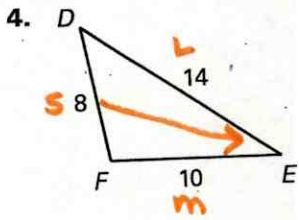**LESSON 5.5**

Practice

For use with pages 328–334

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?
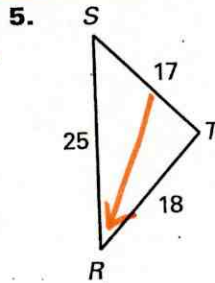
1. Obtuse scalene

2. Acute isosceles

3. Right isosceles

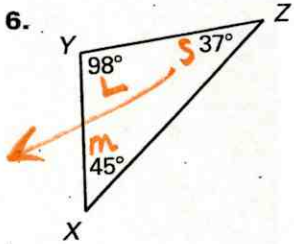**List the sides and the angles in order from smallest to largest.**

4.

start w/

Sides	Angles
DF	∠E
FE	∠D
DE	∠F

5.

Sides	Angles
ST	∠R
TR	∠S
SR	∠T

6.

start w/

Sides	Angles
YX	∠Z
YZ	∠X
XZ	∠Y

7.

90-32 = 58°
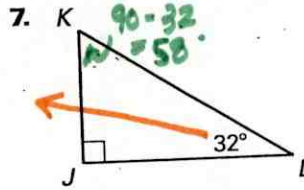
Sides	Angles
KJ	∠L
JL	∠K
KL	∠J

8.
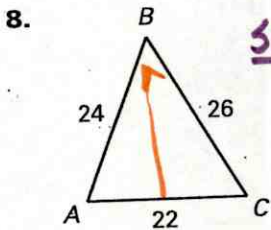
Sides	Angles
AC	∠B
AB	∠C
BC	∠A

★ 9.
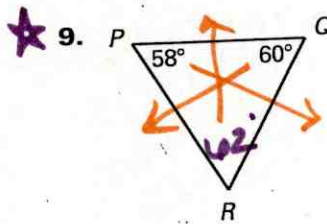
Sides	Angles
GR	∠P
PR	∠Q
PQ	∠R

∠R + 58 + 60 = 180

∠R + 118 = 180

∠R = 62

LESSON 5.5 **Practice** *continued*
For use with pages 328–334

Sketch and label the triangle described.

10. Side lengths: 14, 17, and 19, with longest side on the bottom
    Angle measures: 45°, 60°, and 75°, with smallest angle at the right

11. Side lengths: 11, 18, and 24, with shortest side on the bottom
    Angle measures: 25°, 44°, and 111°, with largest angle at the left

12. Side lengths: 32, 34, and 48, with shortest side arranged vertically at the right.
    Angle measures: 42°, 45°, and 93°, with largest angle at the top.

[handwritten: Is $a+b > c$? make c the longest side]

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

13. 3, 4, 5
[handwritten: c above 5]
$$3+4 > 5$$
$$7 > 5 \text{ yes}$$

14. 1, 4, 6
[handwritten: c above 6]
$$1+4 > 6$$
$$5 > 6 \text{ NO}$$

15. 17, 17, 33
[handwritten: c above 33]
$$17+17 > 33$$
$$34 > 33 \text{ yes}$$

16. 22, 26, 65
[handwritten: c above 65]
$$22+26 > 65$$
$$48 > 65 \text{ NO}$$

17. 6, 43, 39
[handwritten: c above 43]
$$6+39 > 43$$
$$45 > 43 \text{ yes}$$

18. 7, 54, 45
[handwritten: c above 54]
$$7+45 > 54$$
$$52 > 54 \text{ NO}$$

Describe the possible lengths of the third side of the triangle given the lengths of the other two sides.
[handwritten: $a - b < x < a+b$ make a the longest side]

19. 6 in., 9 in.
[handwritten: a above 9]
$$9-6 < x < 9+6$$
$$3 < x < 15$$

20. 4 ft, 12 ft
[handwritten: a above 12]
$$12-4 < x < 12+4$$
$$8 < x < 16$$

21. 9 m, 18 m
[handwritten: a above 18]
$$18-9 < x < 18+9$$
$$9 < x < 27$$

22. 21 yd, 16 yd
[handwritten: a above 21]
$$5 < x < 37$$

23. 22 in., 2 ft
[handwritten: a above 2 ft; 24in]
$$2 < x < 46 \text{ in}$$
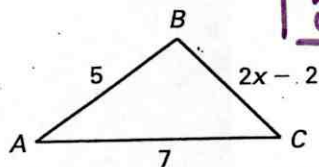
24. 24 in., 1 yd
[handwritten: a; 36in]
$$12 < x < 60 \text{ in}$$

