



CITY SCHOOLS DIVISION OF DASMARIÑAS

TLE

TECHNICAL DRAFTING



SELF-LEARNING MATERIAL

TLE

Technical Drafting

Development Team of the Module

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Guide in Using Learner's Module

For the Parents/Guardian

This module is designed to assist you as the learning facilitator at home. It provides you with activities and lesson information that the learners need to accomplish in a distance learning modality.

For the Learner

This module is designed to guide you in your independent learning activities at your own pace and time. This also aims to help you acquire the competencies required by the Department of Education at the comfort of your home.

You are expected to answer all activities on separate sheets of paper and submit the outputs to your respective teachers on the time and date agreed upon.

I *What I need to know?*

This module was designed and written with you in mind. It is here to introduce to you the world of Technical Drafting. As you explore this module, you will be tasked to perform different learning activities that will help you on how to identify and prepare the necessary tools, materials and equipment needed for a specific job requirement.

After going through this module, you are expected to:

- Prepare, select, and set-up drafting tools, materials, and equipment based on job requirements;
- Identify and assess architectural job requirements based on standard operating procedures;
- Apply appropriate scale;
- Follow proper dimensioning practices;
- Draft site development plan; and
- Draft floor plan.

Your target output for each lesson in this module are as follows:

LESSON / TOPIC	MOST ESSENTIAL LEARNING COMPETENCIES	LEARNING TASK/ APPLICATION /ASSESSMENT	DURATION
<i>Lesson 1 – Prepare Architectural Job Requirements</i> <ul style="list-style-type: none">• Drafting Tools, Materials and Equipment• Prepare and set up tools and materials for drawing	<ul style="list-style-type: none">• Prepare, select and set-up tools, materials, and equipment based on job requirements• Observe OHS policies and procedures in setting-up tools and materials for drawing	<ul style="list-style-type: none">• Learning Task 1: Word Hunt• Learning Task 2: Pretest• Learning Task 3: Name Me!• Learning Task 4: Check It!• Learning Task 5: Border and Title Block• Learning Task 6: Line Exercise• Learning Task 7: Establish your understanding• Learning Task 8: Posttest	5 days

<p>Lesson 2 – Architectural Working Drawings</p> <ul style="list-style-type: none"> • Elements of Architectural Working Drawing • Architectural Abbreviations and Symbols 	<ul style="list-style-type: none"> • Identify and assess architectural job requirements based on standard operating procedures (SOP) • Draw a title block according to the architectural drafting standards • Indicate letterings and labels according to the drafting standards 	<ul style="list-style-type: none"> • Learning Task 1: Sneak Peek • Learning Task 2: Pretest • Learning Task 3: Jumbled Letters • Learning Task 4: Can you draw me? • Learning Task 5: Check this out! • Learning Task 6: Architectural Symbols • Learning Task 7: Architectural Lettering • Learning Task 8: Establish your understanding • Learning Task 9: Posttest 	<p>5 days</p>
<p>Lesson 3 – Scaling and Dimensioning</p> <ul style="list-style-type: none"> • Drafting Scales • Practices and Techniques in Dimensioning 	<ul style="list-style-type: none"> • Use metric scale system according to the magnitude of the plan • Indicate dimension lines, dimensions, and drawing titles according to architectural drafting standards • Draw grid and dimension lines according to architectural design standards 	<ul style="list-style-type: none"> • Learning Task 1: Recall the basics • Learning Task 2: Pretest • Learning Task 3: Can you still remember? • Learning Task 4: Check this out! • Learning Task 5: Scaling and Dimensioning • Learning Task 6: Additional practice • Learning Task 7: Establish your understanding • Learning Task 8: Posttest 	<p>5 days</p>
<p>Lesson 4 – Draft Site Development Plan</p> <ul style="list-style-type: none"> • Planning Considerations in Developing the Site • Lot Plotting • Steps in Drafting Site Development Plan 	<ul style="list-style-type: none"> • Draw a technical description of a lot according to the approved lot survey • Draw a building footprint according to the architectural drafting standards 	<ul style="list-style-type: none"> • Learning Task 1: Crossword Puzzle • Learning Task 2: Can you still remember? • Learning Task 3: Jumbled Letters • Learning Task 4: Check this out! • Learning Task 5: Lot Plotting • Learning Task 6: Draft Site Development Plan 	<p>6 – 8 days</p>

		<ul style="list-style-type: none"> • Learning Task 7: Establish your understanding • Learning Task 8: Posttest 	
<i>Lesson 5 – Draft Floor Plan</i> <ul style="list-style-type: none"> • Room Requirements and pointers in planning a floor plan • Architectural Drafting Standards • Steps in Drafting a Floor Plan 	<ul style="list-style-type: none"> • Draw walls, windows, doors, fixtures, and fittings according to architectural design standards • Identify sizes of doors, walls, and rooms following the schedule 	<ul style="list-style-type: none"> • Learning Task 1: Your Dream house • Learning Task 2: What went wrong • Learning Task 3: Pretest • Learning Task 4: Sneak Peek • Learning Task 5: Check this out! • Learning Task 6: Apply the standards • Learning Task 7: Draft Floor Plan • Learning Task 8: Establish your understanding • Learning Task 9: Posttest 	8-10 days

Are you now ready to move on with this module? You may now start your journey by taking Lesson 1 – Drafting Tools, Materials and Equipment.

LESSON 1

Drafting Tools, Materials, and Equipment

LO 1: Prepare architectural job requirements (*TLE_ICTTD912AL-Ia-1*)

- Prepare tools, materials, and equipment in technical drawing
- Select drawing tools, materials, and equipment in accordance with the SOP

LO 2: Prepare and set up tools and materials for drawing (*TLE_ICTTD912AL-Ib-2*)

- Observe OHS policies and procedures in setting-up tools and materials for drawing
- Prepare drawing tools, materials and equipment based on job requirements
- Set up tools, materials, and equipment based on the job requirements

What I need to know?

Most architectural drafting works generally consist of freehand and mechanical drawings. In this module, you will learn how to prepare all drafting tools, materials, and equipment needed for the job.

It is presumed that all students like you are already aware of the tools and materials needed in drafting works, considering your learning in the previous year level. However, it is still necessary that you review the past lesson to help you prepare for higher drafting activity.

After this lesson, you are expected to:

1. identify and classify drafting tools, materials and equipment;
2. properly set-up drawing tools, materials and equipment based on job requirements;
3. draw a title block and border; and
4. practice line exercises using the appropriate tools and materials

I *What is new?*

Learning Task 1: Word Hunt

Hidden in this box are 15 words related to our lesson about tools, materials, and equipment. Can you find them all? Write your answers in your notebook.

E	D	A	X	Z	L	V	L	X	T	J	J	L	K	R
T	L	Q	N	H	C	D	W	N	T	Q	Y	A	V	O
E	L	B	U	V	L	M	E	I	P	B	V	P	E	T
M	R	Q	A	E	Q	M	P	X	W	Y	E	S	O	C
P	Z	E	I	T	P	S	L	R	B	N	D	G	W	A
L	S	H	D	I	G	S	H	A	R	P	E	N	E	R
A	S	C	U	I	T	N	D	F	U	V	L	I	U	T
T	G	Q	A	N	V	R	I	H	S	T	C	C	D	O
E	E	H	O	L	A	I	I	W	H	N	J	A	D	R
Q	T	U	Z	W	E	B	D	A	A	R	P	R	Y	P
E	R	W	I	T	F	J	Q	Y	N	R	F	T	W	T
Z	I	N	C	L	V	F	M	P	T	G	D	R	U	Z
F	G	T	O	O	L	S	T	G	U	I	L	U	B	R
S	S	A	P	M	O	C	F	B	X	N	U	E	G	X
A	V	O	U	E	H	X	E	B	P	G	J	Z	S	N

Answers:

- | | | |
|----------|-----------|-----------|
| 1. _____ | 6. _____ | 11. _____ |
| 2. _____ | 7. _____ | 12. _____ |
| 3. _____ | 8. _____ | 13. _____ |
| 4. _____ | 9. _____ | 14. _____ |
| 5. _____ | 10. _____ | 15. _____ |

D *What I know?*

Learning Task 2: Pretest

Choose the letter of the best answer. Write the letter of your answer on a separate sheet of paper.

