Name _____ Date _____

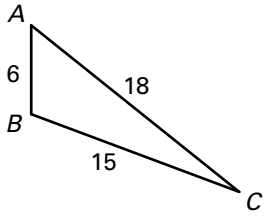
LESSON 5.5

Practice A

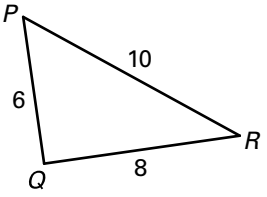
For use with pages 342–348

Name the smallest and largest angles of the triangle.

1.



2.



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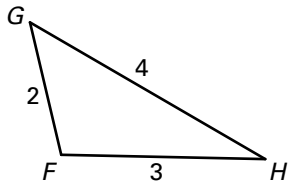
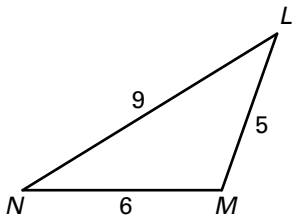
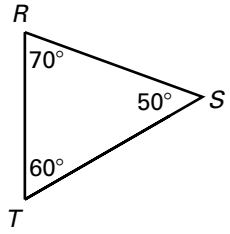


4.

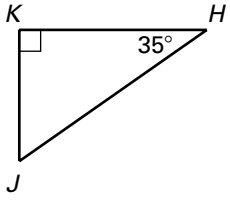


Name the shortest and longest sides of the triangle.

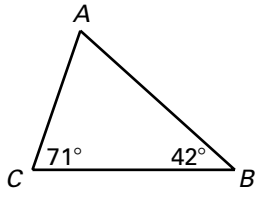
5.



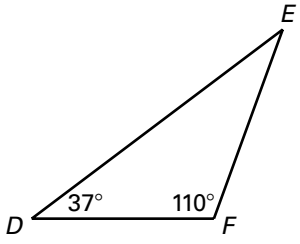
6.



7.



8.



Use a ruler and protractor to draw the given type of triangle. Mark the largest angle and longest side in red and the smallest angle and shortest side in blue. What do you notice?

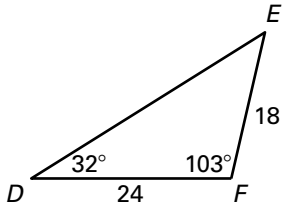
9. Obtuse scalene

10. Right scalene

For Exercises 11 and 12, use the following diagram.

11. Name the smallest and largest angles of $\triangle DEF$.

12. Name the shortest and longest sides of $\triangle DEF$.



Name _____ Date _____

LESSON 5.5

Practice A *continued*

For use with pages 342–348

Is it possible to construct a triangle with the given side lengths? If not, *explain* why not.

13. 6, 10, 15

14. 11, 16, 32

***Describe* the possible lengths of the third side of the triangle given the lengths of the other two sides.**

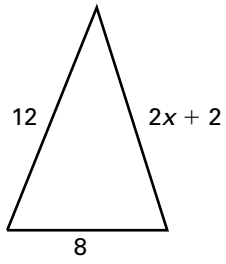
15. 12 in., 6 in.

16. 3 ft, 8 ft

17. 12 cm, 17 cm

18. 7 yd, 13 yd

19. Describe the possible values of x.



In Exercises 20–22, you are given a 12-inch piece of wire. You want to bend the wire to form a triangle so that the length of each side is a whole number.

20. Sketch two possible isosceles triangles and label each side length.

21. Sketch a possible scalene triangle.

22. List two combinations of segment lengths that will not produce triangles.

23. **Distance** Union Falls is 60 miles NE of Harnedville. Titus City is 40 miles SE of Harnedville. Is it possible that Union Falls and Titus City are less than 100 miles apart? *Justify* your answer.

Lesson 5.4, continued

10. Equation for m_1: $y = \frac{c}{b - 2a}(x - a)$;

equation for m_2: $y = \frac{c}{a + b}x$;

equation for m_3: $y = \frac{2c}{2b - a}\left(x - \frac{a}{2}\right)$

11. $\left(\frac{a + b}{3}, \frac{c}{3}\right)$ **12.** $\left(\frac{a + b}{3}, \frac{c}{3}\right)$ **13.** $\left(\frac{a + b}{3}, \frac{c}{3}\right)$

14. Yes, because each pair of lines all intersect at the same point.

Lesson 5.5

Practice Level A

1. smallest, $\angle C$; largest, $\angle B$ **2.** smallest, $\angle R$; largest, $\angle Q$ **3.** smallest, $\angle H$; largest, $\angle F$

4. smallest, $\angle N$; largest, $\angle M$ **5.** shortest, $\overline{RT}$; longest, $\overline{ST}$ **6.** shortest, $\overline{KJ}$; longest, $\overline{HJ}$

