Republic of the Philippines
Department of Education
REGION III
SCHOOLS DIVISION OF NUEVA ECIJA

LEARNING ACTIVITY SHEET
SPECIAL PROGRAM IN ICT 8
FREEHAND DESIGN 8 (TECHNICAL DRAFTING)
Third Quarter, Week 6

Name of Learner: _____ Grade Level: _____
Section: _____ Date: _____

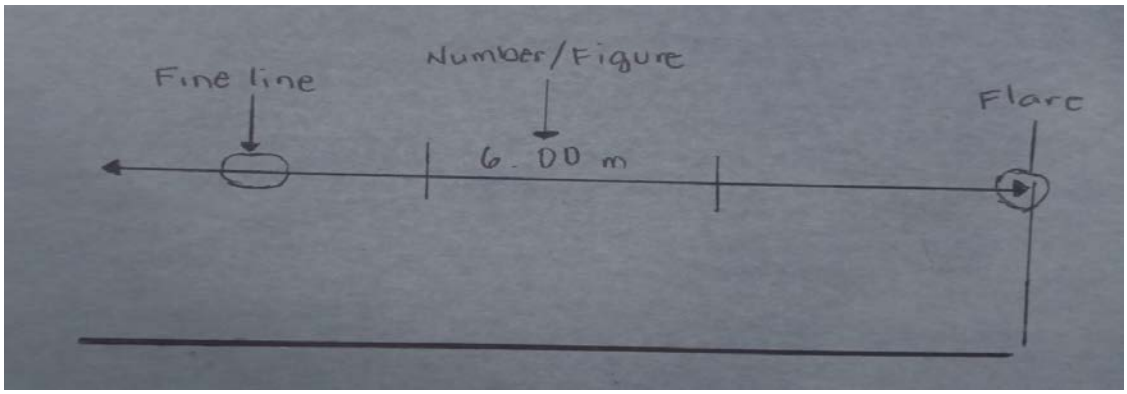
Dimensioning and Layouting

Background Information for Learners

In this lesson, you will understand the Dimensioning and Layouting as very important part in Technical Drafting. Dimension is the length, width, height or depth of something; a measurement in one direction (such as the distance from the ceiling to the floor in a room), on the other hand, Layout is the design or arrangement of something; the way something is laid out. You will understand this two topic as important content in Technical Drafting.

3 PARTS OF DIMENSIONING

1. Fine Line- has the same thickness or weights as the projection line.
2. Arrowhead- are short heavy line strokes placed at the extremities of this fine line (called FLARES) like a point of ordinary drawing pen.
3. Number or Figure- usually positioned at the middle of fine line and its axis is perpendicular to it.

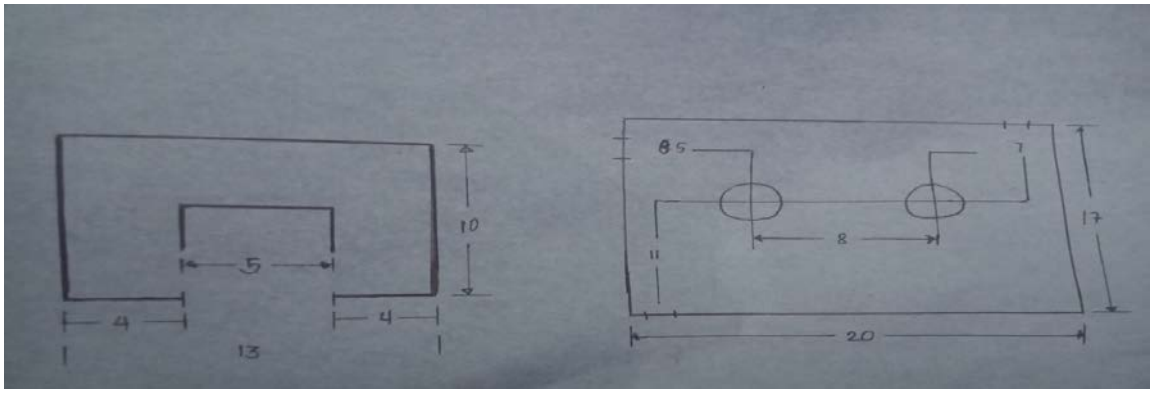


2 KINDS OF DIMENSION

1. Size Dimension- give the detail and over-all sizes of the objects.
2. Location Dimnesions- merely locate part or parts of the object.

    a. Over-all Dimensions- the total thickness or height, width and length of an object.

b. Detail Dimension- the thickness, length and width of each part of the same object.