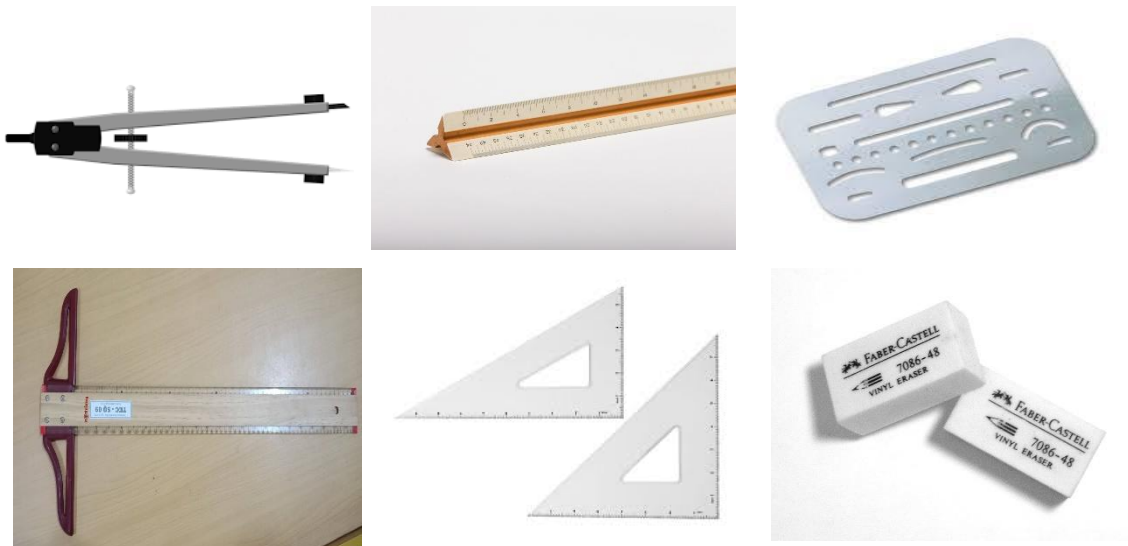
1. What drawing tool will you used to draw horizontal lines?
A. Protractor B. Ruler C. Triangles D. T-Square
2. Ericka needs to draw vertical and oblique lines. Which of the following tools will be the best to use?
A. Protractor B. Ruler C. Tape Rule D. Triangles
3. Which of following is the best instrument to use if you need to divide lines or distance into equal parts?
A. Compass B. Divider C. Protractor D. Ruler
4. Which of the following contains standard symbols that can be used as guide for drawing images on plans?
A. French Curve B. Templates C. Triangles D. T-Square
5. A _____ is a tool used in setting a line degree angle.
A. Compass B. Divider C. Protractor D. Ruler
6. Which of the following drafting materials are used for reproduction of blueprints?
A. Sandpaper Block C. Eraser
B. Masking Tape D. Tracing Paper
7. Which of the following kind of tapes is the best to use to fasten the drawing paper on the drawing board?
A. Scotch Tape C. Electrical Tape
B. Masking Tape D. Packing Tape
8. If an erasing shield protects drawing when erasing, then an _____ removes smears of pencil and ink lines.
A. Sandpaper Block C. Eraser
B. Masking Tape D. Tracing Paper
9. Which of the following will substitute to a sharpener?
A. Sandpaper Block C. Eraser
B. Masking Tape D. Tracing Paper
10. If a compass is used for drawing of circles and arcs, then what drafting tool will you use to measure angles, arcs, and circles?
A. Protractor B. Triangle C. Ruler D. Divider

D What is in?

Most architectural drafting works generally consist of freehand and mechanical drawings. In this module, you will learn how to prepare all drafting tools, materials, and equipment needed for the job.

Learning Task 3: Name Me!

Below are sample pictures of different drafting tools, materials, and equipment required in the preparation of architectural layout and details. Name the tool, materials, or equipment based on the specific tasks by writing them on the space provided.



Tasks/Uses	Drafting Tool	Proper Handling and Care
Used when drawing horizontal lines and support triangles when drawing vertical lines		
Used to enlarge or reduce measurement and distances to a regular proportion in the drawing paper		
A thin sheet of metal used to protect the rest of the drawing when erasing smudges and unnecessary lines		

Used for drawing arcs and circles		
Used when removing/cleaning excess construction lines and smudges in a drawing		
Used when drawing vertical and oblique lines		

After completing this activity, you may watch the YouTube video entitled “Introduction to your drawing equipment” through this link: <https://www.youtube.com/watch?v=TiK-wLCTOas>. Take note of the different drafting tools, materials and equipment presented as well as its corresponding use and function.

What is it?

A. Tools are instruments used as guide in drawing processes.

1. A **T-square** is a drafting tool that is used to draw horizontal lines and serves as a guide for triangles.
2. **Triangles** are an instrument used for drawing vertical and oblique lines.
3. The **drawing pencil** is one of the most important and commonly used tools of a draftsman is the **drawing pencil**. It comes in different grades of softness and hardness.
4. **Erasing shield** is a thin sheet of metal used when erasing pencil and inked lines to protect other drawing lines.
5. **Protractor** is used in setting a line degree angle.
6. A **triangular scale** is a tool used to enlarge or reduce measurement and distances to a regular proportion in the drawing paper.
7. A **French curve** is a flat drafting instrument with curved edges and several scroll shaped cutouts and is used as a guide in drawing irregular curves when constructing graphs or making technical drawings.
8. A **penknife or pencil sharpener** shapes long pencil lead into conical shape points.
9. **Compass** is used to draw arcs and circles.
10. The tools used for dusting and cleaning drawings with dust and crumbs is called **dusting brush**.
11. A **technical pen** is a type of pen used for inking lines in drawing. It comes in different points/sizes.

12. **Templates** are flat piece of plastic with standard symbols which is used as guide for drawing architectural images on plans. Examples of templates are the following:
 - a. *Circle Template* – used for drawing of circles
 - b. *Ellipse Template* – used for drawing ellipse or oblongs
 - c. *Architectural templates* – contains standard drafting symbols used for floor plan and elevation drawings
13. **Ruler** is the most popular type of tool for measuring sizes and short distances.
14. A **divider** is an instrument used when transferring measurements, dividing lines or arcs into the desired number of equal parts.

B. Materials are sets of consumable items that are specifically used in drafting works or activities. The draftsman cannot perform his drafting task without these items.

1. A **tracing paper** is a thin transparent paper used for reproduction in blueprint.
2. **Oslo paper** is a 9' x 12' thick paper commonly used for arts and crafts.
3. **Masking tapes** are used to hold and fasten drawing paper on the drawing board.
4. **Erasers** are used to remove smears of pencil and ink lines
5. A **sandpaper block** serves as substitute instrument in sharpening a pencil into desired points.

C. Equipment refers to instruments, attachments, and other equipment used to make mechanical drawings. These items are also essential in producing quality drafting output especially if the assigned task requires mechanical manipulation. Although these items are so expensive, however, these are important in making the drawing output presentable and convincing to the clients.

1. **Drawing board/table** is a type of board made of soft wood but with cleats of hard wood where the drawing paper is fastened with a draftsman's tape.
2. A **drawing stool** is a basic tool in drafting used to give some height for the drafting table on to the user when drawing on the drafting table.
3. **Drafting machines** are high technology equipment for drawing purposes. It consists of a pair of scales mounted on an articulated protractor head that can be rotated in desired angles.
4. **Computers** installed with a computer-aided drafting (CAD) software improves the quality of drawing designs and increases productivity as it allows the user to create a database of designs that can be used anytime.

One of the basic means of promoting efficiency in drafting is orderliness and neatness. Efficiency in turn will produce accuracy in drawing. The drawing area should be kept clear of equipment not in direct use. A draftsman should plan, prepare, and select tools and materials for a particular drawing activity ahead of time so as to avoid interruption of work process.

Listed below are the course of actions to be undertaken before, during and after each drafting activity.

A. Before the start of the drafting activity: Setting-up of drafting tools, materials, and equipment:

1. Select the tools, materials and equipment which are needed in performing the assigned task.
2. Properly set up the required tools and materials in a place within your reach which is convenient for you to move around in and execute your work.
3. Clean the table and tools, see to it that these are free from dust and other elements that would cause damage to your work.
4. Wash your hands with clean water.

B. Activity proper:

1. Perform the activity by following the standard operating procedure per job requirement.
2. Properly manipulate all the tools and equipment that are used in the activity.
3. In case of errors or mistakes along the way of the activity (for instance misprinting of lines, letters, and other forms of mistakes) use the appropriate eraser for a particular kind of mistake.

C. After the activity:

1. Submit your output to your teacher for checking.
2. Check all the tools and materials to ensure that nothing has lost.
3. Check and clean the drawing tools and equipment.
4. Return the tools and materials to the assigned tool keeper for safekeeping.
5. Withdraw your borrower's card from the tool keeper as a proof that you have returned the borrowed tools and materials.
6. Clean your workstation before leaving.