7. shortest, $\overline{AC}$; longest, $\overline{AB}$ **8.** shortest, $\overline{DF}$; longest, $\overline{DE}$ **9–10.** Check student's drawings. Longest side and largest angle are opposite each other, shortest side and smallest angle are opposite each other. **11.** smallest, $\angle D$; largest, $\angle F$ **12.** shortest, $\overline{EF}$; longest, $\overline{DE}$

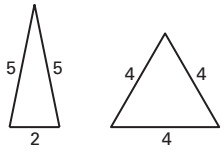
13. yes; $6 + 10 > 15$, $6 + 15 > 10$, and $10 + 15 > 6$ **14.** no; $16 + 11 < 32$

15. 6 in. $< x <$ 18 in. **16.** 5 ft $< x <$ 11 ft

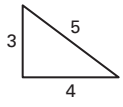
17. 5 cm $< x <$ 29 cm

18. 6 yd $< x <$ 20 yd **19.** $1 < x < 9$

20. *Sample answers:*



21. *Sample answer:*



22. *Sample answer:* 3, 3, 6; 2, 2, 8

23. The distance between Union Falls and Hardnedville must be less than 100 miles due to the Triangle Inequality Theorem.

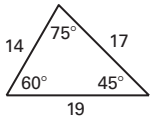
Practice Level B

1–3. Check student's drawings. Longest side and largest angle are opposite each other, shortest side and smallest angle are opposite each other.

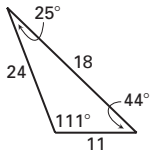
4. $\overline{DF}$, $\overline{FE}$, $\overline{DE}$; $\angle E$, $\angle D$, $\angle F$ **5.** $\overline{ST}$, $\overline{RT}$, $\overline{RS}$; $\angle R$, $\angle S$, $\angle T$ **6.** $\overline{XY}$, $\overline{YZ}$, $\overline{XZ}$; $\angle Z$, $\angle X$, $\angle Y$

7. $\overline{JK}$, $\overline{JL}$, $\overline{KL}$; $\angle L$, $\angle K$, $\angle J$ **8.** $\overline{AC}$, $\overline{AB}$, $\overline{BC}$; $\angle B$, $\angle C$, $\angle A$ **9.** $\overline{QR}$, $\overline{PR}$, $\overline{PQ}$; $\angle P$, $\angle Q$, $\angle R$

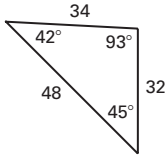
10.



11.



12.



13. yes **14.** No; $1 + 4 < 6$.

15. yes **16.** No; $22 + 26 < 65$.

17. yes **18.** No; $7 + 45 < 54$.

19. 3 in. $< x <$ 15 in. **20.** 8 ft $< x <$ 16 ft

21. 9 m $< x <$ 27 m **22.** 5 yd $< x <$ 37 yd

23. 2 in. $< x <$ 46 in. **24.** 12 in. $< x <$ 60 in.

25. yes; $\angle S$, $\angle R$, $\angle T$ **26.** no **27.** $2 < x < 7$

28. $2 < x < 6$ **29.** The building is taller than 200 ft. **30.** $m\angle C < m\angle D$

31. 70 mi $< d <$ 1350 mi

32. Think of the 60- and 24-ft distances as two sides of a triangle. Then the unknown distance d is 36 ft $< d <$ 84 ft. This doesn't account for the cases when the ball lands straight forward ($d = 36$ ft) or straight backward ($d = 84$ ft).

Practice Level C

1. smallest, $\angle A$ and $\angle B$; largest, $\angle C$

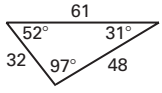
2. smallest, $\angle R$; largest, $\angle P$ **3.** smallest, $\angle H$; largest, $\angle G$ **4.** shortest, $\overline{RS}$; longest, $\overline{ST}$

5. shortest, $\overline{KH}$ and $\overline{KJ}$; longest, $\overline{JH}$

6. shortest, $\overline{AC}$; longest, $\overline{CB}$ **7.** $x > 4$ **8.** $x > \frac{3}{2}$

9. $12 < x < 21$ **10.** $5 < x < 11.5$

11.



12. $\overline{CD}$, $\overline{BC}$, $\overline{BD}$, $\overline{AB}$, $\overline{AD}$

13. $\overline{DE}$, $\overline{AE}$, $\overline{AD}$, $\overline{AB}$, $\overline{BD}$, $\overline{BC}$, $\overline{CD}$

14. 0 ft $< x <$ 12 ft **15.** 4 in. $< x <$ 14 in.

16. 5 yd $< x <$ 17 yd **17.** 60 in. $< x <$ 108 in.

18. 600 feet **19.** It is shorter to cut across the park because the sum of the lengths of the two sidewalks is greater than the length of the diagonal across the park. **20.** $\overline{RT} \perp \overline{TS}$, so $\triangle RTS$ is a right triangle. The largest angle in a right triangle is the right angle, so $m\angle RTS > m\angle RST$, so $RS > RT$. (If one angle of a triangle is larger than another angle, then the side opposite the larger angle is longer than the side opposite the smaller angle.)