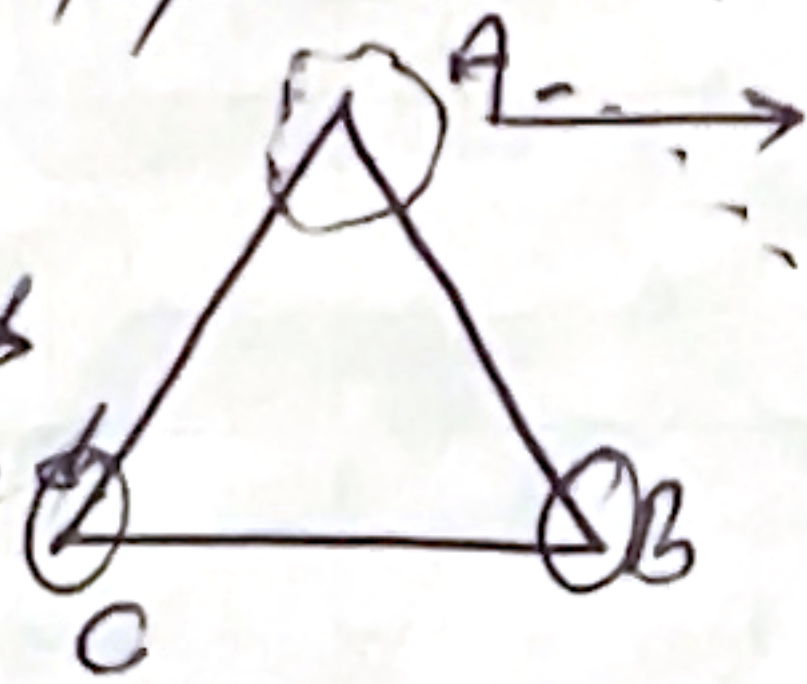


part #40 Design a T-shaped lock

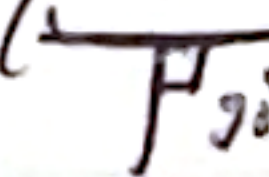
This is proposed  
finger shape  
per.



This is a T-shaped locking mechanism.  
The problem I come across while  
designing is:

i) What is the actual bet<sup>n</sup> male  
& female lock? I mean the  
angle bet<sup>n</sup> left & right arm of position

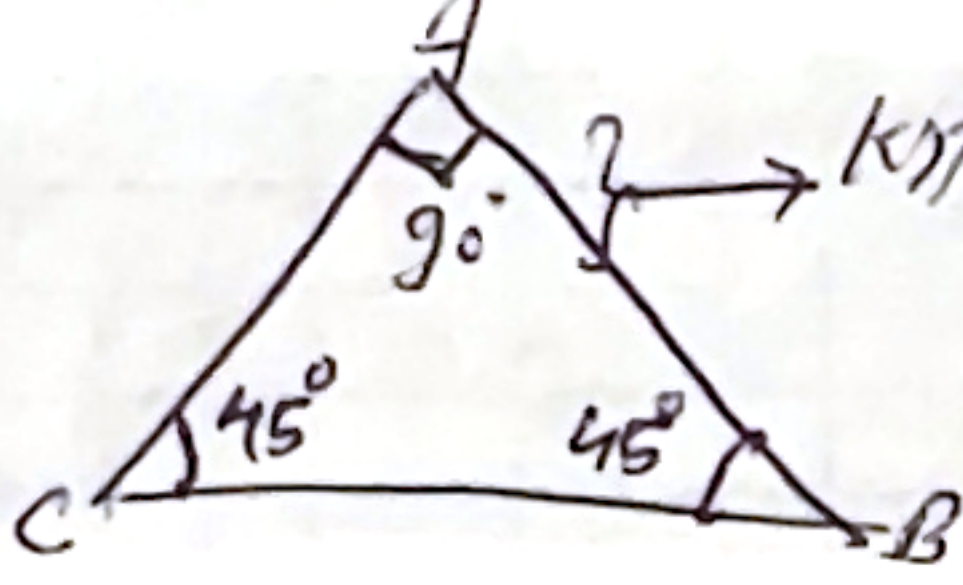


Ans: Well, the male lock 'T' is designed  
with  $90^\circ$ . ; hence, to get roll into  
female lock, 'T' has to be  $90^\circ$ .

Now, this opens up after two questions.

