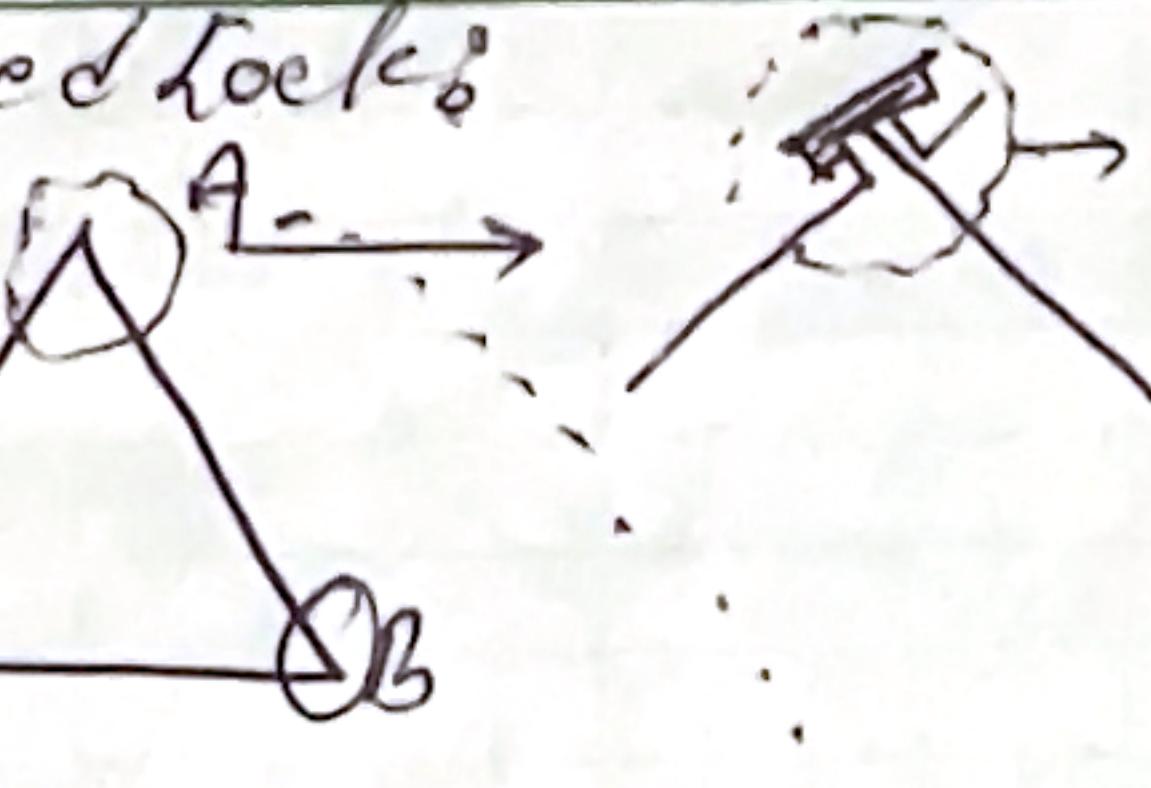


part #40 Design a T-shaped locks

This a proposed
fingular shape
pk.



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

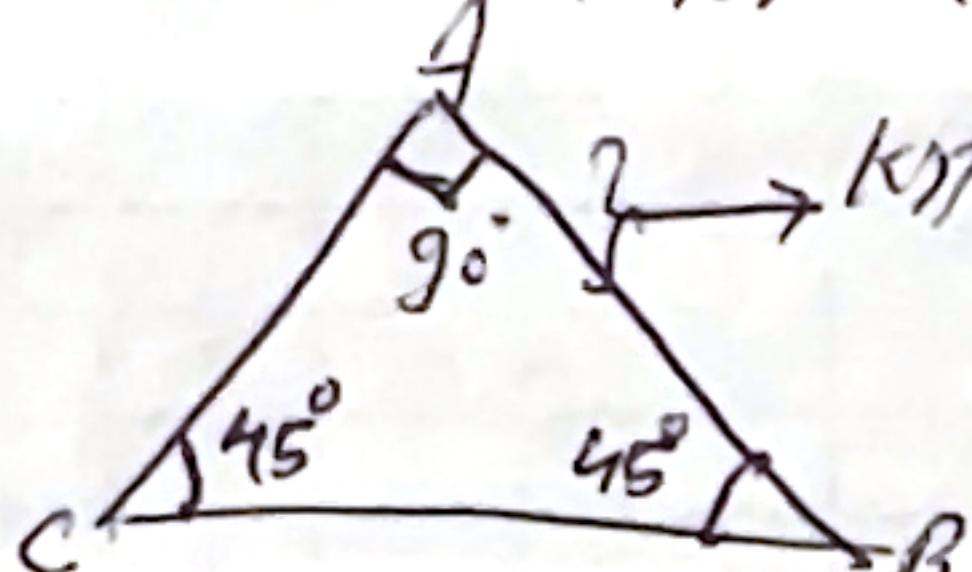
- What is the depth both male & female lock? I mean the angle from left & right arm at position

~~(A)~~

Ans: Well, the male lock 'T' is designed with 90° . \angle_{90° , hence, to get roll into female lock, 'T' has to be 90° .

