

Worksheet 15.3B: Triangle Inequalities

Date _____ Period _____

State if the three numbers can be the measures of the sides of a triangle.

1) 8, 11, 10

2) 7, 13, 5

3) 19, 10, 7

4) 8, 6, 16

5) 8, 12, 12

6) 10, 9, 8

7) 38, 30, 35

8) 47, 12, 28

Two sides of a triangle have the following measures. Find the range of possible measures for the third side.

9) 10, 8

10) 10, 9

11) 8, 11

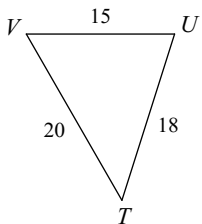
12) 16, 13

13) 43, 39

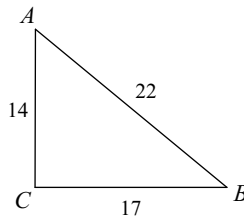
14) 50, 45

Order the angles in each triangle from smallest to largest.

15)



16)



17) In $\triangle PQR$

$$QR = 22$$

$$PR = 18$$

$$PQ = 12$$

18) In $\triangle LKJ$

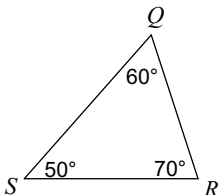
$$KJ = 17$$

$$LJ = 12$$

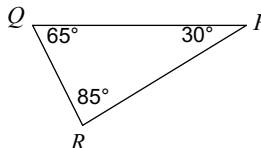
$$LK = 14$$

Order the sides of each triangle from shortest to longest.

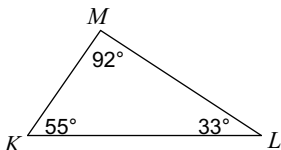
19)



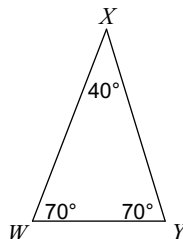
20)



21)



22)



23) In $\triangle STU$

$$m\angle S = 91^\circ$$

$$m\angle T = 58^\circ$$

$$m\angle U = 31^\circ$$

24) In $\triangle ZYX$

$$m\angle Z = 30^\circ$$

$$m\angle Y = 120^\circ$$

$$m\angle X = 30^\circ$$

25) In $\triangle QRS$

$$m\angle Q = 96^\circ$$

$$m\angle R = 52^\circ$$

$$m\angle S = 32^\circ$$

26) In $\triangle QRS$

$$m\angle Q = 29^\circ$$

$$m\angle R = 40^\circ$$

$$m\angle S = 111^\circ$$

Answers to Worksheet 15.3B: Triangle Inequalities

- | | | | |
|---|--|---|--|
| 1) Yes | 2) No | 3) No | 4) No |
| 5) Yes | 6) Yes | 7) Yes | 8) No |
| 9) $2 < x < 18$ | 10) $1 < x < 19$ | 11) $3 < x < 19$ | 12) $3 < x < 29$ |
| 13) $4 < x < 82$ | 14) $5 < x < 95$ | 15) $\angle T, \angle V, \angle U$ | 16) $\angle B, \angle A, \angle C$ |
| 17) $\angle R, \angle Q, \angle P$ | 18) $\angle K, \angle J, \angle L$ | 19) $\overline{QR}, \overline{RS}, \overline{QS}$ | 20) $\overline{RQ}, \overline{RP}, \overline{QP}$ |
| 21) $\overline{MK}, \overline{ML}, \overline{LK}$ | 22) $\overline{WY}; \overline{XY}$ and \overline{WX} | 23) $\overline{ST}, \overline{SU}, \overline{TU}$ | 24) \overline{YX} and $\overline{ZY}; \overline{ZX}$ |
| 25) $\overline{QR}, \overline{QS}, \overline{RS}$ | 26) $\overline{RS}, \overline{QS}, \overline{QR}$ | | |