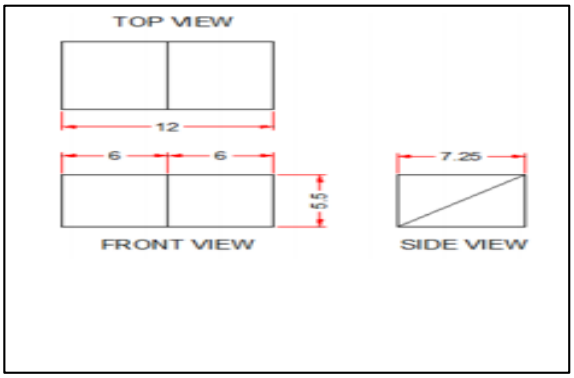
RULES OF DIMENSIONING

This is the detailed part of the drawing given or presented by the designer, draftsman, engineers etc.

Dimension should generally be placed between views.

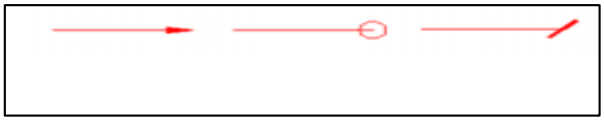
1. Avoid repetition of dimensions.
2. Dimension lines should be parallel to the edge or one line being measured.
3. The fine lane in dimensions must be strictly observed.
4. The figure or numbers in a dimension line should be legible and properly located.

Illustration:



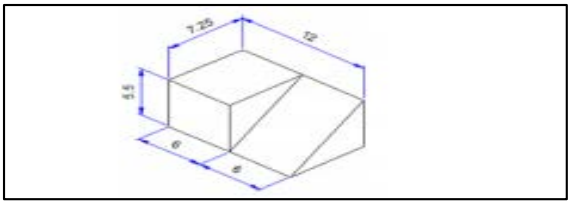
5. The flare at the arrowhead should be properly made.

Illustration:



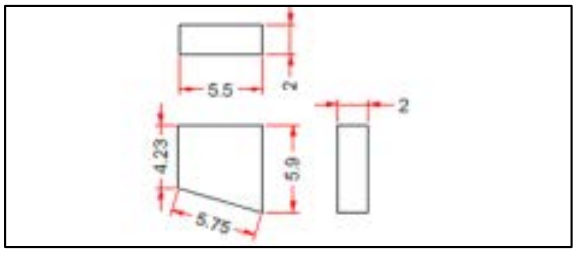
6. Dimensional figure are preferably directional.

Illustration:



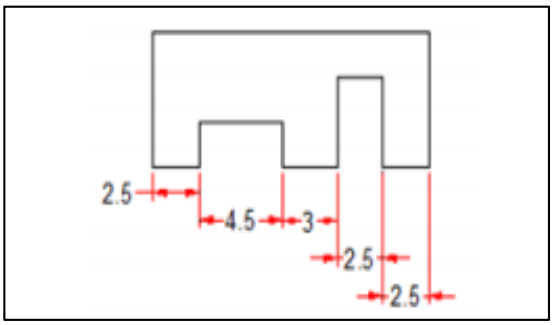
7. Use an outside dimension If the space is limited and use an inside dimension if the space is simple.
8. Only metric measurements should appear in drawings.

Illustration:



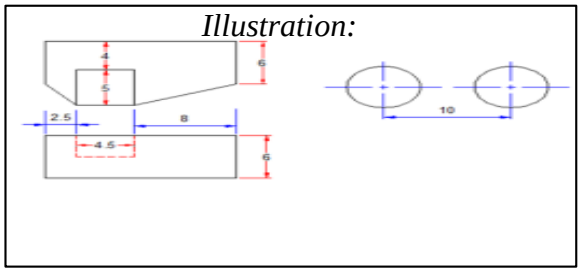
9. Continuous dimensions should be used whenever possible.
10. Saggeres dimensioning should be used when the spaces for dimensions are narrow.