Now, this opens up other two questions.
What is the angle of these arm of position 'B' & 'C'?

Ans:

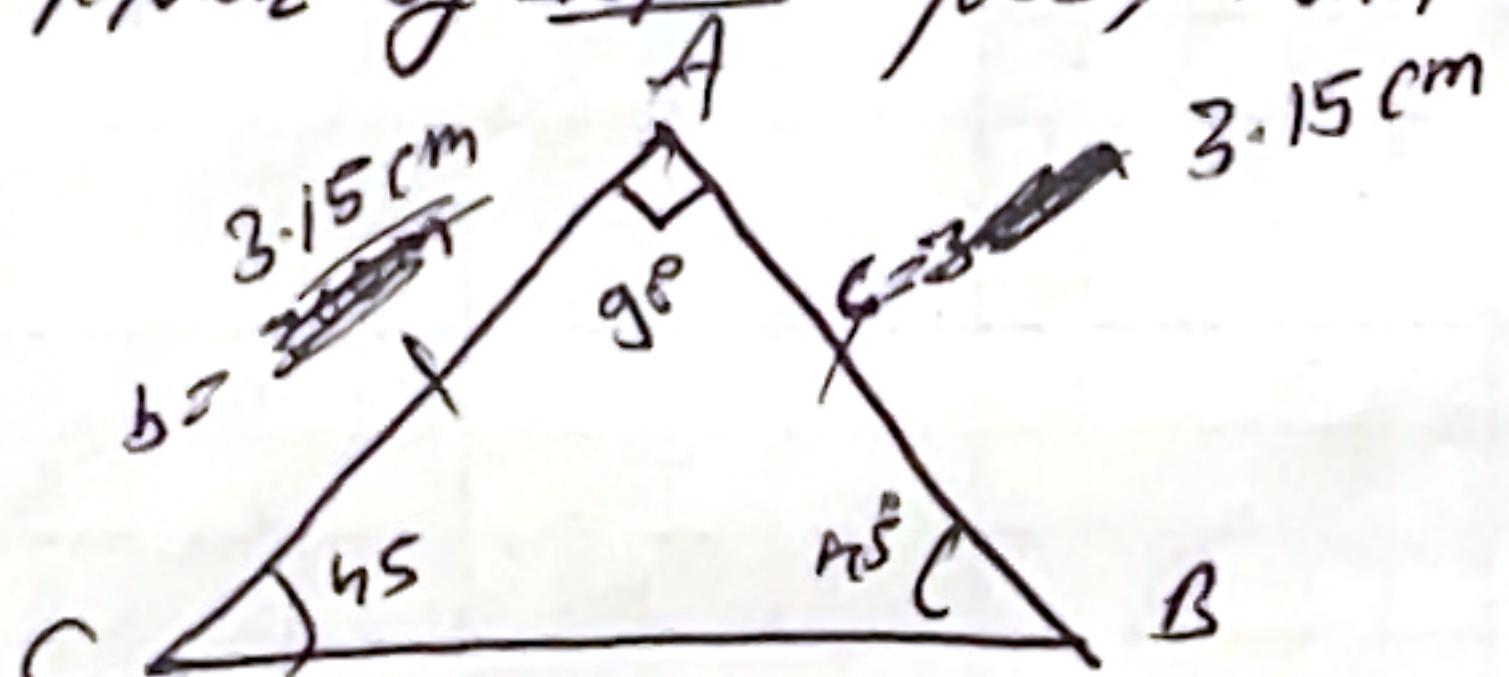


Known from above, $\angle A + \angle B + \angle C = 180^\circ$

$$\angle B + \angle C = 180 - 90 = 90$$

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

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



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

- Two sides are equal
- Right angle: One angle measures 90°
- Two non-right angles are equal, each measuring 45°

i.e Pythagoras theorem can be applied here:

$$3^2 = p^2 + b^2 \text{ or } \cancel{3^2 = p^2 + b^2}$$

$$9 = C^2 + A^2$$

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

$$= 445.47 \text{ mm}$$

\approx