

Unit I- Part-1: Lettering, dimensioning and Construction of polygonsTheory Questions

1. What is lettering?

A. Writing of titles, dimensions, notes and other important particulars on a drawing is called as Lettering. There are different types of lettering like single stroke letters (thickness of the letter should be obtained in one stroke of the pencil), Gothic letters (like Bold in MS word), etc. In single stroke lettering, there are two types, namely vertical letters and inclined letters (like Italicised in MS word)

2. Write the letter M and W in at least two types of letterings.

A. M and W can be written in vertical, inclined and gothic lettering as follows:

M W (vertical); M W (inclined at 75°); M, W (Gothic)

3. What is meant by aspect ratio?

A. It is the proportional relationship between the width and height ratio used for lettering. Usually 6:5, 7:4, etc are some examples of aspect ratios used for lettering.

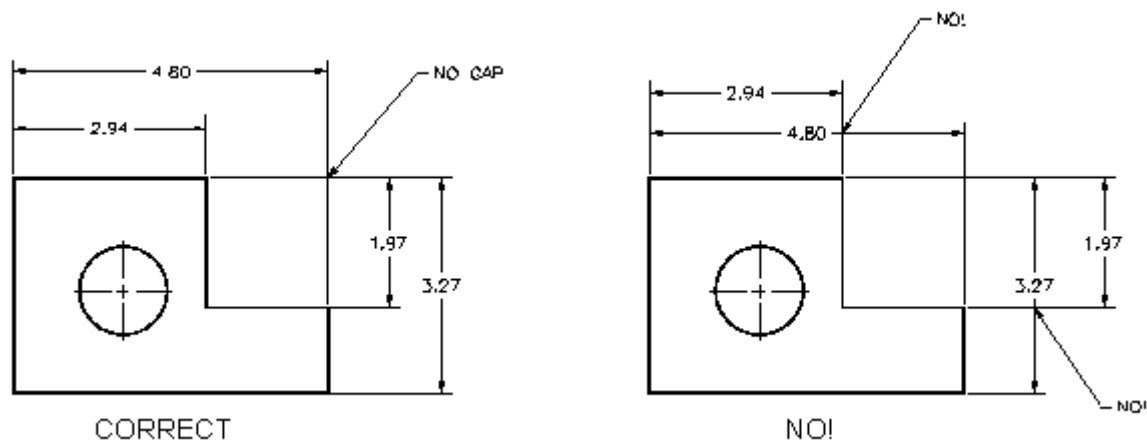
4. The size of a letter is given by its _____. (Ans: Aspect ratio)

5. Write double stroke vertical alphabets, G and M of height 35 mm, taking ratio of 7:4. (Refer text book for correct representations)

6. What are the 2 systems of placing dimensions on a drawing? Illustrate your answer with sketches.

A. There are two systems of placing dimensions. They are the unidirectional system and the aligned system.

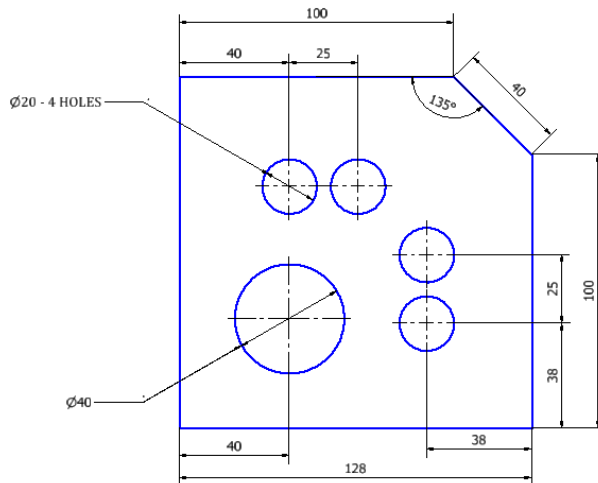
(i) Unidirectional system: In this system all the dimensions are so placed that they can be read from the bottom edge of the drawing sheet. The dimension lines are broken near the middle for inserting the dimensions. This system is mainly used on large drawings.



Always place shorter dimensions nearest to the object lines. Dimension lines should never cross. However, extension lines may cross each other.

(ii) Aligned system: In this system the dimensions are placed perpendicular to the dimension line in such a way that it may be read from the bottom edge or the right hand edge of the drawing sheet. The dimensions should be placed near the middle and above the dimension lines when seen from bottom or right edge of sheets.

ALIGNED METHOD OF DIMENSIONING



7. Explain with sketches the various types of lines used in drawing.
 A. The following is the list of lines and their uses in drawing:

Line	Description	General Application
A	Continuous thick	A1 Visible outlines. A2 Visible edges.
B	Continuous thin (straight or curved)	B1 Imaginary lines of intersection. B2 Dimension lines. B3 Projection lines. B4 Leader lines. B5 Hatching lines. B6 Outlines of revolved sections in place. B7 Short centre lines
C	Continuous thin free hand	C1 Limits of partial or interrupted views and sections, if the limit is not a chain thin.
D	Continuous thin (straight) with zigzags	D1 Long break line
E	Dashed thick	E1 Hidden outlines. E2 Hidden edges.
F	Dashed thin	F1 Hidden outlines. F2 Hidden edges.
G	Chain thin	G1 Center lines. G2 Lines of symmetry. G3 Trajectories
H	Chain thin, thick at ends and changes of direction	H1 Cutting planes.
J	Chain thick	J1 Indication of lines or surfaces to which a special requirement applies
K	Chain thin double dashed	K1 Outlines of adjacent parts. K1 Alternative or extreme position of movable parts. K3 Centroidal lines. K4 Initial outlines prior to forming K5 Parts situated in front of the cutting plane

8. What are the different sizes of sheets used in drawing?

A. The drawing sheets are designated as A series with the size decreasing as the number increases. The commonly used sheets are A0, A1, A2, A3, A4.

S.No	Designation of sheet	Dimensions of the sheet (mm)
1	A0	841 X 1189
2	A1	594 X 841
3	A2	420 X 594
4	A3	297 X 420
5	A4	210 X 297
6	A5	147 X 210

9. Write where the following lines are used in graphics:

a) Continuous thick line; b) Continuous thin with zig zag line; c) dash dot lines; d) thin dash lines.

A (a)-Visible parts of objects and main drawings; (b)- irregular boundaries or long breaks;

(c) - used for axis lines, center lines, lines of symmetry, etc; (d) -Hidden outlines & hidden edges

10. Match the following sizes of drawing paper as per BIS recommendation

Designation of sheet

Trimmed size in mm, width x length

1. A4

a. 420 x 594

2. A2

b. 210 x 297

3. A1

c. 297 x 420

4. A3

d. 594 x 841

(Ans: 1-b; 2-a; 3-d; 4-c)

Problems

- Inscribe a pentagon in a circle of diameter 60 mm.
- Inscribe a regular hexagon in a circle of 60 mm diameter.
- Inscribe a regular heptagon in a circle of 60 mm diameter.
- Inscribe a regular octagon in a circle of 60 mm diameter.
- Inscribe a circle in an equilateral triangle of 60 mm side.
- Construct a regular pentagon, given the length of its side 25 mm.
- Construct a regular hexagon, given the length of its side 25 mm.
- Construct a regular heptagon given the length of its side 25 mm.
- Construct a regular octagon given the length of its side 25 mm.

(Angle between sides of pentagon is 108° and between sides of hexagon is 120° . But in problems 15 to 18, the angles must not be used; instead follow the inscribed method common to all the polygons)

For answers to the above problems, refer to the solutions enclosed.