Illustration:



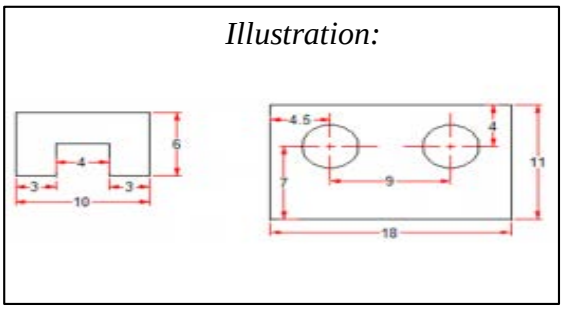
11. A dimension lines may be terminated by projection, visible hidden or center line.
12. Dimension ides should not be extended beyond the edge/line being measured.
13. Arrowhead should be point to the terminated line and not to the dimensional figure.

Illustration:



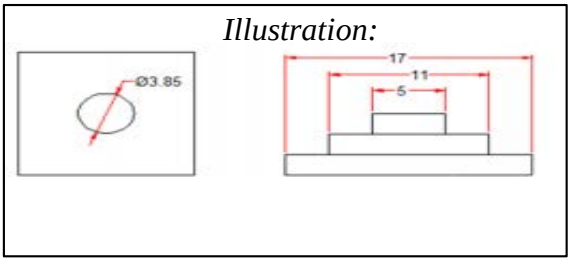
14. Let no workman add or subtract dimensions.
15. When giving the locational dimension from round holes, measure the center to center distance between holes and from the center line of the holes to the nearest visible lines.

Illustration:



16. Place the dimension closest to the part being measures.
17. Never crowd dimensions.
18. Projection and extension lines should be properly drawn.

Illustration:



LAYOUT

Building layout design is regarded as one of the major tasks in architecture design. It determines the shapes, dimensions and positions of internal building spaces to satisfy architectural criteria. This task becomes complicated for human designers when the topology of relationships of rooms are complex.

By reading the following sections, you're going to understand various requirements and considerations when you are designing building layouts both in plan and section.

A. PARAMETERS AND CONSTRAINTS

A guiding principle for all buildings is that there is always parameters and constraints with regards to the bounding box of the building massing.

Things to note and establish include:

a. Perimeter

-Total length

- Length of longest facade for adjacent driveway

b. Area

- Per floor

- Entire building (Gross floor area/Accessible floor area)

c. Height

- Below maximum height allowed by authority (AMSL)

- Number of floors & Floor-to-floor height

d. Cubical Extents

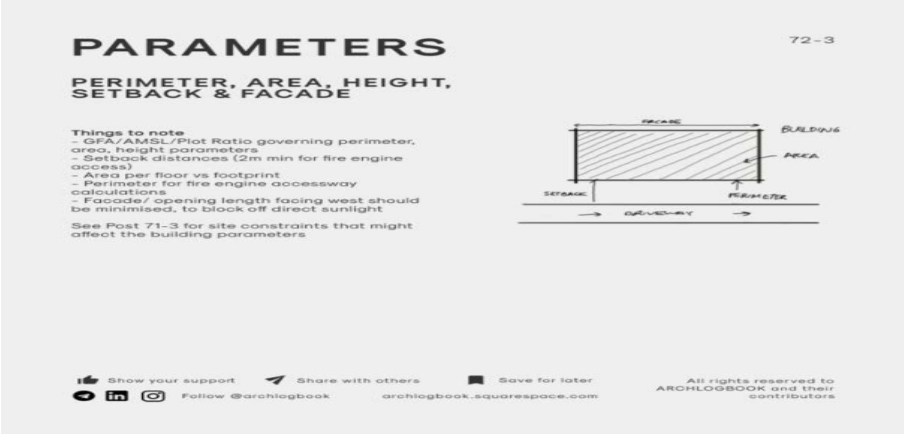
- Overall cubical extents for fire engine access way calculations

e. Footprint

f. Facade area/Openings

- Minimise exposure to west by either rotating the building or angle the facade plane away.

One of these constraints are established, it is good for us more aspects of the building.



B. CORES- FUNCTIONAL & STRUCTURAL

"Cores" are defined as the basic building blocks for all multi- storey buildings. They are also typically found at each floor at the same location such that they stack vertically throughout the building.

The result of this are coherent structural cores, and optimal design of the provision of basic services for each storey- by preventing any unnecessary and excess horizontal service lines. These cores can also act as one of the main structure anchoring the buildings.

