Worksheet Triangle Inequalities

Name ____________________

Decide whether each set of numbers is a triangle.

1) 15, 12, 9  2) 23, 16, 7
3) 20, 10, 9  4) 8.5, 6.5, 13.5
5) 47, 28, 70  6) 28, 41, 13
7) 5, 10, 15  8) 9, 40, 41
9) 12, 2.2, 14.3  10) 6, 9, 16

The measures of two sides are given. Between what two numbers must the third side fall.

11) 9 and 15  11) Write an inequality to represent your answer:________
12) 11 and 20  12) Write an inequality to represent your answer:________
13) 23 and 14  13) Write an inequality to represent your answer:________
14) 5 and 8  14) Write an inequality to represent your answer:________
15) 15 and 18  15) Write an inequality to represent your answer:________
16) 22 and 34  16) Write an inequality to represent your answer:________
17) 47 and 71  17) Write an inequality to represent your answer:________
18) 21 and 47  18) Write an inequality to represent your answer:________

Name the largest and the smallest angle.

19) 

List the angles of \( \triangle ABC \) from the smallest to the largest.

20) 

21) 

22) \( \overline{AB} = 17, \overline{BC} = 21, \overline{AC} = 18 \)
23) \( \overline{AB} = 15, \overline{AC} = 16, \overline{BC} = 17 \)
List the sides in order, underline the side with the shortest length.

24) \( \triangle ABC \)

25) \( \triangle DEF \)

26) \( \triangle ABC \)

List the sides of \( \triangle ABC \) from the longest to shortest.

27) \( m\angle A = 46^\circ, \ m\angle B = 30^\circ \)

28) \( m\angle C = 101^\circ, \ m\angle B = 70^\circ \)

29) \( m\angle A = 59^\circ, \ m\angle C = 61^\circ \)

Find the value of \( x \) and list the sides of \( \triangle ABC \) in order from shortest to longest if the angles have the indicated measures. (Hint: Find the angle measures first, then decide which sides are the longest)

30) \( m\angle A = (9x + 29)^\circ, \ m\angle B = (93 - 5x)^\circ, \ \text{and} \ m\angle C = (10x + 2)^\circ. \)

31) \( m\angle A = (9x - 4)^\circ, \ m\angle B = (4x - 16)^\circ, \ \text{and} \ m\angle C = (68 - 2x)^\circ. \)

32) \( m\angle A = (12x - 9)^\circ, \ m\angle B = (62 - 3x)^\circ, \ \text{and} \ m\angle C = (16x + 2)^\circ. \)

33) \( m\angle A = (5x + 2)^\circ, \ m\angle B = (6x - 10)^\circ, \ \text{and} \ m\angle C = (x + 20)^\circ. \)

34) \( m\angle A = (10x)^\circ, \ m\angle B = (5x - 17)^\circ, \ \text{and} \ m\angle C = (7x - 1)^\circ. \)

Answer the following questions.

35) Draw \( \triangle DEA \) with a median \( \overline{EG} \).

36) Draw \( \triangle JKH \) with an altitude \( \overline{JP} \).

37) Find the value of \( x \).

\( \overline{SO} \) is an altitude of \( \triangle SAT \)