Answers for Lesson 7-3, pp. 385–388 Exercises

1. Yes; $\triangle ABC \sim \triangle FED$; SSS $\sim$ Thm.

2. No; more info. is needed.

3. Ex. 1: $\frac{2}{3}$ (for $\triangle ABC$ to $\triangle FED$); Ex. 2: Not possible; the $\measuredangle$s aren't necessarily similar.

4. yes; $\triangle FHG \sim \triangle KHJ$; AA $\sim$ Post.

5. No; $\frac{6}{3} \neq \frac{10}{4}$.

6. No; $\frac{20}{45} \neq \frac{25}{55}$.

7. Yes; $\triangle APJ \sim \triangle ABC$; SSS $\sim$ Thm. or SAS $\sim$ Thm.

8. Yes; $\triangle NMP \sim \triangle NQR$; SAS $\sim$ Thm.

9. No; $\frac{32}{22} \neq \frac{45}{30}$.

10. AA $\sim$ Post.; 7.5

11. AA $\sim$ Post.; 2.5

12. AA $\sim$ Post.; $12\frac{5}{6}$

13. AA $\sim$ Post.; 12

14. AA $\sim$ Post.; 8

15. AA $\sim$ Post.; 15

16. SAS $\sim$ Thm.; 12 m

17. AA $\sim$ Post.; 220 yd

18. AA $\sim$ Post.; 15 ft 9 in.

19. AA $\sim$ Post.; 90 ft

20. Answers may vary. Sample: She can measure her shadow and use $\sim$ $\measuredangle$s to find the length of the shadow of the proposed building.

21. 151 m

22. **a.** trapezoid

b. $\triangle RSZ \sim \triangle TWZ$; AA $\sim$ Post.

23. **a.** No; the corr. $\measuredangle$s may not be $\cong$.

b. Yes; every isosc. rt. $\triangle$ is a 45°-45°-90° $\triangle$. Therefore, by AA $\sim$ Thm. they are all $\sim$.

24. Yes; $\triangle GMK \sim \triangle SMP$; SAS $\sim$ Thm.

25. Yes; $\triangle AWV \sim \triangle AST$; SAS $\sim$ Thm.

26. Yes; $\triangle XYZ \sim \triangle MNK$; SSS $\sim$ Thm.

27. No; there is only one pair of $\cong$ $\measuredangle$s.

28. 45 ft

29. Check students' work.

30. 3 : 2

31. 2 : 1

32. 12 : 7

33. 4 : 3

34. 3 : 1

35. 3 : 2

36. 3 : 2

37. 2 : 1

38. 3 : 1

39. 6 : 1

40. Check students' work. Draw $\triangle ABC$. Construct $\angle A \cong \angle R$. Construct $\overline{RS}$ such that $RS = 3AB$, and $\overline{RT}$ such that $RT = 3AC$. Connect points S and T.

41. **1.** $RT \cdot TQ = MT \cdot TS$ (Given)

2. $\frac{MT}{TQ} = \frac{RT}{TS}$ (Prop. of Proportions)

3. $\angle RTM \cong \angle STQ$ (Vert. $\measuredangle$s are $\cong$.)

4. $\triangle RTM \sim \triangle STQ$ (SAS $\sim$ Thm.)

42. **1.** $\ell_1 \parallel \ell_2$, $\overline{EF} \perp \overline{AF}$, $\overline{BC} \perp \overline{AF}$ (Given)

2. $\angle EFD$ and $\angle BCA$ are right $\measuredangle$s. (Def. of $\perp$)

3. $\angle EFD \cong \angle BCA$ (All rt. $\measuredangle$s are $\cong$.)

4. $\angle BAC \cong \angle EDF$ (If $\parallel$ lines, then corr. $\measuredangle$s are $\cong$.)

5. $\triangle ABC \sim \triangle DEF$ (AA $\sim$)

6. $\frac{BC}{AC} = \frac{EF}{DF}$ (Def. of similar)

43. **1.** $\frac{BC}{AC} = \frac{EF}{DF}$, $\overline{EF} \perp \overline{AF}$, $\overline{BC} \perp \overline{AF}$ (Given)

2. $\angle ACB$ and $\angle DFE$ are rt. $\measuredangle$s. (Def. of $\perp$)

3. $\angle ACB \cong \angle DFE$ (All rt. $\measuredangle$s are $\cong$.)

4. $\triangle ABC \sim \triangle DEF$ (SAS $\sim$)

5. $\angle BAC \cong \angle EDF$ (Def. of similar)

6. $\ell_1 \parallel \ell_2$, (If corr. $\measuredangle$s are $\cong$, then $\parallel$ lines.)

44. $\triangle ADC \sim \triangle CBD \sim \triangle ABC$; $\overline{CD}$ is an altitutde to the hypotenuse of a rt. triangle, $\triangle ABC$. Therefore, it divides $\triangle ABC$ into two triangles ($\triangle ADC$ and $\triangle CBD$) that are similar to each other and to the original triangle.