Load-bearing walls make up most of these vertical cores and house the following functions:

a. Lifts/Elevators

b. Staircaes

c. Service Risers

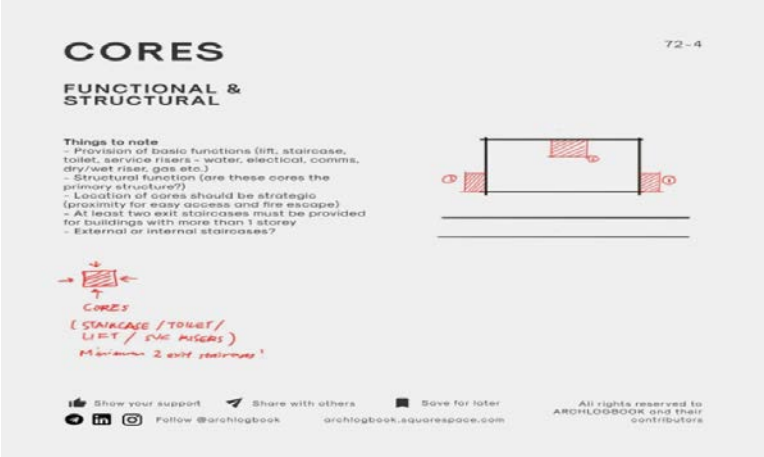
- Mechanical-Water, Gas, Sewerage

-Fire safety- Dry/Wet Riser

- Electrical- Comms, Telephone, Cables

d. Toilets

These are typically placed symmetrically for ease of design (i.e. one core on each side or centre core)



C. **PROGRAM**

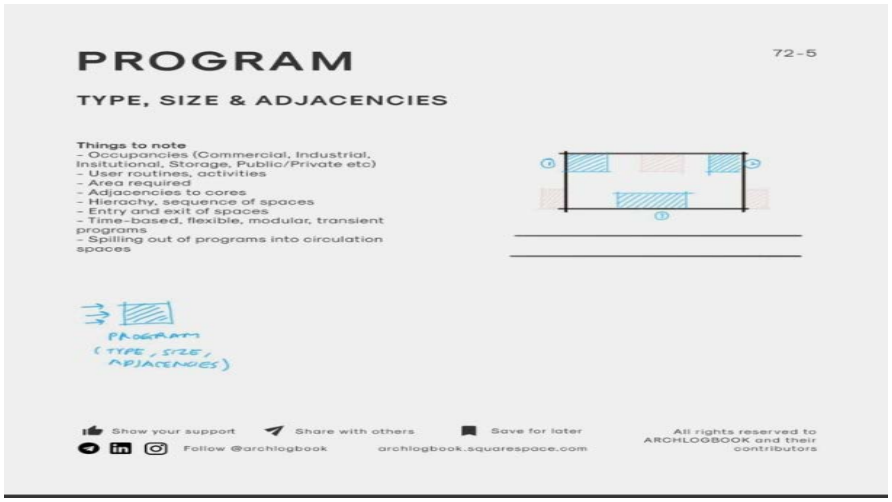
"Program" refer to the activity or what people will do in given space within the building.

Things to note include:

Type of accupancy (retail, office, industrial, dormitory/accomodation, storage/warehouse, hazardous material storage/processing, public space)

a. User routines/journeys
b. Area and height for each program space
c. Proximity to cores
d. Hierchy
e. Sequence (which program space comes first?)
f. Permanent vs temporary program
g. Program spilling into circulation spaces

In conclusion, the type, size and location of these program zones should be discussed early with the various stakeholders early in the design.



D. CIRCULATION

"Circulation" refers to the movement within the building.

Things to note for circulation include:

Origin & Destination

- Point A to Point B (recall journey from Program)
- Branch or Network of paths

a. Direction

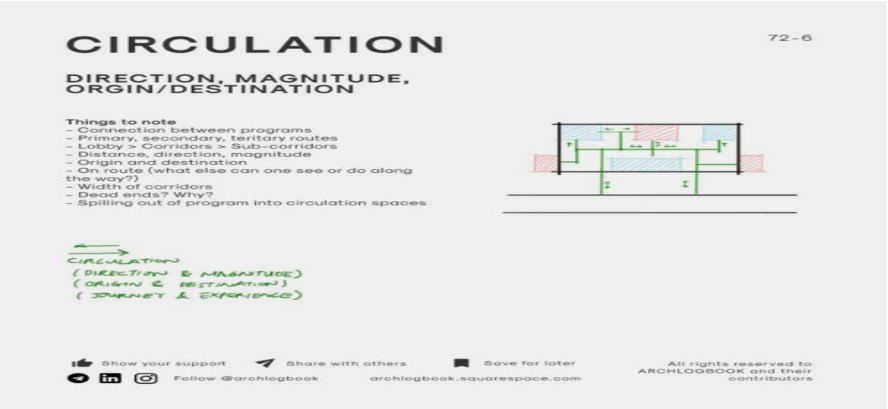
-Linear or Organic
- Horizontal or Vertical 9or a combination of both)
- Direct vs Messy