D. Other important practices that must be observed in the workstation or workplace

There are important practices that you must observed in the workstation and these are the following:

1. Observe safety precautions:
 - 1.1 Never use any tool and equipment without having these cleaned.
 - 1.2 Always turn off the lights, air condition, ceiling fan, computer units, and other electronic equipment before leaving the workstation.
 - 1.4 Maintain the cleanliness and orderliness of the workstation.
 - 1.5 Use tools and equipment properly.
2. Observe punctuality in attendance.
3. Avoid quarrelling with your co-students.
4. Observe and practice the value of respect.
5. Return the borrowed tools and equipment on time.
6. Observe and practice proper disposal of waste.

What is more?

Learning Task 4: Check It!

A. Identify what is referred to in each number. Write your answer on a separate sheet of paper.

1. A three-sided ruler used for drawing of vertical and oblique lines.
2. Used to transfer accurate measurements by adjusting the divider points.
3. Consist of standard symbols that can be used for drawing images on plan.
4. A type of tape that does not damage the paper once you pulled it off.
5. Composed of one with the pen leg and the needle point leg being held together with a handle.
6. Composed of a head and a blade that is used to guide triangles when drawing vertical lines.
7. A translucent paper on which inked or penciled drawing is made for reproduction in blueprint or white print.
8. Its main function is to reproduce measurements of an object in full size, reduced size, and enlarged size.
9. A high technology machine for drawing purposes.
10. Used to remove smears of pencil and ink lines.
11. A pen used for inking mechanical lines.
12. A semi-circular instrument divided into 180 equal parts, each of which is called degree.
13. Used to sharpen pencils into desired lead point.
14. Used to safeguard parts of drawing when clearing up smudges, unnecessary lines, and other erasures.
15. Used in setting a line degree angle.

B. Write T if the statement is True and F if the statement is False. Write your answers in your notebook.

1. Avoid unnecessary sliding of T-square or triangles across the drawing.
2. T-square is preferably hung when not in use.
3. Report defective measuring tools and any hazard to instructor immediately.
4. After using a tool, clean it thoroughly with a damp cloth.
5. Be sure to check and then clean tools before and after using them.

What I can do?

Learning Task 5: Border and Title Block

Technical drawings have border lines on all four sides and a title block, containing the information necessary to identify the drawing properly. A border is a line drawn around the inside edge of the paper. It is basically a rectangle drawn precisely and inside this rectangle is the design area. A title block is normally drawn at the bottom of the paper. Inside the title block are printed important information such as Name, Title and Date.

For this activity, you will have to draw borders and title block on your working sheet. The same format will be used in the succeeding operation sheets/performance task that you have to conduct. Observe proper use of tools and accuracy.

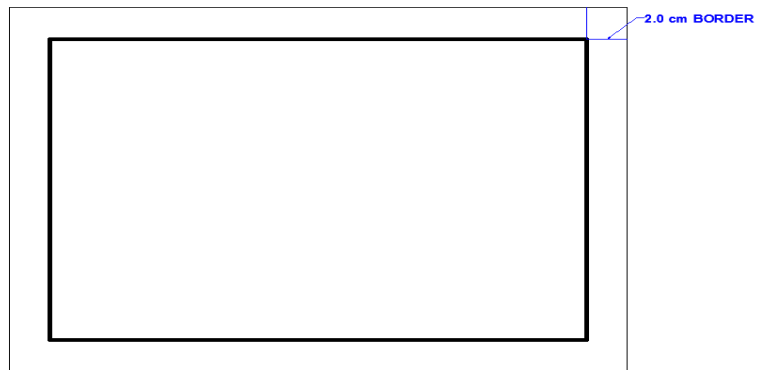
You may also watch this video on setting up of border for technical drawing through this link: <https://www.youtube.com/watch?v=4hb3B-JcbnE>.

Materials needed:

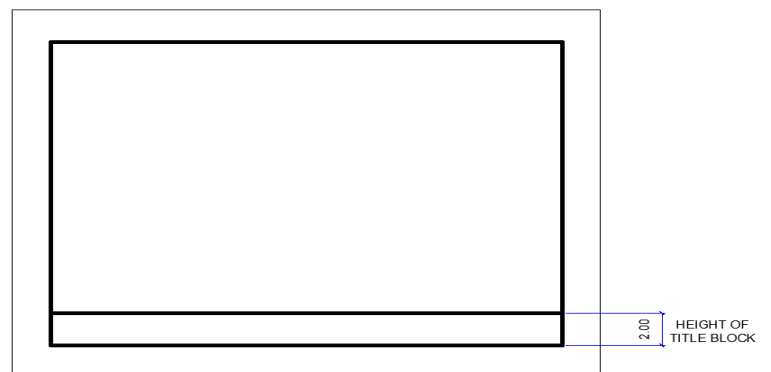
- Oslo paper
- Ruler/triangles/T-square
- Pencil and eraser

Instructions:

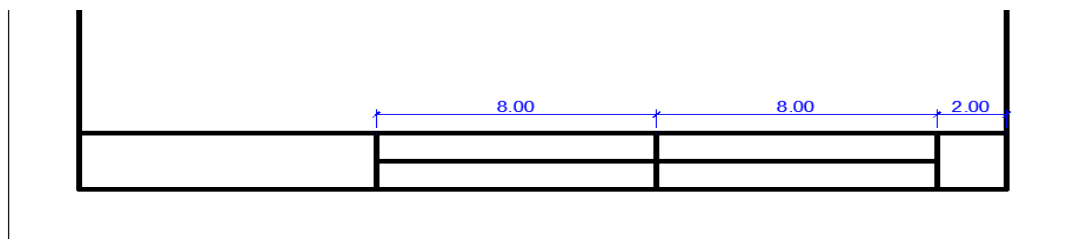
1. In a clean Oslo paper, draw a border (thick line) by measuring 2.0 cm from the edge of the paper, as shown in the picture.



2. For the height of the title block, measure 2.0 cm from the border.

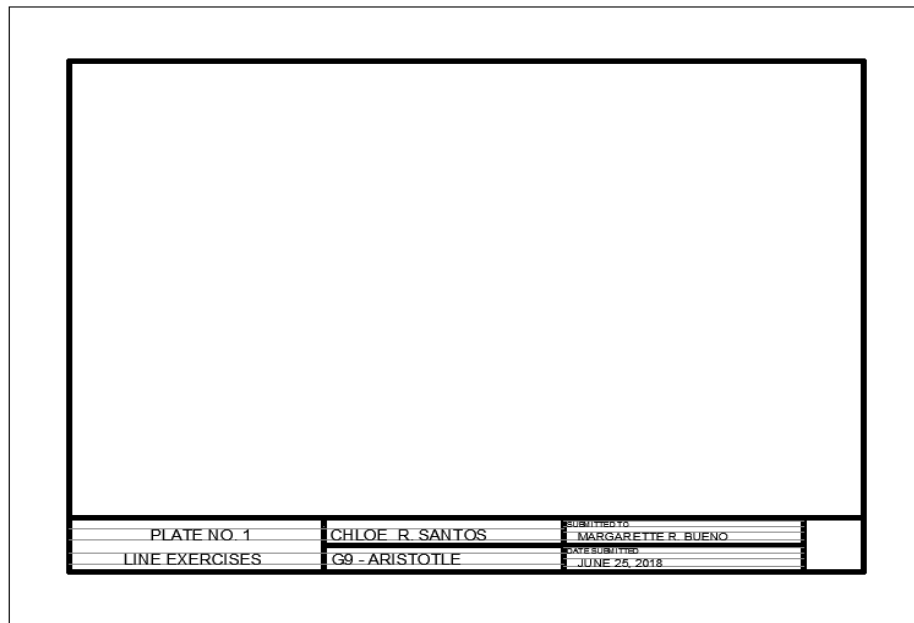


3. Divide the title block into columns by following the given measurements.



4. Complete the title block by filling the necessary information. Use guidelines (thin lines). Write legibly and in printed form.

