle ZXY$ (HL)