H.Geometry – Chapter 4 – Definition Sheet

Section 4.3

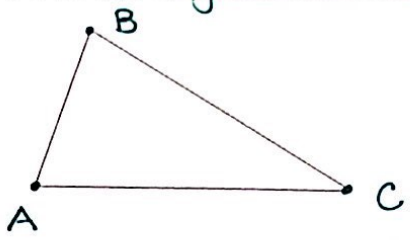
Triangle Inequality Conjecture

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

$AB + BC > AC$

$AB + AC > BC$

$BC + AC > AB$



1. CAN A TRIANGLE BE MADE WITH THE GIVEN SIDES?

a) 3, 5, 7 yes

b) 8, 13, 25 no

c) 10, 10, 10 yes

d) 15, 10, 5 no

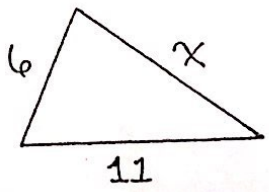
e) 16, 35, 13 no

f) 11, 21, 31 yes

g) 8, 12, 22 no

h) 1, 2, 3 no

2. GIVE ALL THE POSSIBLE VALUES FOR x



$5 < x < 17$

$6 + 11 > x$ → $x < 17$

$11 + x > 6$ always true

$6 + x > 11$ → $x > 5$

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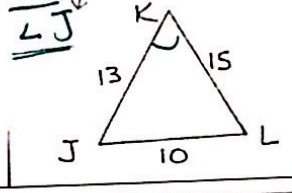
Side-Angle Inequality Conjecture

- The largest side is opposite from the largest angle.
- The smallest side is opposite from the smallest angle.

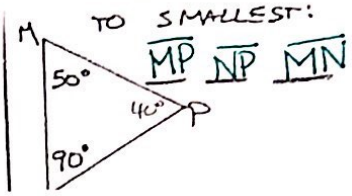
Example: **3.** LIST THE ANGLES FROM SMALLEST TO LARGEST

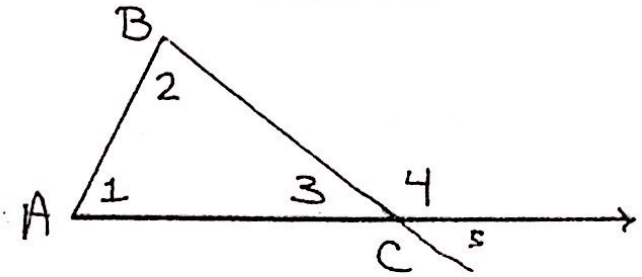
∠K
∠L
∠J



4. LIST THE SIDES FROM LARGEST TO SMALLEST:

MP NP MN



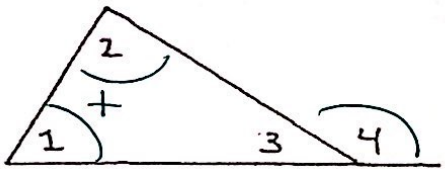


Exterior Angle - Formed by extending one side from one of the vertices
EX: ∠4

Adjacent Interior Angle - The Interior Angle that form a linear pair with an exterior angle
EX: ∠3

Remote Interior Angle - The two interior angles of a triangle NOT adjacent to the exterior angle
EX: ∠1 and ∠2

Triangle Exterior Angle Thm - The measure of an exterior angle of a triangle is equal to the sum of the measures of the remote interior angles.



$m\angle 4 = m\angle 1 + m\angle 2$