Answers for 6.5
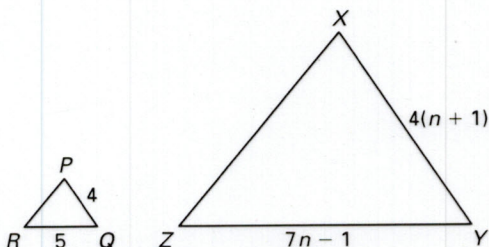
6.5 Skill Practice

1. *PX, CB, PQ*

2. You would need to know that one pair of corresponding sides is congruent.

3. $\dfrac{18}{12} = \dfrac{15}{10} = \dfrac{12}{8}; \dfrac{3}{2}$

4. $\dfrac{10}{25} = \dfrac{16}{40} = \dfrac{20}{50}; \dfrac{2}{5}$

5. $\triangle RST$　　　6. $\triangle JKL$

7. similar; $\triangle FDE \sim \triangle XWY; 2:3$

8. not similar

9. 3;

10. $\triangle GHJ \sim \triangle FHK; \dfrac{FH}{GH} = \dfrac{HK}{HJ}$

$= \dfrac{KF}{JG} = \dfrac{4}{3}$ thus the triangles

are similar by the SSS Similarity Theorem.

11. $\triangle ABC \sim \triangle DEC; \angle ACB \cong \angle DCE$ by the Vertical Angles Congruence Theorem and

$\dfrac{AC}{DC} = \dfrac{BC}{EC} = \dfrac{3}{2}$. The triangles are

similar using the SAS Similarity Theorem.

12. $\triangle XYZ \sim \triangle DJG; \angle D \cong \angle X$ and

$\dfrac{DG}{XZ} = \dfrac{DJ}{XY} = \dfrac{5}{3}$. The triangles are

similar by the SAS Similarity Theorem.

13. *Sample answer:* The triangle correspondence is not listed in the correct order; $\triangle ABC \sim \triangle RQP$.
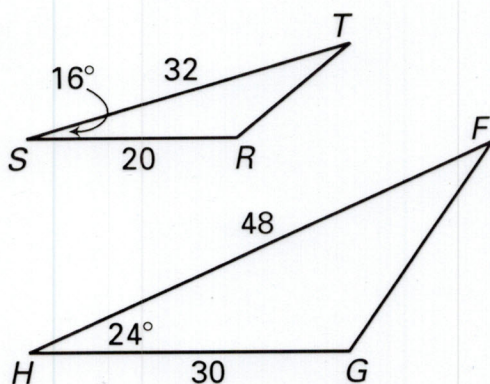
14. D

15.
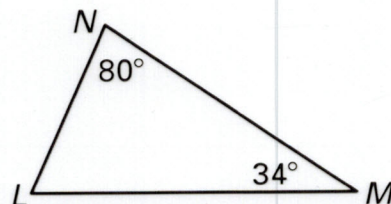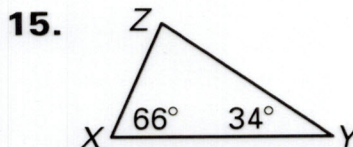
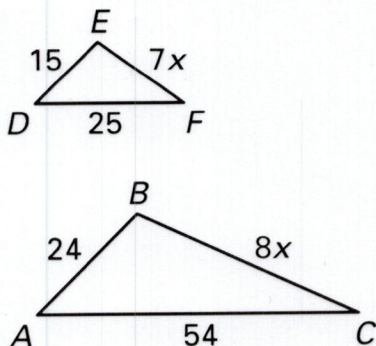They are similar by the AA Similarity Postulate.

16.

They are not similar since the larger side in △RST would not be opposite the largest angle.

17.

They are not similar since the ratio of corresponding sides is not constant for any arrangement of side lengths.

