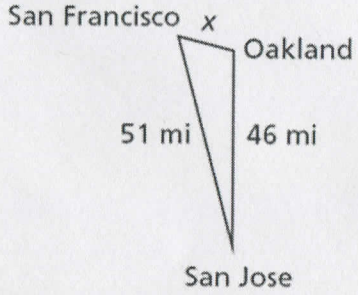
Lesson Title 6.5 Indirect Proofs & Inequalities in Triangles Notes **HGEO** **Date** _____

TASK 1: Travel Application

The figure shows the approximate distances between cities in California. What is the range of distance from San Francisco to Oakland? (HINT: range implies and inequality: < > ≤ or ≥) ±



46+51 = 97

51-46 = 5

5<x<97

TASK 2: Possible lengths for the third side

When given two sides you could be given the 2 smallest or the 2 largest. So you have to cover both options by adding your two and subtracting your two to find the options for the third side.

a) 28 & 23

28+23

28-23

5<x<51

b) 4 & 19

19+4

19-4

15<x<23

c) 3.07 & 1.89

3.07+1.89

3.07-1.89

1.18<x<4.96

TASK 3: Hinge Theorem

a) List the sides of ΔABC in order from shortest to longest if m∠A = (3x + 20)°, m∠B = (2x + 37)°, m∠C = (4x + 15)°. (HINT: draw and label your triangle.)

3x+20+2x+37+4x+15=180

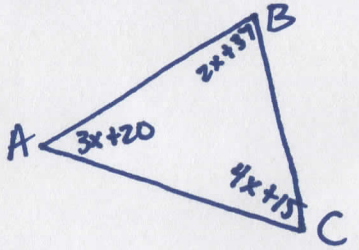
x=12

m∠A = 56°

m∠B = 61°

m∠C = 63°

$\overline{CB}, \overline{AC}, \overline{AB}$

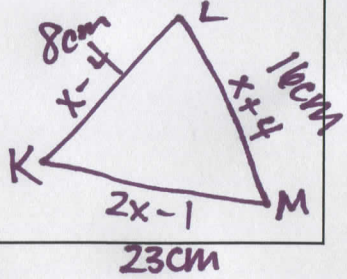


b) List the angles of ΔKLM in order from smallest to largest if the perimeter of ΔKLM is 47 cm. KL = (x – 4) cm, LM = (x + 4) cm, and KM = (2x – 1) cm. (HINT: draw and label your triangle.)

x-4+x+4+2x-1=47 cm

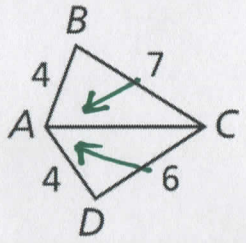
x=12

∡M; ∡K; ∡L

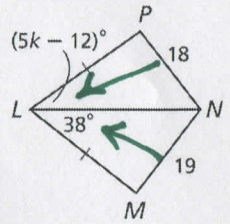


TASK 4: Applying the Hinge Theorem

a) Compare m∠BAC ___ m∠DAC.



b) Find the range of values for k.



$0 < 5K-12 < 38$

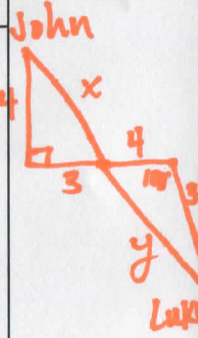
$0 < 5K-12$ $\quad 5K-12 < 38$

$\frac{12}{5} < K < 10$

TASK 5: Application

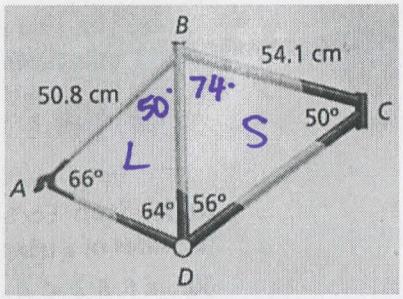
a) John and Luke leave school at the same time. John rides his bike 2 blocks west and then 4 blocks north. Luke rides 4 blocks east and then 3 blocks at a north east angle of 10 degrees. Who is farther from school? *(HINT: draw a diagram and label it)*

$x < y$ $\quad 90 < 100$ Luke

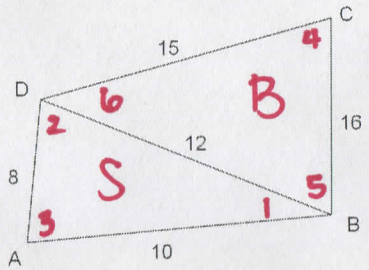


b) The five speed tubes of this mountain bike frame form two triangles. List the 5 tubes in order from shortest to longest. Justify your answer.

$\overline{AD}, \overline{AB}, \overline{BD}, \overline{BC}, \overline{DC}$



c) List the angles from smallest to largest.



m∠ABD
m∠ADB
m∠BAD
m∠DCB
m∠CBD

Still need help with:

m∠BDC