#  
Ans:

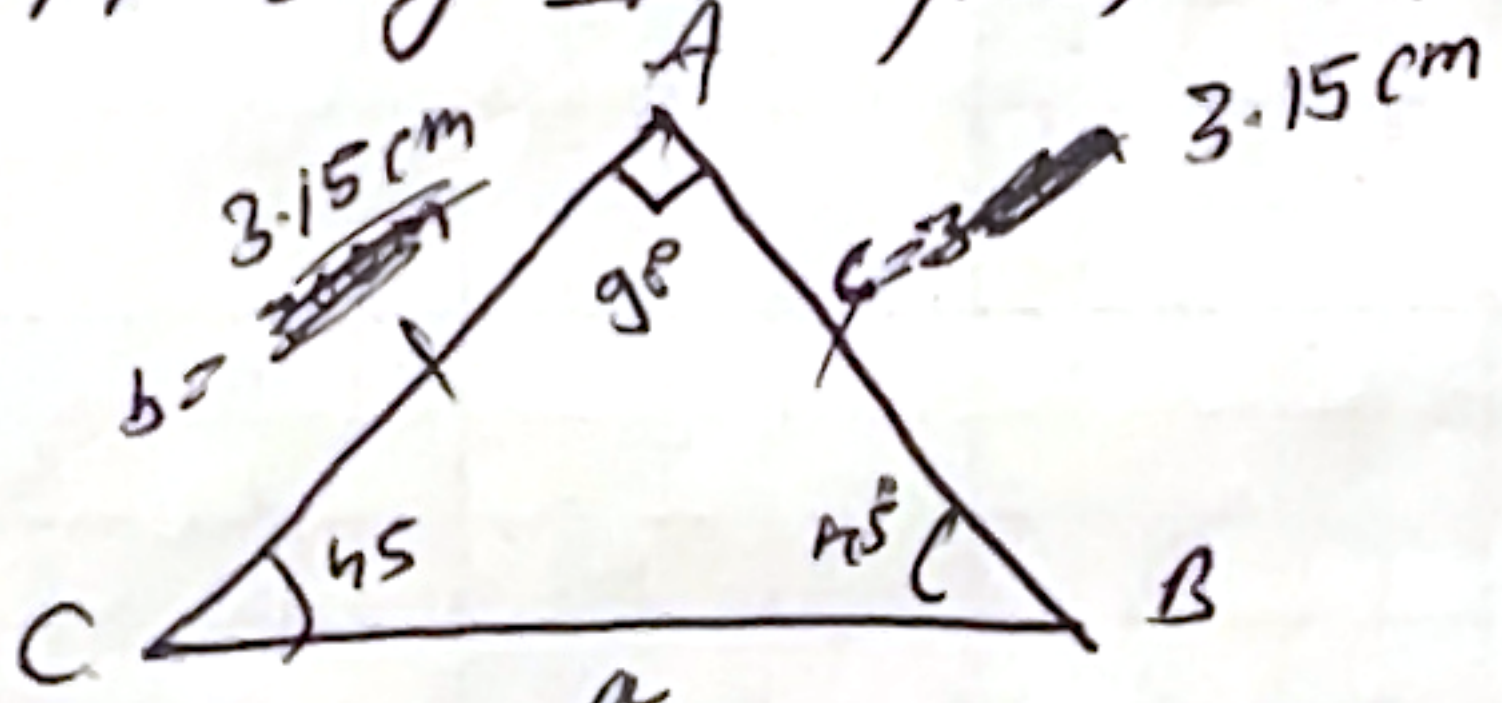
What is the angle of these arm of position 'B' & 'C'?



known from above,  $\angle A + \angle B + \angle C = 180^\circ$   
 $\angle B + \angle C = 180 - 90 = 90$

if  $\angle B = \angle C$ , then both  $\angle B = \angle C = 90/2 = 45^\circ$

# Angles are known by ~~you~~ you, What is the length of each arm  
then?



Basically, ~~this~~ this is an isosceles right angle triangle.  
Key properties:

- i) Two sides are equal
- ii) Right angle: One angle measures  $90^\circ$
- iii) Two non-right angles are equal, each measuring  $45^\circ$

ie Pythagoras theorem can be applied here:

$$h^2 = p^2 + b^2 \text{ or } A^2 = B^2 + C^2$$

$$B^2 + C^2 = A^2$$

$$\text{or } A = \sqrt{315^2 + 315^2}$$

$$= 445.47 \text{ mm}$$

$\approx$