**Grade 12 ESSENTIAL**
UNIT D - PRECISION MEASURMENT
PRACTICE PROBLEMS - QUESTIONS

Name: _____
Date: _____

[extracted from the Mb Distance Learning Website]

Instructions: *These solutions questions are to confirm your readings.*
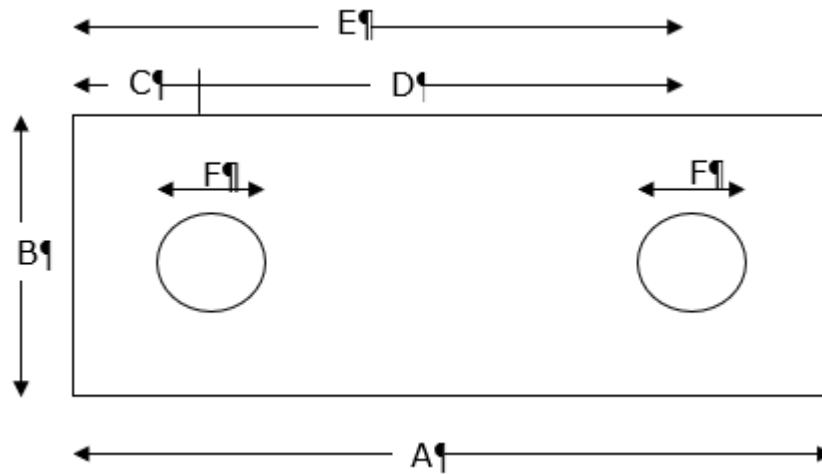
1.   Given the following rectilinear diagram with measurements and their tolerances, fill in the chart with respect to these tolerances and maximum and minimum limits. All measurements are in centimetres and the objects are not to scale.
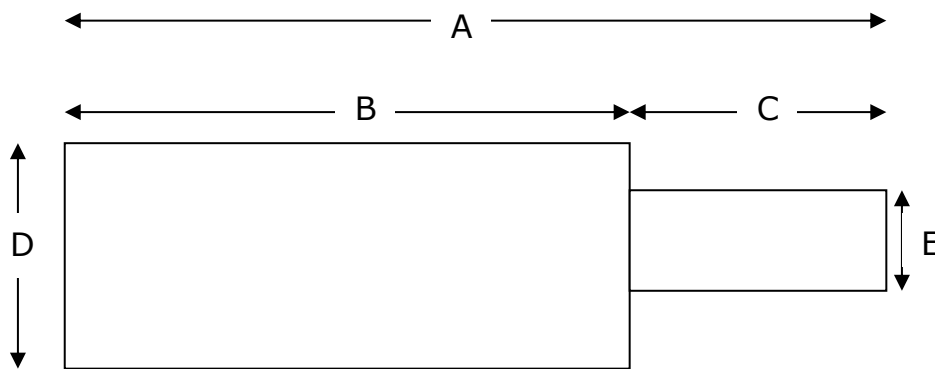
$A = 74.62 \pm 0.38$ $B = 50 \pm 0.5$ $D = 19.9 \pm 0.1$ $E = 12.48 \pm 0.02$

| Dimension	Basic Size	Upper Limit	Lower Limit	Tolerance
A				
B				
C				
D				
E				

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2.   Given the following rectilinear diagram with measurements and their tolerances, fill in the chart with respect to these tolerances and maximum and minimum limits. All measurements are in centimetres and the objects are not to scale.