PLATE NO. 1	NAME	SUBMITTED TO	
TITLE OF ACTIVITY	GRADE LEVEL & SECTION	DATE SUBMITTED	



Sample finished worksheet with filled out title block

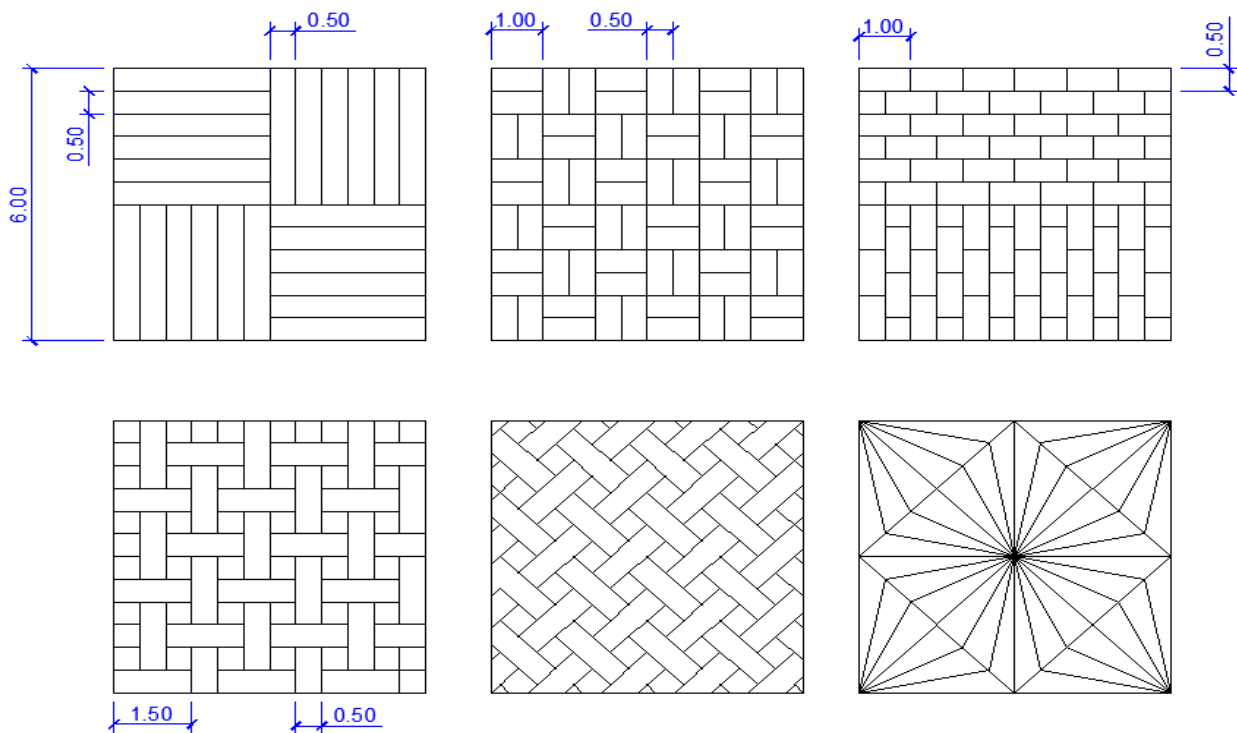
E *What else can I do?*

Learning Task 6: Line Exercise

Using the knowledge and skills that you have learned about line sketching during your Exploratory Course in Technical Drafting, draw the following line exercises. Use the appropriate tools and observe proper set-up and usage.

Tools/Materials Needed:

- T-square/ruler
- Triangles
- Oslo paper with border and title block (Learning Task 5)
- Pencil and Eraser



Your output will be graded based on the given performance rubrics:

Criteria	7 points	5 points	3 points
Accuracy	All measurements are accurately drawn	Three to five measurements were inaccurately drawn	Most of the measurements were inaccurately drawn
Line Technique/ Legibility	All lines were drawn appropriately	Three to five lines were drawn inappropriately	Most of the lines were drawn inappropriately
	3 points	2 points	1 point
Time Management	Finished the task 5 minutes ahead of the given time	Finished the task on time	Unable to finish the given task
Cleanliness	Finished output was neatly done, pleasing, and no erasures/smudges	Pleasing but erasures and smudges are observable on the finished output	Finished output have so many erasures and smudges

A What I have learned?

Learning Task 7: Establish your understanding

In a clean sheet of paper, prepare a 200-word essay, based on the previous drafting activity by answering the given guide questions below:

- ✓ Did you use the appropriate drafting tool or material to perform the process?
- ✓ If yes, enumerate at least 5 different instances where you used the correct tool.
If not, what do you think would be the consequences of using inappropriate drafting tools and materials?

A What can I achieve?

Learning Task 8: Posttest

Based on the different tasks in your previous activity, copy the table below on your notebook and fill in the tools and materials that you used and those that you did not use.

Task	Tools/Materials Used	Did not use
<i>Example:</i>		
A. Border and Title Block	Masking Tape	French Curve

A. Border and Title Block

Ruler

T-square

Masking Tape

French Curve

Drawing Pencil

Eraser

B. A square with a length of 8.0 cm

Divider

Compass

Pen

Triangle

Triangular Scale

Erasing shield

C. A circle with a diameter of 8.0 cm

Drawing Pencil

Erasing Shield

Drawing Board

Compass

Triangle

Eraser

D. A rectangle with dimensions of 4.0 cm by 6.0 cm that is divided into six equal parts.

Sharpener

Erasing Shield

Dusting Brush

T-square

Template

Drawing Pencil

E. A circle with a diameter of 5.0 cm placed at the center a 6.0 cm square.

French Curve

Drawing Pencil

Eraser

Divider

Compass

Pen

LESSON 2

Architectural Working Drawings

LO 2: Prepare and set up tools and materials for drawing (TLE_ICTTD9-12AL-Ib-2)

- Prepare drawing tools, materials and equipment based on job requirements
- Set up tools, materials and equipment based on the job requirements
- Assess architectural job requirements based on SOP

I *What I need to know?*

Just like a coach board, an architectural working drawing presents the plan of engineers and architects about a specific job requirement. Together with the specifications, architectural working drawings are the most important parts of the documents constituting the contract. Information on the designs, locations, and dimensions of the elements of a building is found on the architectural working drawings while information on the quality of materials and workmanship is found in the specifications. A good architectural working drawing gives the contractor the exact information he needs. It should be clear, simple, orderly arranged, and accurately drawn so that scaled measurements will match with dimensions.

After going through this lesson, you are expected to;

1. determine the elements of a complete architectural working drawing; and
2. identify the different symbols and abbreviations used in architectural working drawings.

I What is new?

Learning Task 1: Sneak Peek

A. Identify the words described in each item. Answer by completing the words in each box.

1. The top view of the floor area of a house

	L		O			L	A	
--	---	--	---	--	--	---	---	--

2. The front or side view of a building

	L			A			O	N
--	---	--	--	---	--	--	---	---

3. It is the upper covering of the house

	O		
--	---	--	--

4. A room used in most house activities

	I			N	
--	---	--	--	---	--

5. Structural member of Roofs

	R		S	
--	---	--	---	--

6. Structure that supports columns, posts and walls

	O	O		I		G
--	---	---	--	---	--	---

7. Establish and completes house plan and its details

	R	A		T		M		N
--	---	---	--	---	--	---	--	---

8. Abbreviation of Cabinets

--	--	--

8. Abbreviation for concrete hollow blocks

--	--	--

9. Abbreviation for Lavatory

--	--	--

B. Identify the different local company logos listed below.

1.



2.



3.



4.



5.



6.



Answer the following questions based on the activity above.

1. Cite your experience as you identify the local company logos.
2. What is the purpose of these local company in using these logos?
3. How do you relate the use of symbols or logos in drafting architectural layouts such as in floor plan?



What I know?

Learning Task 2: Pretest

Identify which of the given information does not belong to the group of plans. Write your answers on a separate sheet of paper.

1. Title Block in House Plan

General Notes	Owner's name	Location plan
Lot and Block numbers	Signatures	Scale

2. Electrical Plan Sheet

Lighting Plan	Lighting Layout	Roof Plan
Reflected Ceiling	Power Layout	Auxiliary Layout

3. Structural Plans

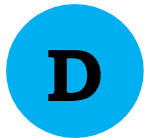
Roof Plan	Truss Detail	Window Schedule
General Notes	Footing Details	Column Schedule

4. Plumbing Plan

Plumbing Plan	Sewage System Plan
Water System Plan	Pipes Schedule

5. Architectural Sheet

Perspective Drawing	Roof Framing Plan	Location Plan
Elevation	Floor Plan	Construction Notes
Baluster Detail	Door Schedule	Bath Detail



What is in?

