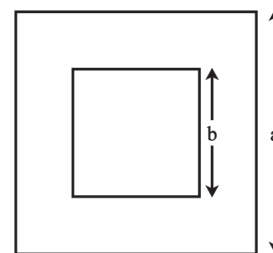


Diagram shows a square shaped thin uniform metal sheet of side length a consisting of a square shaped hole of side length b . a and b are in centimetre size. It is needed to measure a , b , thickness of the sheet (t) and the mass (m) as accurately as possible.



- (a) What is the most suitable measuring instrument in the laboratory to measure t ?
-
- (b) An important inspection should be done before getting a reading from the above instrument. What is that?
-
- (c) A vernier caliper is provided for you to get the measurements of a and b .
- (i) Which part of the caliper do you use to get the reading a ?
-
- (ii) Which part of the caliper do you use to get the reading b ?
-
- (d) What is the most suitable measuring instrument in the laboratory to measure m ?
-
- (e) Write down an expression for the density of the metal using m , a , b and t .
-
- (f) Following are the readings taken for the thickness t from five different places of the sheet.
- 1.10 mm , 1.11 mm , 1.12 mm ,1.12 mm , 1.11 mm
- (i) What is the least count of the instrument used here?
-
- (ii) Calculate the mean thickness of the sheet.
-

(iii) For how many decimal places do you give the above calculated answer? Explain the reason for that.

(g) A student has suggested measuring the volume of water displaced by the sheet when it is submerged in water to find out the volume of the sheet. Why this value won't be accurate as the value obtained by calculating using a , b and c .