b. Magnitude

- Width of space catering to the size of crowd or signalling hierchy
- Length

c. Journey & Experience
- Welcoming space
- Public vs private routes

d. Types
- Staircases
- Corridors
- Lifts
- Open space
- Ramps

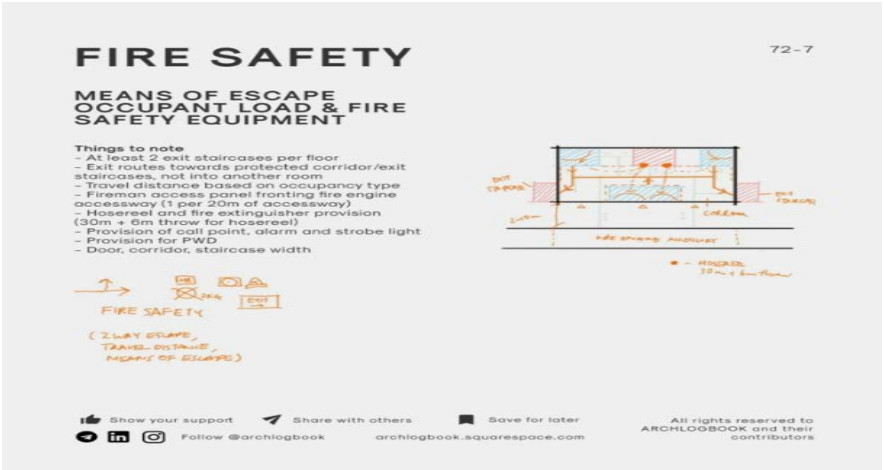


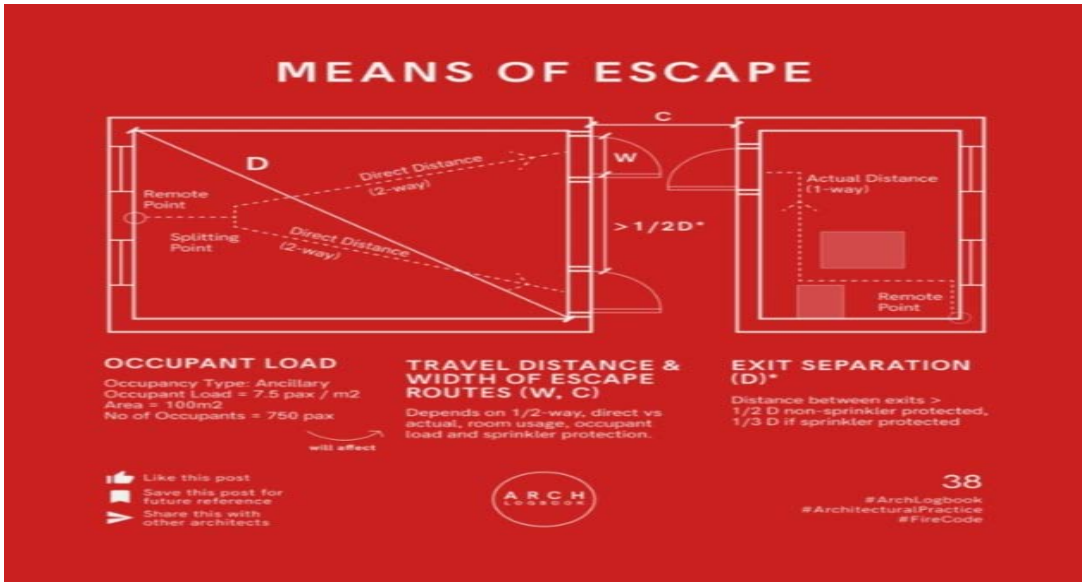
E. FIRE SAFETY

When it comes to fire safety, there are three aspects to take note of- Travel Distance, Occupant Load and Means of Escape:

a. Travel Distance
- Distance from the remote point to exit door fronting protected corridor/exit staircase.
- One-way vs two-way escape
- Number of exit doors

b. Occupant load and means of escape
- Width of corridors and staircases must comply with Fire Code
- Protected corridors
- Internal or external exit passageway
- Internal or external exit staircases
- Adequate number of exit staircases for each storey





