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## STUDY QUESTIONS FOR STEP 4

1. List three (3) uses for freehand sketches:

Freehand sketches allow designers, architects, engineers, and detailers to record their ideas quickly without having to use tools. They can revise and refine ideas for their clients, and finally, they can use freehand sketches as a preliminary plan of a drawing or a layout.

2. What does a "multiview sketch" show you about an object?

This is a 2D sketch that shows the shape of an object from perspectives 90 degrees apart. For the most part, these perspectives are views from the top, front and right side of the object.

3. List the three (3) principle views that are shown on a multiview sketch:

Top

Front

Right Side

4. List in your own words the steps to follow in the making of a multiview sketch:

1. Look carefully at the object, taking into account the measurements and type of paper.
2. Starting at the lower left corner of the paper, make four dots going vertically, then four dots going vertically in order to represent the length and width of the object.
3. Draw construction lines lightly connecting the dots so that your drawing has an established outline.
4. Use construction lines to locate details such as rounded corners and places where the shape of the object changes.
5. Make construction lines to show exact measurements of holes or rounded corners. Sketch these in taking into account the measurements.
6. Make sure that the lines that represent visible edges in the drawing are solid and dark.
7. Make sure that all interior edges and hollow sections of the drawing are represented by dashed lines.
8. Without erasing construction lines, use thin, long, dashed lines to located the centers of holes and arcs.

5. What does a "pictorial sketch" show you about an object?

This is a 3D sketch that shows the overarching shape of an object. It is shown from one direction.

6. List the three (3) principle types of pictorial sketches:

Isometric

Oblique

Perspective

7. Why is the "isometric pictorial sketch" the most commonly used type of pictorial view?

The Isometric Pictorial Sketch is the most commonly used because it is the one which is easiest to create while using measurements of arcs and circles which are consistent.

8. What overall shape should an object have to utilize an "oblique view"?

This is best for cylindrical shaped objects and furniture, because a normal front view is used.

9. What does a "perspective sketch" show you about an object?

These are the most realistic views of an object, however they are difficult to construct because you must shorten all of the measurements.

10. What does a "floor plan" and an "elevation" show you about a building?

A floor plan is an "aerial view", where the roof is not shown, and you are able to see the walls, windows, doors, fixtures, stairways, etc. An elevation is a front view, where exterior materials can be viewed, such as doors and windows.

11. List in your own words the steps to follow in the making of a pictorial sketch:

1. Look carefully at the object, taking into account the measurements and dimensions.
2. At a point beginning at below the center of the page and to the right, draw three lines, one vertical and two going 30 degrees to either side, so that the three lines together form the shape of a "Y".
3. Measure the widths and heights on either axis, and make marks to delineate these measurements.
4. Make construction lines parallel to the axis to make a box to draw the object in.
5. Use construction lines to show where shapes are located and where holes and rounded corners are located.
6. Make construction lines to make diamonds that show the measurements of holes

and rounded corners. Sketch in the holes and rounded corners.

7. Darken all the lines which represent visible edges.
8. Hidden lines and center lines must be erased.

12. Show and label with arrows the recommended methods for sketching the following lines:

Horizontal lines



Angular lines



Vertical lines



Circular lines



13. Sketch an example of a "construction" line and explain how it is used:

They are used to create preliminary shapes and should not be erased.

14. Sketch an example of a "visible" line and explain how it is used:

A Visible line is a thick, solid line which shows the visible edges and outline of an object.

15. Sketch an example of a "hidden" line and explain how it is used:

A hidden line is a medium thick and dashed line that can show edges inside the object or behind the front, side, or top surfaces.



16. Sketch an example of a "center" line and explain how it is used:

A center line is a thin line with short and long dashes that are used to indicate the center of holes of the central axis of a cylinder.



17. Is it necessary to erase "construction" lines? No Explain: Construction lines do not have to be erased because they should be drawn in very lightly in the first place. They are used to provide a layout for the preliminary drawing.

18. What shape does a circle become when sketched on a pictorial view?

A circle becomes an ellipse when sketched on a pictorial view.

19. Is it necessary to sketch objects in the proper "proportions"? Yes

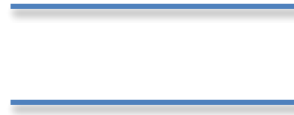
Explain:\_No, because when things are drawn to scale, they must be proportional to real life things, so that they are recognizable by anyone viewing the drawing. Also disproportional designs can cause problems in building or crafting the objects later.

20. Make freehand sketches of the following using appropriate "proportions" in the space below :

1" x 2" rectangle



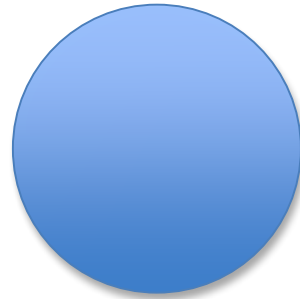
two 1.5" parallel lines 1/2" apart



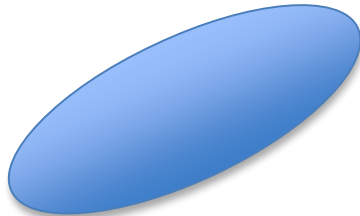
two 3/4" perpendicular lines



1.5" diameter circle



2" isometric ellipse



30°, 60° & 90° triangle a 45°, 45° & 90° triangle