$A = 90 \pm 1.5$ $B = 20 \pm 0.25$ $C = 15 \pm 0.25$ $E = 70 \pm 0.25$ $F = 10.01 \pm 0.01$

Dimension	Basic Size	Upper Limit	Lower Limit	Tolerance
A				
B				
C				
D				
E				
F				

3. Using the measurements and tolerances for the object below, find the indicated values in the chart. All measurements are in centimetres and the objects are not to scale.
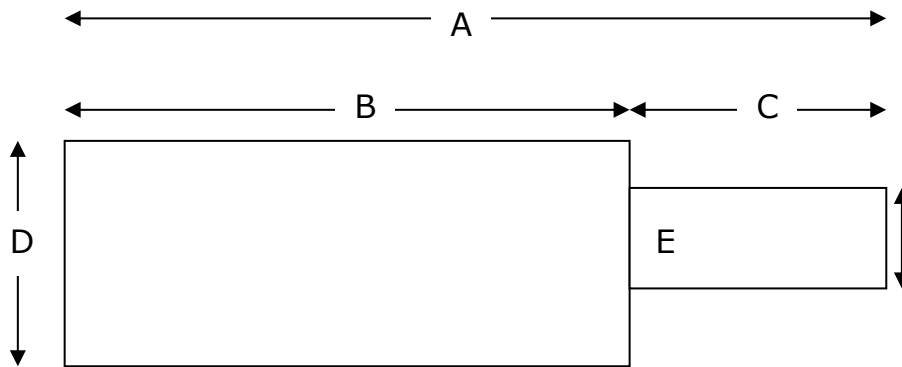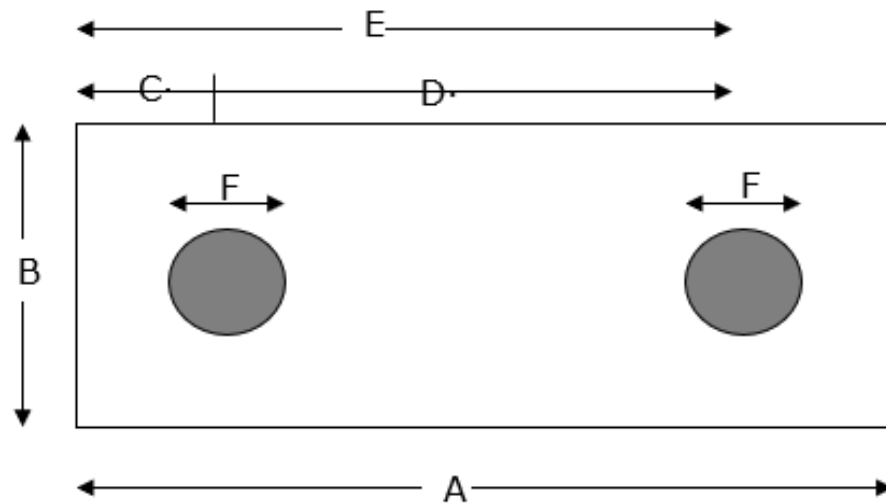

$$A = 74.62 \pm 0.38\ B = 50 \pm 0.5\ D = 19.9 \pm 0.1\ E = 12.48 \pm 0.02$$
$$Thickness = 4.985 \pm 0.015$$

Measurement	Basic Measurement	Minimum Limit	Maximum Limit	Tolerance
Area of top view				
Volume				

This is a composite object that is made up of 2 rectangular prisms. To find the area of the top view you will need to calculate B x D + C x E.

4. Using the measurements and tolerances for the object below, find the indicated values in the chart. All measurements are in centimetres and the objects are not to scale.

$A = 90 \pm 1.5$ $B = 20 \pm 0.25$ $C = 15 \pm 0.25$ $E = 70 \pm 0.25$ $F = 10.01 \pm 0.01$

$\text{Thickness} = 4.3 \pm 0.02$

Measurement	Basic Measurement	Minimum Limit	Maximum Limit	Tolerance
Area of one circle	cm^2	cm^2	cm^2	cm^2
Area of non-shaded	cm^2	cm^2	cm^2	cm^2
Volume of non-shaded Object	cm^3	cm^3	cm^3	cm^3

Note that in the diagram the measurement given for the circle is the diameter, so to find the radius you need to divide the diameter by 2.

The volume of the non-shaded object is a rectangular prism with two cylinders removed.

3. Find the tolerance and maximum and minimum limits for the volume of the following cylinder.

$r = 3 \pm 0.02 inches$

$h = 7.3 \pm 0.5 inches$