Is it possible to build a triangle using the given side lengths? If so, order the angle measures of the triangle from least to greatest.
[handwritten: $a+b > c$ make c the longest side]

25. $RS = \sqrt{46}$, $ST = 3\sqrt{5}$, $RT = 5$
[handwritten: c above RS, a above ST, b above RT]

[handwritten: Put the $\sqrt{46}$ and $3\sqrt5$ in calculator to see the actual numbers]

[handwritten:]
$$\sqrt{46} = 6.78$$
$$3\sqrt5 = 6.71$$
$$3\sqrt5 + 5 > \sqrt{46}$$
$$11.71 > 6.78 \checkmark$$
[handwritten: yes]

[handwritten: Angles]
∠S
∠R
∠T

26. $AB = \sqrt{26}$, $BC = 4\sqrt5$, $AC = 2\sqrt2$
[handwritten: a above AB, b above BC, c above AC]

[handwritten:]
$$\sqrt{26} = 5.1$$
$$4\sqrt5 = 8.9$$
$$2\sqrt2 = 2.8$$

$$\sqrt{26} + 2\sqrt2 > 4\sqrt5$$
$$5.1 + 2.8 > 8.9$$
$$7.9 > 8.9$$
[handwritten: NO]

LESSON 5.5

Practice *continued*
For use with pages 328–334

Describe the possible values of x.

27.

B
5    $2x - 2$
A ——— 7 ——— *C*

$7 - 5 < 2x - 2$
$2 < 2x - 2$
$+2 \quad +2$
$4 < 2x$
$\overline{2}$

$2x - 2 < 7 + 5$
$2x - 2 < 12$
$+2 \quad +2$
$2x < 14$ $x < 7$

$\boxed{2 < x < 7}$

$2 < x$

28.

$18 - 8 < 4x + 2$
$10 < 4x + 2$
$-2 \qquad -2$
$8 < 4x$
$\overline{4} \quad \overline{4}$
$2 < x$

$4x + 2 < 18 + 8$
$4x + 2 < 26$
$-2 \quad -2$
$4x < 24$
$\overline{4} \quad \overline{4}$
$x < 6$

18
F ——— $4x + 2$ ——— *H*   8   *G*

$\boxed{2 < x < 6}$

29. **Building** You are standing 200 feet from a tall building. The angle of elevation from your feet to the top of the building is 51° (as shown in the figure). What can you say about the height of the building?

51° ← you
200 ft
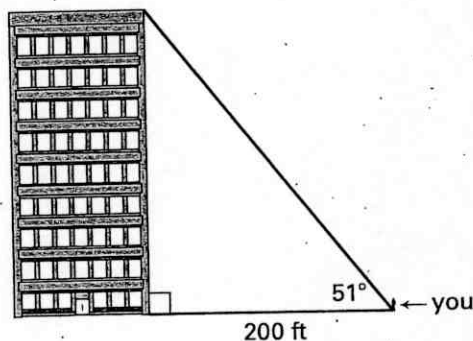
30. **Sea Rescue** The figure shows the relative positions of two rescue boats and two people in the water. Talking by radio, the captains use certain angle relationships to conclude that boat *A* is the closest to person *C* and boat *B* is the closest to person *D*. *Describe* the angle relationships that would lead to this conclusion.
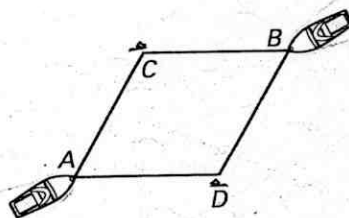
31. **Airplanes** Two airplanes leave the same airport heading in different directions. After 2 hours, one airplane has traveled 710 miles and the other has traveled 640 miles. *Describe* the range of distances that represents how far apart the two airplanes can be at this time.

32. **Baseball** A pitcher throws a baseball 60 feet from the pitcher's mound to home plate. A batter pops the ball up and it comes down just 24 feet from home plate. What can you determine about how far the ball lands from pitcher's mound? Explain why the Triangle Inequality Theorem can be used to describe all but the shortest and longest possible distances.