F. CLIMATE

Apart from fulfilling the user requirements for the building, there should be consideration for the comfort one experiences while being the building. This includes thermal comfort and lighting

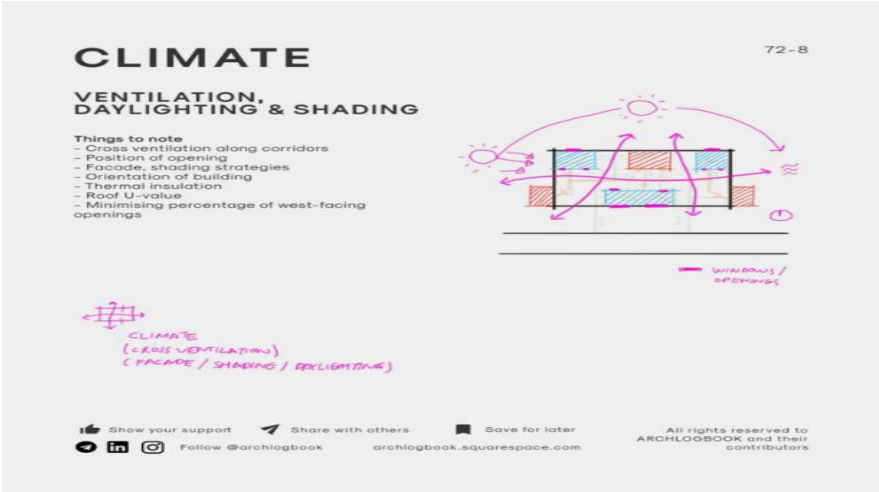
Things to note include the following:

a. Position and size of openings

b. Cross ventilation across circulation spaces, or air wells

c. Orientation of building- avoid west-facing openings as far as possible.

d. Utilising facade shading strategies, such as overhangs and vertical fins to shield.



e. Daylighting strategies- through skylights of floor-to-ceiling openings

G. CONCLUSION

In conclusion, architects should work to establish the various parameters and typologies of spaces with all stakeholders- client, users, engineers from the civil/structural, mechanical and electrical disciplines to obtain a holistic building design.

A proper building design is integral in order to have a smooth design and construction process as well as a comfortable and safe occupant experience.

Learning Competency

A. Identify the kinds and parts of Dimensioning.

B. Follow the Rules of Dimensioning.

C. Create simple building layout following various requirements and considerations.

Exercises/Activities

Activity 1: Write your answer in a one whole sheet of paper.

Direction: Identify the following questions.

1. It has the same thickness or weights as the projection line.

2. These are short heavy line strokes placed at the extremities of this fine line (called FLARES) like a point of ordinary drawing pen.
3. This usually positioned at the middle of fine line and its axis is perpendicular to it.
4. It is the total thickness or height, width and length of an object.
5. It is the thickness, length and width of each part of the same object.

Activity 2: Write your answer in a one whole sheet of paper.

Direction: Analyze the sentence below, write True if the statement is correct and False if it is Not.

1. "Program" refer to the activity or what people will do in given space within the building.
2. "Circulation" refers to the movement within the building.
3. "Cores" are defined as the basic building blocks for all multi- storey buildings.
4. Building layout design is regarded as one of the minor tasks in architecture design. It disregards the shapes, dimensions and positions of internal building spaces to satisfy architectural criteria.
5. When it comes to fire safety, there are two aspects only to take note of- Travel Distance, Occupant Load.

Activity 3: Write your answer in a one whole sheet of paper or a short bond paper.

Make or create a room/building plan following the Rules of Dimensioning and various requirements and considerations.

Rubrics

Creativity	20
The rules are strictly followed	60
Neatness of work	20
Total	100%

Reflection: Write your answer in a one whole sheet of paper.

- Why is dimensioning and layouting considered as an important content in Technical Drafting?

References for Learners

- Michael M. Bongco, TLE 7/8-Technical Drafting: Prepare and Interpret Technical Drawing (TD), Schools Division of Bataan
- Building Layout
- https://archlogbook.co/posts/72-building-layout-architecture

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Note: Practice Personal Hygiene Protocols at all times.