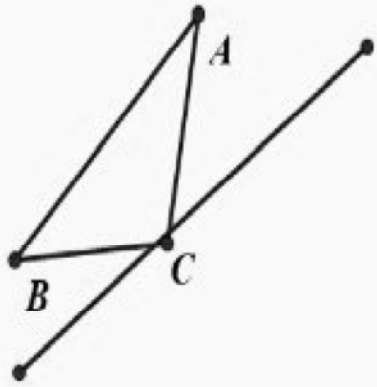
Doing Mathematics by Staring

100AED AWARD

SOLVED. Winner I: Liana Hajeir (see Solution Below)

Imagine that you found yourself in a desert. You saw a line in sand and two holes A, B. (See Picture) You only have a very long piece of wood (Let say unmarked ruler). Using the unmarked ruler, you were able to find a point C on the line and you constructed the triangle ACB with minimum perimeter , i.e., if you choose a different point on the line, say d, then the perimeter of ADB >= the perimeter of ACB.



How did you do that? state clearly the steps that you used in construction of such triangle.

Assume that you can draw line-segments or perpendicular line-segments just by using your finger and the unmarked ruler.

Winner : Liana Hajeir

1) We reflect B on ℓ, and call the reflection D

2) This means that any point on ℓ makes BC = DC

3) Since the base AB is fixed, we want to minimize AC + BC

4) Since BC = DC, we can say that we want to minimize AC + DC

5) Since the shortest distance between 2 points is a straight line, we take C to be the point where ℓ intersects with a straight line drawn from A to D (AC + DC)