Answers for 4.3

For use with pages 236–239

4.3 Skill Practice

1. corresponding angles

2. neither

3. corresponding sides

4. neither

5. not true; $\triangle RST \cong \triangle PQT$

6. true; SSS

7. true; SSS

8. The triangle vertices do not correspond. *Sample answer:* $\triangle WXZ \cong \triangle YZX$

9. congruent **10.** not congruent

11. congruent **12.** not congruent

13. Stable; the figure has diagonal support with fixed side lengths.

14. Not stable; a figure without diagonal support is not stable.

15. Stable; the figure has diagonal support with fixed side lengths.

16. B

17. B

18. not congruent; $CA \neq FD$

19. Not congruent; the congruence statement should read $\triangle ABC \cong \triangle FED$.

20. Since $\overline{JP} \cong \overline{JP}$ the triangles are congruent by SSS.

21. 5; setting $5x = 4x + 3$ and $5x - 2 = 3x + 10$ yields $x = 3$ and $x = 6$ which is inconsistent. Setting $5x = 3x + 10$ and $5x - 2 = 4x + 3$ yields $x = 5$ in both equations and is the answer.

4.3 Problem Solving

22. Yes; use the string to measure each side of one triangle and then measure the sides of the second triangle to see if they are congruent to the corresponding sides of the first triangle.

23. Gate 1. *Sample answer:* Gate 1 has a diagonal support that forms two triangles with fixed sides, and these triangles cannot change shape. Gate 2 is not stable because the gate is a quadrilateral which can take many different shapes.

24. Statements (Reasons)

1. $\overline{GH} \cong \overline{JK}$, $\overline{HJ} \cong \overline{KG}$ (Given)

2. $\overline{JG} \cong \overline{GJ}$ (Reflexive Property of Congruence)

3. $\triangle GHJ \cong \triangle JKG$ (SSS)

Answers for 4.3

For use with pages 236–239

25. Statements (Reasons)

1. $\overline{WX} \cong \overline{VZ}$, $\overline{WY} \cong \overline{VY}$, $\overline{YZ} \cong \overline{YX}$ (Given)
2. $\overline{WV} \cong \overline{VW}$ (Reflexive Property of Congruence)
3. $WY = VY$, $YZ = YX$ (Definition of segment congruence)
4. $WY + YZ = VY + YZ$ (Addition Property of Equality)
5. $WY + YZ = VY + YX$ (Substitution Property of Equality)
6. $WZ = VX$ (Segment Addition Postulate)
7. $\overline{WZ} \cong \overline{VX}$ (Definition of segment congruence)
8. $\triangle VWX \cong \triangle WVZ$ (SSS)

26. Statements (Reasons)

1. $\overline{AE} \cong \overline{CE}$, $\overline{AB} \cong \overline{CD}$, E is the midpoint of $\overline{BD}$. (Given)
2. $\overline{BE} \cong \overline{DE}$ (Definition of midpoint)
3. $\triangle EAB \cong \triangle ECD$ (SSS)

27. Statements (Reasons)

1. $\overline{FM} \cong \overline{FN}$, $\overline{DM} \cong \overline{HN}$, $\overline{EF} \cong \overline{GF}$, $\overline{DE} \cong \overline{HG}$ (Given)
2. $MN = NM$ (Reflexive Property of Equality)
3. $FM = FN$, $DM = HN$ $EF = GF$ (Definition of segment congruence)
4. $EF + FN = GF + FN$, $DM + MN = HN + NM$ (Addition Property of Equality)
5. $EF + FN = GF + FM$, $DM + MN = HN + NM$ (Substitution Property of Equality)
6. $EN = GM$, $DN = HM$ (Segment Addition Postulate)
7. $\overline{EN} \cong \overline{GM}$, $\overline{DN} \cong \overline{HM}$ (Definition of segment congruence)
8. $\triangle DEN \cong \triangle HGM$ (SSS)

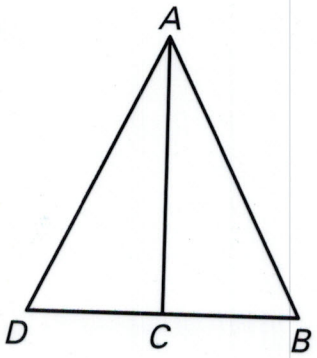
28. **a.** A figure with diagonal support and fixed side lengths is stable.

b. no **c.** yes

d. It is more stable because there is one diagonal support.

29. Only one triangle can be created from three fixed sides.

30.



Statements (Reasons)

1. $\triangle ABD$ is isosceles, C is the midpoint of $\overline{BD}$. (Given)
2. $\overline{AB} \cong \overline{AD}$ (Definition of isosceles triangle)
3. $\overline{CA} \cong \overline{CA}$ (Reflexive Property of congruence)
4. $\overline{DC} \cong \overline{BC}$ (Definition of midpoint)
5. $\triangle ACD \cong \triangle ACB$ (SSS)

4.3 Mixed Review

31. 1 **32.** $\frac{3}{5}$ **33.** $\frac{6}{5}$

34. $y = -\frac{1}{2}x + 2$

35. $y = -x - 6$

36. $y = \frac{1}{2}x + 20$

37. $y = 3x + 8$

Quiz

2) isosceles; right Δ

3) scalene; not a right Δ

4) 9

5) 5