

CHALLENGE AND EXTEND

35. $P = TU + UV + VW + TW$
 $149 = 6x + 7x + 3 + 9x - 8 + 8x - 11$
 $149 = 30x - 16$
 $165 = 30x$
 $x = 5.5$
 Yes; $UV = WV = 41.5$, and $UT = WT = 33$.
 $TU = TV$ by the Reflex. Prop. of $=$. It is given that
 $\angle VWT \cong \angle VUT$ and $\angle WTV \cong \angle UTV$.
 $\angle WVT = \angle UVT$ by the Third Δ Thm. Thus
 $\triangle TUV \cong \triangle TWV$ by the def. of $\cong \Delta$.

36. $\angle E \cong \angle A$
 $m\angle E = m\angle A$
 $y^2 - 10 = 90$
 $y^2 = 100$
 $m\angle D = m\angle H$
 $= 2y^2 - 132$
 $= 2(100) - 132 = 68^\circ$

37. Statements	Reasons
1. $\overline{RS} \cong \overline{RT}$; $\angle S \cong \angle T$	1. Given
2. $\overline{ST} \cong \overline{TS}$	2. Reflex. Prop. of \cong
3. $\angle T \cong \angle S$	3. Sym. Prop. of \cong
4. $\angle R \cong \angle R$	4. Reflex. Prop. of \cong
5. $\triangle RST \cong \triangle RTS$	5. Def. of $\cong \Delta$

SPIRAL REVIEW

38. $P(\text{both even}) = P(\text{cube 1 even}) \cdot P(\text{cube 1 even})$
 $= \frac{1}{2} \cdot \frac{1}{2} = \frac{1}{4}$
 39. $P(\text{sum is 5}) = P(1, 4) + P(2, 3) + P(3, 2) + P(4, 1)$
 $= \frac{4}{36} = \frac{1}{9}$

40. acute 41. rt.

42. obtuse

43. **Step 1** Find x .
 $3x + 20 + 4x + x + 16 = 180$
 $8x + 36 = 180$
 $x = 18$

Step 2 Find $m\angle Q$.
 $m\angle Q = 4x = 72^\circ$

44. $m\angle P = 3x + 20 = 74^\circ$
 45. $m\angle QRS = m\angle P + m\angle Q$
 $= 72 + 74 = 146^\circ$

READY TO GO ON? PAGE 239, #1-15

1. rt. Δ , since $\angle ACB$ is rt. \angle
2. equiangular, since $m\angle BAD = 30 + 30 = 60^\circ = m\angle B = m\angle ADB$
3. obtuse, since $m\angle ADE = m\angle B + m\angle BAD = 120^\circ$
4. isosc., since $PQ = QR = 5$, $PR = 8.7$
5. equilateral, since $PR = RS = PS = 5$
6. scalene, since $PQ = 8.7$, $QS = 5 + 5 = 10$, $PS = 5$

7. $m\angle M + m\angle N = m\angle NLK$
 $6y + 3 + 84 = 151 - 2y$
 $8y = 64$
 $y = 8$
 $m\angle M = 6y + 3 = 51^\circ$
 8. $m\angle C + m\angle D = m\angle ABC$
 $90 + 5x = 20x - 15$
 $105 = 15x$
 $x = 7$
 $m\angle ABC = 20x - 15 = 125^\circ$
 9. $m\angle RTP = m\angle R + m\angle T = 55 + 37 = 92^\circ$
 10. \overline{EF} 11. \overline{JL}
 12. $\angle E$ 13. $\angle L$
 14. $\overline{PR} \cong \overline{SU}$ 15. $\angle S \cong \angle P$
 $PR = SU$ $m\angle S = m\angle P$
 $14 = 3m + 2$ $2y = 46$
 $12 = 3m$ $y = 23$
 $m = 4$
 $PQ = 2m + 1 = 9$

16. Statements	Reasons
1. $\overline{AB} \parallel \overline{CD}$	1. Given
2. $\angle BAD \cong \angle CDA$	2. Alt. Int. Δ Thm.
3. $\overline{AC} \perp \overline{CD}$, $\overline{DB} \perp \overline{AB}$	3. Given.
4. $\angle ACD$ and $\angle DBA$ are rt. Δ	4. Def. of \perp
5. $\angle ACD \cong \angle DBA$	5. Rt. $\angle \cong$ Thm.
6. $\angle CAD \cong \angle BDA$	6. Third Δ Thm.
7. $\overline{AB} \cong \overline{CD}$, $\overline{AC} \cong \overline{DB}$	7. Given
8. $\overline{AD} \cong \overline{DA}$	8. Reflex. Prop. of \cong
9. $\triangle ACD \cong \triangle DBA$	9. Def. of $\cong \Delta$

4-4 TRIANGLE CONGRUENCE: SSS AND SAS, PAGES 242-249

CHECK IT OUT!

1. It is given that $\overline{AB} \cong \overline{CD}$ and $\overline{BC} \cong \overline{DA}$. By the Reflex. Prop. of \cong , $\overline{AC} \cong \overline{CA}$. So $\triangle ABC \cong \triangle CDA$ by SSS.
2. It is given that $\overline{AB} \cong \overline{BD}$ and $\angle ABC \cong \angle DBC$. By Reflex. Prop. of \cong , $\overline{BC} \cong \overline{BC}$. So $\triangle ABC \cong \triangle DBC$ by SAS.
3. $DA = 3t + 1$
 $= 3(4) + 1 = 13$
 $DC = 4t - 3$
 $= 4(4) - 3 = 13$
 $m\angle ADB = 32^\circ$
 $m\angle CDB = 2t^2$
 $= 2(4)^2 = 32^\circ$
 $\overline{DA} \cong \overline{DC}$, $\overline{DB} \cong \overline{DB}$, and $\angle ADB \cong \angle CDB$
 So $\triangle ADB \cong \triangle CDB$ by SAS.