18. $53°$ **19.** $45°$ **20.** $82°$

21. 24 **22.** 42 **23.** $16\sqrt{2}$

24. △NSM and △NRP,
△NSL and △NRQ,
△NLM and △NQP

25. $\dfrac{3}{2}$ **26.** $\dfrac{9}{4}$

27. In similar triangles the ratio of the areas is the square of the scale factor. *Sample answer:* Let the base and height of △VWX measure 3a and 3b and the base and height of △ABC measure 2a and 2b. The ratio of their areas is $\dfrac{\frac{3a(3b)}{2}}{\frac{2a(2b)}{2}} = \dfrac{9}{4}$.

6.5 Problem Solving

28. AA Similarity Postulate; in △AGB ∠A and ∠AGB are congruent to ∠A and ∠AFC in △AFC. In △AFC ∠A and ∠AFC are congruent to ∠A and ∠AED in △AED.

29. The triangle whose sides measure 4 inches, 4 inches, and 7 inches is similar to the triangle whose sides measure 3 inches, 3 inches, and 5.25 inches.

30. $\dfrac{CD}{CE}$ is the same scale factor as the other ratio.

31. $\angle CBD \cong \angle CAE$

33. a) AA~ Post
b) 80ft c) 70.8ft

34) 8, 24;
b) $\frac{1}{3}$ c) yes, yes

32.
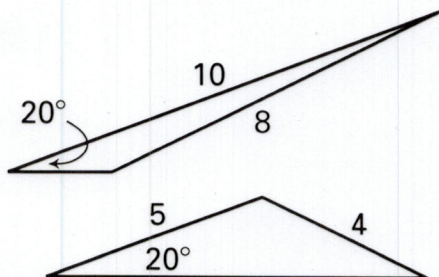
△*XYW* is not similar to △*XZW*.

33. a. AA Similarity Postulate

b. 80 ft

c. 70.8 ft

34. a. 8, 24;
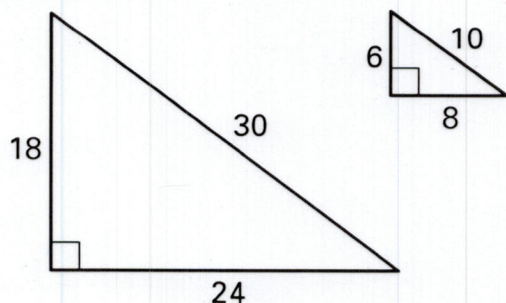
b. $\frac{1}{3}$

c. yes; yes

35. *Sample answer:* Given that *D* and *E* are midpoints of $\overline{AB}$ and $\overline{BC}$ respectively the Midsegment Theorem guarantees that $\overline{AC} \parallel \overline{DE}$. By the Corresponding Angles Postulate $\angle A \cong \angle BDE$ and so $\angle BDE$ is a right angle. Reasoning similarly $\overline{AB} \parallel \overline{EF}$. By the Alternate Interior Angles Congruence Theorem $\angle BDE \cong \angle DEF$. This makes $\angle DEF$ a right angle that measures 90°.

36. Yes. *Sample answer:* All pairs of similar triangles have angle pairs whose measures are in proportion (with constant of proportionality 1).

37. *Sample answer:* Locate *G* on $\overline{AB}$ so that *GB* = *DE*. Draw $\overline{GH}$ so that $\overline{GH} \parallel \overline{AC}$. This makes $\triangle ABC \sim \triangle GBH$ by the AA Similarity Postulate. From this similarity you have $\frac{AB}{GB} = \frac{AC}{GH}$. Using this along with what's given, you get $\frac{GH}{DF} = \frac{GB}{DE}$ which implies that $\overline{GH} \cong \overline{DF}$, making $\triangle GBH \cong \triangle DEF$. Finally, use the definition of congruent triangles and the AA Similarity Postulate to conclude $\triangle ABC \sim \triangle DEF$.

38. about 15.4 ft

6.5 Mixed Review Pg. 395

39. 6   **40.** 2   **41.** $-\frac{7}{10}$

42. AAS Congruence Theorem; $\triangle QRT \sim \triangle STR$

43. 7.5   **44.** 24

Quiz:
1) 5:3   4) not
2) 42, 27, 85   5) △ACF~△KRS
3) 191 2/3, 115 6) △MGL~△JGH