Parts of a Dimension

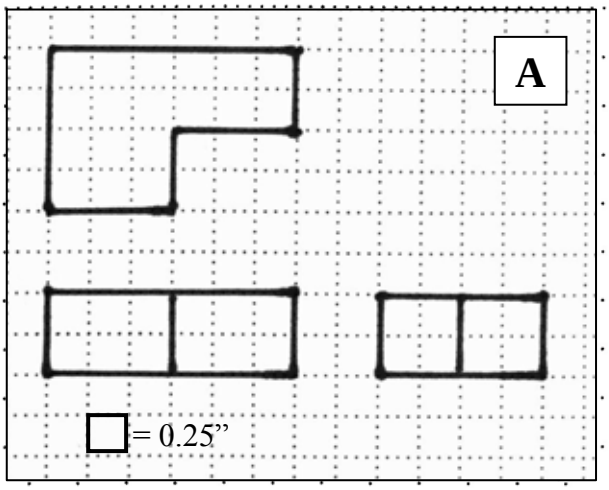
- Dimension – a dimension is a numerical value shown on a drawing to define the size of an object or part of an object. Dimensions may be expressed in either US or metric units.
- Dimension line – a dimension line is a thin solid line used to show the extent and direction of a dimension.
- Arrowheads – arrowheads are placed at the ends of dimension lines to show the limits of the dimension.
- Extension line – extension lines are thin lines drawn perpendicular to dimension lines, and they indicate the feature of the object to which the dimension refers.
- Leader line – a leader line is a thin solid line used to direct dimensions or notes to the appropriate feature.
- Tolerance – tolerances are the amount a dimension is allowed to vary. The tolerance is the difference between the maximum and minimum permitted sizes.

Principles of Good Dimensioning

The overriding principle of dimensioning in CLARITY.

1. Each feature of an object is dimensioned once and only once.
2. Dimensions should be selected to suit the function of the object.
3. Dimensions should be placed in the most descriptive view of the feature being dimensioned.
4. Dimensions should specify only the size of a feature. The manufacturing method should only be specified if it is a mandatory design requirement.
5. Angles shown on drawings as right angles are assumed to be 90 degrees unless otherwise specified, and they need not be dimensioned.
6. Dimensions should be located outside the boundaries of the object whenever possible.
7. Dimension lines should be aligned and grouped where possible to promote clarity and uniform appearance.
8. Crossed dimensions lines should be avoided whenever possible. When dimension lines must cross, they should be unbroken.
9. The space between the first dimension line and the object should be at least 3/8 inch (10mm.) The space between dimension lines should be at least ¼ inch (6mm.)
10. There should be a visible gap between the object and the origin of an extension line.
11. Extension lines should extend 1/8 inch (3mm) beyond the last dimension line.
12. Extension lines should be broken if they cross or are close to arrowheads.
13. Leader lines used to dimension circles or arcs should be radial.
14. Dimensions should be oriented to be read from the bottom of the drawing.
15. Diameters are dimensioned with a numerical value preceded by the diameter symbol (Φ).
16. Concentric circles should be dimensioned in a longitudinal view whenever possible.
17. Radii are dimensioned with a numerical value preceded by the radius symbol (R).
18. When a dimension is given to the center of an arc or radius, a small cross is shown at the center.
19. The depth of a blind hole may be specified in a note. The depth is measured from the surface of the object to the deepest point where the hole still measures a full diameter in width.
20. Counterbored, spotfaced, or countersunk holes should be specified in a note.

Redraw each orthographic, and dimension each object completely.
Follow the principles of good dimensioning.
(You may find it helpful to draw the isometric, but it is not required.)



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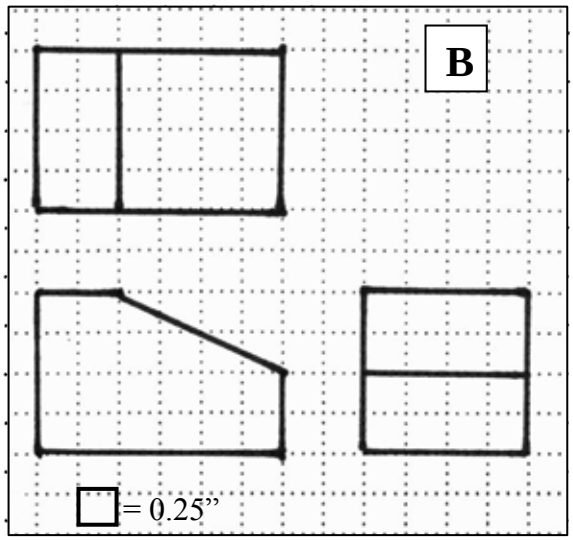

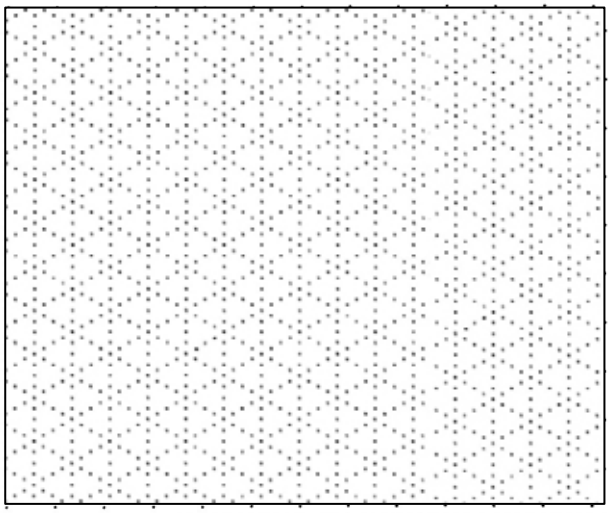

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