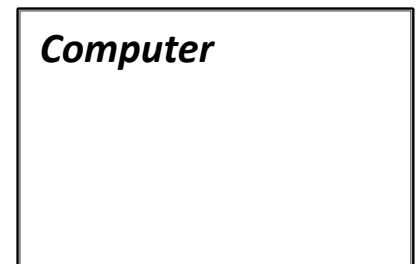
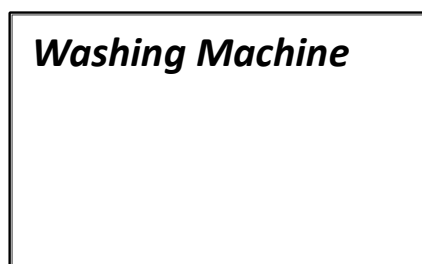
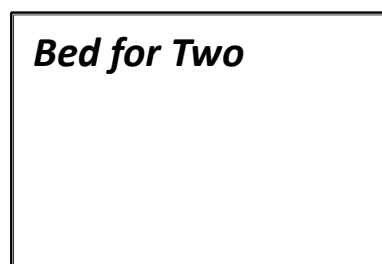
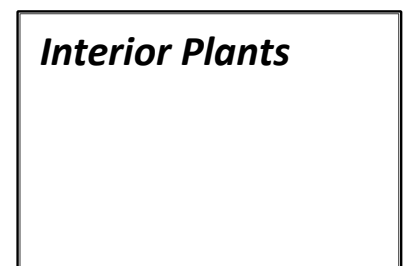
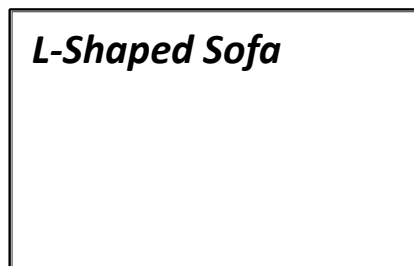
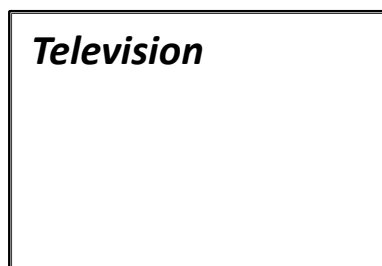
Learning Task 3: Jumbled Letters

Arrange the letters to reveal the elements of an Architectural Working Drawings. Write your answer in your notebook.

1. **RECITETURCAH** - _____
2. **TLO** _____
3. **SUEHO** _____
4. **SINDEG** _____
5. **DESCULEH** _____
6. **TISE** _____
7. **ILETADS** _____
8. **SECPS** _____
9. **ENDIMSINOS** _____
10. **LOROF** _____
11. **SMORO** _____
12. **GOFINOR** _____
13. **WIVE** _____
14. **PECTPEREIVS** _____
15. **OCTINAOL** _____

Learning Task 4: Can you draw me?

In your notebook, draw the realistic top view of the following furniture or equipment given below.



What is it?

Elements of Architectural working drawing

A complete architectural working drawing of a house generally includes the following:

1. Architectural sheets

- a. *Sheet #1 - Title page and index (exterior perspective, site development plan or plot plan, and vicinity map or location plan is often included in the plan)*
 - **PERSPECTIVE DRAWING.** It is the view as seen by the eyes or it shows the appearance of the finished building. This drawing represents the actual form of the proposed building.
 - **SITE DEVELOPMENT PLAN.** This drawing includes the outline and measurements of the proposed building and its placement on the property. It shows the position and the location of the building with property line, setbacks, approaches, grade contours, landscape and other pertinent data in relation to the site.
 - **LOCATION PLAN.** It is the draft of the top view of the site or lot where the proposed house will be built. It shows the position of the house inside the lot, the number of the adjacent lots, streets or lanes before or beside the lot, and the North sign. The location plan is usually located near the title block. The main line symbol of the North sign is generally parallel to the side border line of the drawing paper and points upward.

Title Page and Index generally includes title block, table of contents, labels, and the name of the duly licensed and registered Geodetic Engineer who approves the lot survey plans.

Title Block in House Plan

The title block in house plans includes the following information:

1. Owner's name
2. Location or address of the proposed house
3. Lot and block numbers
4. Signature of architect for architectural plans, structural engineer for structural plans, Professional Electrical Engineer (PEE) for electrical plans, Professional Mechanical Engineer (PME) for mechanical plans who approves the plan
5. Draftsman's name or initials
6. Date when plan was drawn or completed

7. Table of Contents

8. Scale as shown (See title block in sheet #1)

b. *Sheet # 2 – Floor plan, of a Two - Storey House. It includes the Ground Floor Plan and Second Floor Plan) with complete Elevation.*

- **FLOOR PLAN.** The cutting plane line for this top view passes between the upper and lower window sills. It represents the arrangement of rooms, doors, windows and other features located in the floor plan.
- **ELEVATION.** It is the front or side view of a building. It shows the design of the house, height dimension, materials, finish and complete information on specification.

•

c. *Sheet # 3 - Sections, Roof Plan, and Reflected Ceiling Light*

- **SECTION.** This is the view showing the inside part of the building either in cross- section or longitudinal section.
- **ROOF PLAN.** It shows the outline of the roof and the major object lines indicating ridges, valleys, hips, and openings.
- **REFLECTED CEILING PLAN.** It is the complete plan design of house ceiling.
- **BALUSTER DETAIL.** This drawing shows the detail of the vertical railing along a staircase or balcony railing. Railing can either made of steel baluster, ceramic baluster, free-cast baluster, wooden baluster, etc.

d. *Sheet # 4 - Doors and Windows Schedule, Detail of kitchen, and Detail of Toilet and Bath*

- **DOORS and WINDOWS SCHEDULE.** It is a complete specification of doors and windows in terms of width, height, types, materials and quantity.
- **KITCHEN DETAIL.** This is a drawing of kitchen floor plan with complete specifications.
- **TOILET and BATH DETAIL.** It is a drawing of toilet and the floor plan that shows complete features of toilet and bath.

2. Structural Sheets

a. Sheet # 5 - Foundation Plan, Roof Framing Plan, Truss Detail, and Column / Footing / Beam Schedules

- **FOUNDATION PLAN.** It is a structural excavation plan of footings and walls of a building.
- **ROOF FRAMING PLAN.** A drawing of structural framing plan of the roof plan with complete specification.
- **TRUSS DETAIL.** It is a complete structural detail of a common or typical truss of a building.
- **COLUMN/FOOTING/BEAM SCHEDULE.** This is a complete specification of column, footings, and beam in terms of sizes, materials and quantity.

b. Sheet # 6 - Detail of Footings, Construction Notes and General Notes

- **FOOTINGS.** It is a part of foundation directly supporting the column or post of a house. A detail drawing of building footings with specific requirements.
- **CONSTRUCTION NOTES.** This is a sub-complete detail of wall footings, lintels, beams, and other required structural features to present in the plan.
- **GENERAL NOTES.** It is a complete specification and legend of structural features presented in the plan.

3. Plumbing Plan/Layout Sheets

a. Sheet # 7 - Water and Sewage System Plan

- **PLUMBING PLAN.** It is the complete drawing detail of water and sewage distribution.
- **WATER SYSTEM PLAN.** This is the drawing of flow of water in the house from main water source.
- **SEWAGE SYSTEM PLAN.** It is the drawing flow of sewage from the house to main canal and septic tank.

b. Sheet # 8 - Storm Drainage System, and Septic Tank Detail

- **STORM DRAINAGE SYSTEM.** This shows the flow of water waste from the lavatory, floor drain, and downspout from roof to storm drainage.
- **SEPTIC TANK.** It is the depository of human excreta and a drainage reservoir for all washing done in the kitchen and bathroom. The main section of septic tank is the digestive chamber and the leaching well.

4. Electrical Plan Sheet

a. Sheet # 9 - Lighting Layout, Power and Auxiliary Layout, Location Plan, Panel Board Detail, Load Schedules and Specifications

- **ELECTRICAL PLAN.** It is a plan consists of lighting plan, power layout and specification details of the house.
- **LIGHTING LAYOUT.** It is an electrical plan that shows the flow of house lightings.
- **POWER & AUXILIARY LAYOUT.** It is an electrical plan that shows the flow of convenience outlet and other auxiliary outlet in the floor plan.

Architectural Abbreviations

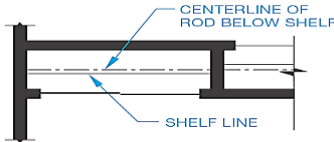
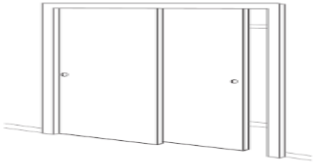
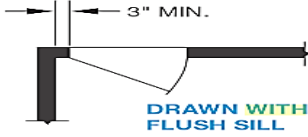


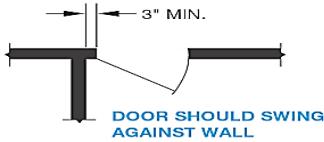
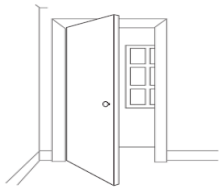


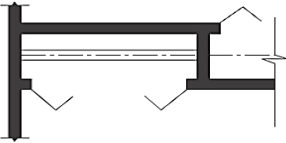
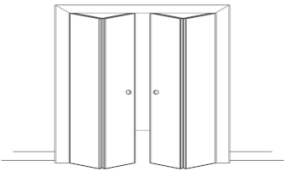
Here is the list of architectural terms and their abbreviations commonly used in technical drafting preparations. You are going to come across these terms, so familiarize yourself with each of them.

