Practice — Triangle Inequality Theorem

Triangle Inequality Theorem

The sum of the lengths of any two sides of a triangle is ________________ than the length of the third side.

Can these numbers be the length of the sides of a triangle? Show math to prove your answer, using the Triangle Inequality Theorem. Then circle YES or NO.

1. 8, 9, 10
   YES   NO

2. 1, 1, 2
   YES   NO

3. 6, 9, 8
   YES   NO

4. 3, 4, 9
   YES   NO

5. 12, 4, 17
   YES   NO

6. 8, 7, 2
   YES   NO

7. 14, 3, 9
   YES   NO

8. 12, 18, 2
   YES   NO

9. 3, 2, 1
   YES   NO
In Exercises 10 – 15, the lengths of two sides of a triangle are given. What are the possible lengths for the third side? Between what two numbers?

10. \(8, 5\)  
11. \(9, 2\)  
12. \(10, 10\)  

Between \___________\  
Between \___________\  
Between \___________\  

13. \(4, 13\)  
14. \(27, 39\)  
15. \(15, 6\)  

Between \___________\  
Between \___________\  
Between \___________\  

16. Which of the following could be the length of \(YZ\)?

(a) \(12\)  
(b) \(4\)  
(c) \(14\)  
(d) \(21\)

17. Mrs. Barto has a pet rabbit and wants to build a pen for it. She has 3 pieces of lumber: one is 3 ft, one is 7 ft, and the other is 8 ft long. Can she build a closed triangular pen with these three boards (will the boards form a triangle)?

Show your work here:

YES \ or \ NO