Abbrev.	Terms	Abbrev.	Terms	Abbrev.	Terms
@	At	CORR	Corrugated	LAV	Lavatory
BALC	Balcony	DR	Dining room	LR	Living room
B	Bathroom	DN	Down	MBR	Master bedroom
BR	Bedroom	DS	Down spout	M	Meter
B.W.	Both ways	ELEV.	Elevation	MM	Millimeter
BLDG	Building	FFL	Finish floor line	NTS	Not to scale
BLT-IN	Built-in	FGL	Finish ground line	OC	On center
CAB	Cabinet	FLR	Floor	SEC.	Section
CL	Ceiling line	FL	Floor line	T & B	Toilet & bath
CEM	Cement	GL	Ground line	VERT.	Vertical
CHB	Concrete hollow block	K	Kitchen		

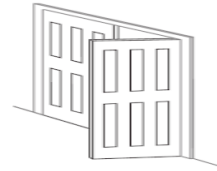
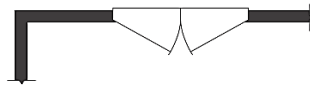
Architectural Drawing Symbols

Architectural drawing symbols form an important role in any architectural layouts especially during the preparation of working drawings. Knowing the architectural symbols is a prerequisite for all students in architecture and drafting technology program. It would be difficult for you to interpret drawings or blueprints unless you are familiar with the symbols.

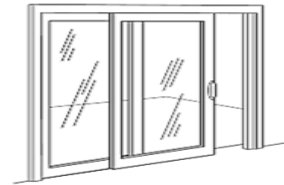
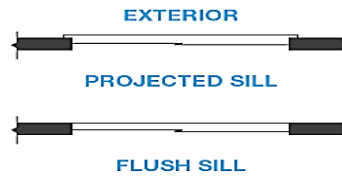
A. DOORS

DOOR TYPE	SYMBOLS	PICTORIAL/PERSPECTIVE
By-Pass Door		
Exterior Door	 	
Interior Door		
Pocket Door		
Bifold Door		

**Double-Entry
Door (French
Door)**



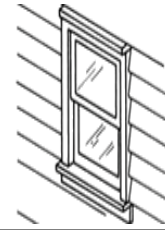
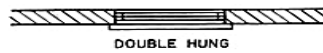
**Glass Sliding
Door**



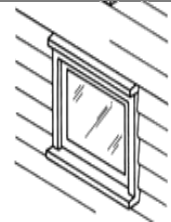
B. *WINDOWS

WINDOW TYPE	SYMBOLS	PICTORIAL/PERSPECTIVE
Horizontal Sliding Window	<p>WINDOWS DRAWN WITH DOUBLE LINES</p>	
Casement Window		
Hopper Window		
Awning Window		
Jalousie Window		

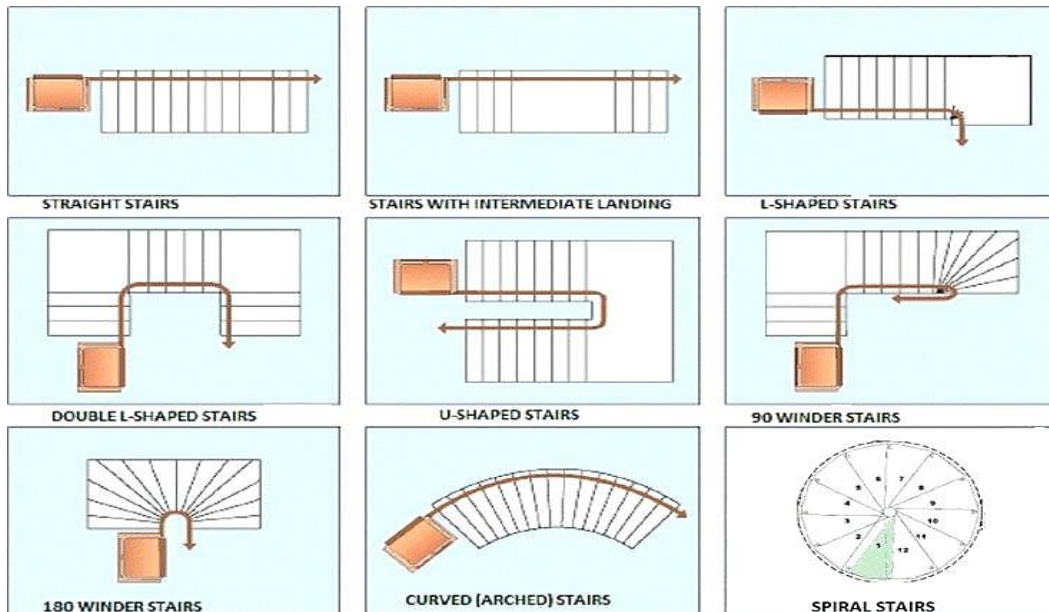
Double-Hung Window



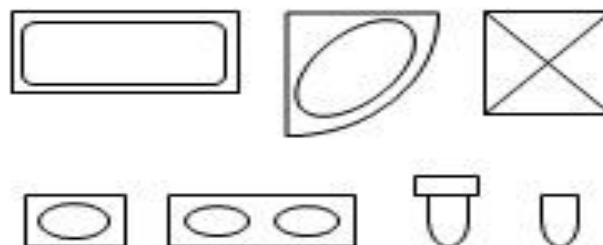
Fixed Window



C. STAIRS



D. TOILET AND BATH



E. KITCHEN



Washer



Dryer



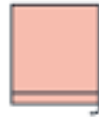
Water Heater



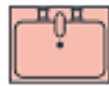
Dishwasher



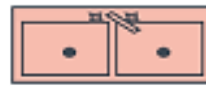
Stove/Oven



Refrigerator



Kitchen Sink



Double Sink



Countertop

E

What is more?

Learning Task 5: Check this out!

- A. Identify what is referred to in each number and write your answer on a separate sheet of paper.
1. A drawing sheet that contains perspective, site development title, page, and sheet index
 2. A drawing of the lot showing the setback and development of the house in relation to the lot
 3. The top view of the site or lot where the proposed house will be built
 4. It includes title block, table of contents, and labels for signs and seals of the duly licensed and registered professionals named in the plans
 5. A complete specification of doors and windows in terms of width, height, types, materials, and quantity
- B. Give the term of the following architectural abbreviations.

1. ELEV _____
2. FFL. _____
3. DN _____
4. O.C. _____
5. CHB _____

6. FLR. _____
7. GL _____
8. NTS _____
9. FL _____
10. @ _____

C. Draw the following architectural symbols of doors and window.

Requirements	Symbol	Requirements	Symbol
1. Interior Door		6. Sliding Door	
2. Exterior Door		7. Casement Window	
3. By-pass Door		8. Double-Hung Window	
4. Bi-fold Door		9. Sliding Window	
5. Pocket Door		10. Jalousie	

E *What I can do?*

Learning Task 6: Draw the symbols

In a clean sheet of paper, draw two architectural symbols in each category given below.

	Top View (Floor Plan)	Elevation Symbol
A. Window (indicate type of window)		
B. Stair		
C. Toilet and Bath		
D. Kitchen		

E *What else can I do?*

Learning Task 7: Architectural Lettering

Architectural drawings are quite difficult and complicated to look especially to those who are not familiar with them. To convey and assist information about a certain technical drawing, a draftsman or an architect usually include letterings in the form of dimensions, notes, legends, and titles.

Lettering is the process by which letters and numbers are formed in freehand to have an easier and faster reading and to avoid chances of committing errors. In addition, lettering adds style and individuality to a certain work. To achieve a neat and legible lettering, one must continue to practice in improving both style and speed.

In this activity, you will practice making architectural letterings. Follow the instructions below.

Materials needed:

- Ruler/Triangles
- Oslo paper (with title block and border)
- Pencil and eraser

Instructions:

1. Start doing your guidelines. Guidelines are very necessary when lettering. It ensures consistency in the size of the letter characters. They are constructed very lightly that they need not anymore to be erased. The pencil used in this aspect is hard type of pencil which is either 4H or 6H.
 - ✓ 3 sets of 0.50 cm. guidelines
 - ✓ 5 sets of 0.40 cm. guidelines
 - ✓ 12 sets of 0.30 cm. guidelines
 - ✓ Use 0.20 cm. space in between each guideline or sentence

PLATE NO. 1	RHEINA R. REYES	TEACHER	RATING
ARCHITECTURAL LETTERING	G9 - EINSTEIN	DATE SUBMITTED	

2. The generally accepted style of lettering for most of the architectural drawings is the single-stroke Gothic vertical or inclined lettering. Single-stroke means that each stroke of the letter is made by one stroke of the pencil. Remember to draw lettering strokes rather than sketching them.
3. On each line, write **A GOOD DRAFTSMAN WILL NEVER LETTER WITHOUT A GUIDELINE.**

Sample output:

PLATE NO. 1	RHEINA R. REYES	TEACHER	RATING
ARCHITECTURAL LETTERING	G9 - EINSTEIN	DATE SUBMITTED	

Your output will be graded based on the given performance rubrics:

Criteria	7 points	5 points	3 points
Accuracy	All measurements are accurately drawn	Three to five measurements were inaccurately drawn	Most of the measurements were inaccurately drawn
Line Technique/ Legibility	All lines were drawn appropriately	Three to five lines were drawn inappropriately	Most of the lines were drawn inappropriately
	3 points	2 points	1 point
Time Management	Finished the task 5 minutes ahead of the given time	Finished the task on time	Unable to finished the given task
Cleanliness	Finished output was neatly done, pleasing, and no erasures/smudges	Pleasing but erasures and smudges are observable on the finished output	Finished output have so many erasures and smudges



What I have learned?

Learning Task 8: Establish your understanding

In a clean sheet of paper, prepare a 250-word essay by using the guide questions listed below.

- As an aspiring draftsman, why is it important for you to recognize the different architectural working drawings as well as the symbols and abbreviations?



What can I achieve?

Learning Task 9: Posttest

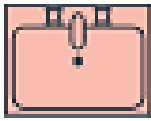
Choose the letter of the best answer. Write the letter of your answer on a separate sheet of paper.

1. A plan consists of lighting plan, power layout and specification details of the house.
A. Plumbing B. Architectural C. Electrical D. Structural
2. The plan with a complete drawing detail of water and sewage distribution.
A. Plumbing B. Architectural C. Electrical D. Structural
3. A plan that includes structural excavation plan of footings and walls of a building.
A. Architectural B. Electrical C. Footing D. Foundation
4. What is the abbreviation of the word Lavatory?
A. LVTY B. LAV C. LVTRY D. LAVA
5. It is the complete plan design of house ceiling.
A. Electrical B. Architectural C. Ceiling D. Reflected Ceiling
6. Which of the following parts of the house does not have a detailed plan?
A. Kitchen B. Doors C. Bedroom D. Windows
7. This plan shows the design of the house, height dimension, material finish, and complete information and specification.
A. Elevation B. Perspective C. Roof D. Section
8. The plan that shows the outline of the roof and the major object lines indicating ridges, valleys, hips, and openings.
A. Floor Plan C. Location Plan
B. Foundation Plan D. Roof Plan

9. This plan shows the position of the house inside the lot, the number of the adjacent lots, streets or lanes before or beside the lot, and the North sign.
- A. Floor Plan
B. Foundation Plan
C. Location Plan
D. Roof Plan
10. It is the drawing of flow of water in the house from the main source.
- A. Plumbing Plan
B. Water System Plan
C. Sewage System Plan
D. Water and Sewage System Plan

For 11 – 15, identify the name of each architectural symbol.

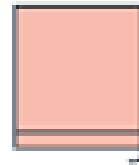
11.



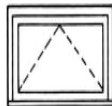
12.



13.



14.



15.



LESSON 3

Scaling and Dimensioning

LEARNING OUTCOMES:

- Use metric scale system according to the magnitude of the plan
- Indicate dimension lines, dimensions, and drawing titles according to architectural drafting standards
- Draw grid and dimension lines according to architectural design standards

I *What I need to know?*

One of the fundamental skills that a draftsman should possess is the ability to use and interpret scale and dimensions. Both scale and dimensions play a vital role in architectural drawings. Scale allows us to understand the relationship between a drawing or physical model and the reality of its world size. On the other hand, dimensions provide size and location of features, details and notes for construction or manufacturing, and other information necessary to define an object completely.

After going through this lesson, you are expected to:

1. Determine the appropriate scale to be used for a specific plan; and
2. Adhere to the rules in dimensioning technical drawings.

I *What is new?*

Learning Task 1: Recall the basics

Analyze each statement carefully. Write T if the statement is correct and F if not. Write your answers in your notebook.

1. If there are 5 customers in 1 store, then the ratio of store to customer is 1:5.
2. If there are 3 boys per 1 girl in the class, is the ratio of boys to girls 3:1?
3. There are 4 bees in each flower. The flower garden has 10 sunflowers, so there is a total of 40 bees in that garden.
4. Each street has 8 houses. The barangay has 15 streets, so there are 120 houses in all.
5. The ratio 1:2 is proportion with the ratio 3:6.

For 6-10.

A certain province had 15 cities and 10 municipalities. Each city has 20 towns and 10 barrios. Each municipality has 15 town and 15 barrios.

6. The Town to Province ratio is 1:450.
7. The Barrio to City ratio is 1:10.
8. The Barrio to Municipality ratio is 1:15.
9. The City to Province Ratio is 1:15.
10. If there are 5 Provinces in the region, there will be 76 cities in that region.

D *What I know?*

Learning Task 2: Pretest

A. Choose the letter of the best answer for each number and write your answer on a separate sheet of paper.

1. It is the appropriate scale for a plot plan.
A. 1:2500 and 1:1250 C. 1:5, 1:10, 1:20
B. 1:75, 1:50, 1:40 D. 1:100, 1:80
2. Its equivalent is ten millimeters in metric figures.
A. 0.0010 B. 0.010 C. 0.100 D. 0.10

3. It is equal to one hundred centimeters.
 A. 0.100 B. 0.0100 C. 1.00 D. 10.0
4. It is equivalent to one-half kilometer.
 A. 1,000 Meters C. 500 Meters
 B. 50 Meters D. 500 Decimeters
5. It is a kind of scale equivalent to 1:1.
 A. Half Scale C. Metric Scale
 B. Full Scale D. None of The Above

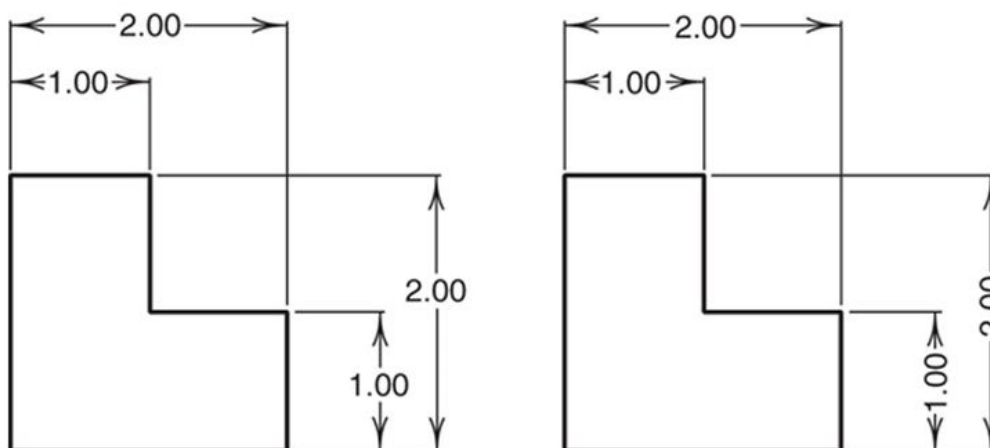
B. Read each statement carefully. Write T if the statement is correct and F if not.

1. Dimensions should be written above and in line **with** the dimension lines.
2. Arrowheads should be placed outside the extension line.
3. The windows and door sizes should be included in the floor plan.
4. Avoid overcrowding of dimensions.
5. Arrowheads, dash, small circles, and diagonals are used to denote termination of dimension line.

D *What is in?*

Learning Task 3: Can you still remember?

Recall the two methods of dimensioning.



Answer the following questions:

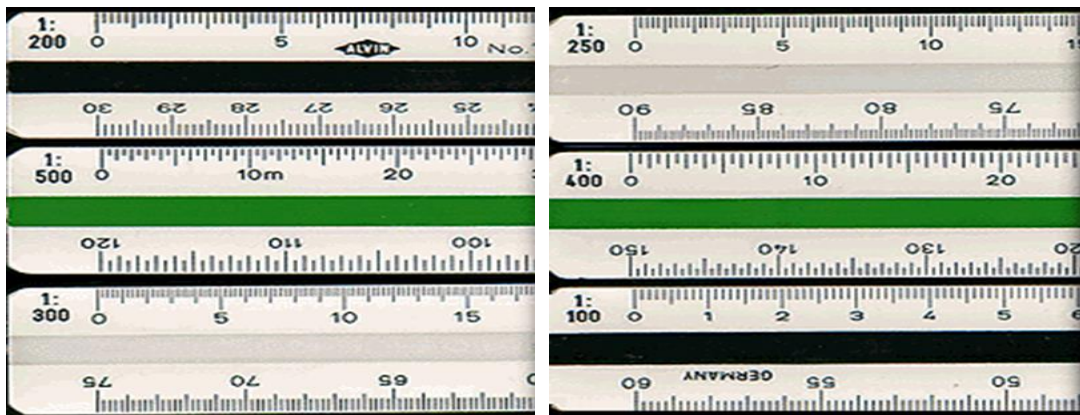
1. How do these illustrations differ?
2. Which of the two figures illustrates the aligned method?
Unidirectional method?

D What is it?

Drafting Scales

The architectural draftsman normally uses an architect's scale for reducing and enlarging the size or measurement of an object. There are two systems of measurement, namely, the Metric system and the English system.

Sample Metric Scale



Architectural Use of Metric System

Always remember that the smaller the number used in metric scale, the bigger the size in the triangular scale, whereas, the larger the number used, the smaller size of actual measurement.

1:05 m.	1: 100 m.
1:10 m.	1: 200 m.
1:20 m.	1: 300 m.
1: 30 m.	1: 400 m.
1: 40 m.	1: 500 m.
1: 50 m.	1: 600 m.
1:75 m.	1:1000m.

Note: The scale of 1:1000 m. or more is being used in Lot Plan and other topographical drawings.

Full size scale

The 1:1 is a full size scale and each division measures 1 mm. in width with the numbering of the calibrations at 10mm. intervals. This same scale is convenient for ratios of 1:10, 1:100, and 1:1000

Half size Scale

The 1:2 is one-half size scale and each division is equal to 2 mm. with the calibration numbering at 20-unit intervals. In addition, this scale is convenient for ratios of 1:20, 1:200, and 1:2000.

Architectural Use of Metric Scale

USE	RATIO	COMPARISON TO 1 METER
CITY MAP	1:2500	0.4 mm. equals to 1 M.
	1:1250	0.8 mm. equals to 1 M.
PLAT PLANS	1:500	12 mm. equals to 1 M.
	1:200	5 mm. equals to 1 M.
PLOT PLANS	1:100	10 mm. equals to 1 M.
	1: 80	12.5 mm. equals to 1M.
FLOOR PLANS	1:75	13.3 mm. equals to 1 M.
	1:50	20 mm. equals to 1 M.
	1:40	25 mm. equals to 1M.
DETAILS	1:20	50 mm. equals to 1M.
	1:10	100 mm. equals to 1 M.
	1:5	200 mm. equals to 1 M.

Scaling Actual Measurements

- ✓ How do we convert corresponding scale measurement from an actual measurement? Follow the suggested computation.

Example: The length of a bedroom measures 2.5 m., what will be the measurement to be used in the drawing if it is in a) 1:100 mts b) 1:50 mts

- Convert the given actual measurement to the desired metric unit, example in centimeter
Since 1 meter = 100 centimeter, then 2.5 meters x 100 = 250 cm.
- Divide the converted unit with the desired scale, as shown.
If scale is 1:100 mts , then 250 cm. / 100 = 2.5 cm.
If scale is 1:50 mts, then 250 cm. / 50 = 5 cm.

which means

$$\begin{array}{lll} 1:1 \text{ mts} & = & 2.5 \text{ m.} \\ \text{If scale } 1:100 \text{ mts} & = & \text{use } 2.5 \text{ cm. in the drawing.} \\ \text{If scale } 1:50 \text{ mts} & = & \text{use } 5 \text{ cm. in the drawing.} \end{array}$$

- ✓ How about if we want to know the actual measurement of a given drawing?

Follow the suggested computation.

Example: A kitchen layout measures 3.0 cm., what will be the actual measurement if the drawing is drawn in a) 1:100 mts b) 1:50 mts

- Convert the given measurement in meters

Since 1 meter = 100 centimeter, then $3.0 \text{ cm.} / 100 = 0.03 \text{ m.}$

- Multiply the converted value with scale used in the drawing, as shown.

If scale is 1:100 mts, then $0.03 \text{ m.} \times 100 = 3.0 \text{ m.}$

If scale is 1:50 mts, then $0.03 \text{ m.} \times 50 = 1.5 \text{ m.}$

which means

If scale used is 1:100 mts = actual measurement of the kitchen is 3.0 m.

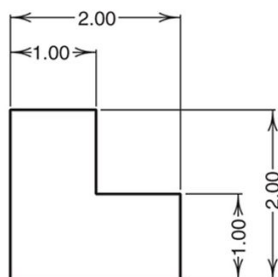
If scale used is 1:50 mts = actual measurement of the kitchen is 1.5 m.

DIMENSIONING

Dimensioning involves the process of placing sizes and other related information on a drawing. The main purpose of dimensioning is to provide a clear and complete description of an object. A complete set of dimensions will permit only one interpretation needed to construct the part. A good dimensioning should follow guidelines to ensure accuracy, clearness, completeness, and readability.

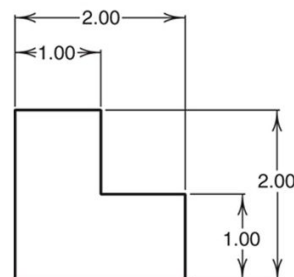
There are two methods of dimensioning used for working drawing.

ALIGNED METHOD



- ✓ All dimensions are placed aligned with the dimension line and be read from either the bottom or right side of the paper
- ✓ Old method

UNIDIRECTIONAL METHOD



- ✓ all dimensions are read from the bottom of the page
- ✓ current method

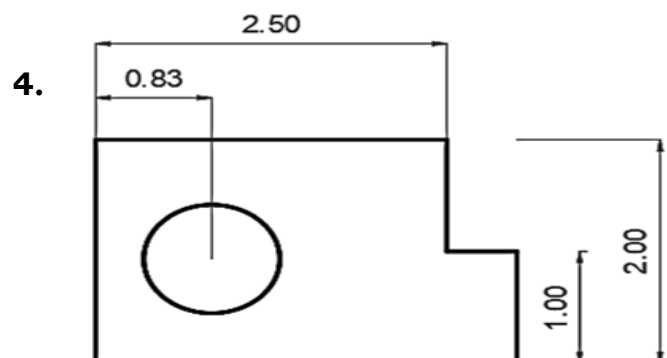
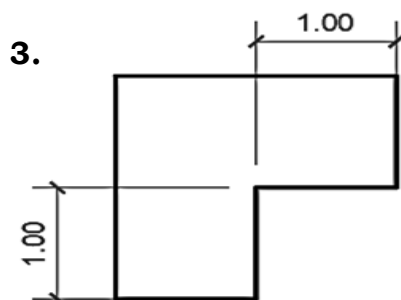
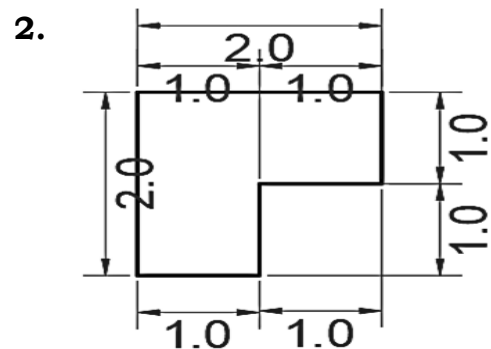
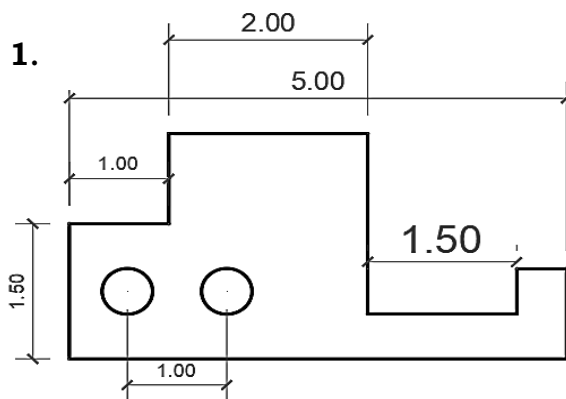
Recommended Practices and Techniques in Dimensioning

1. Architectural dimension lines are unbroken lines with dimension placed above the lines. Arrowheads, dash, small circles, and diagonal are used to denote the termination of the dimension line. Arrowheads may also be placed outside the extension lines when the area is too narrow or limited.
2. When using architectural tick, marks should be drawn at a 45 degree angle at the intersection of dimension line and extension line.
3. Dimensions should be placed to be read from the right or from the bottom of the drawing. The measurements should always be written above the dimension lines.
4. Dimension lines are placed about 10 mm. apart. Overall dimensions of the building are placed outside all other dimensions.
5. Dimension lines should be lined up and grouped together as much as possible.
6. Dimension text should never touch the dimension line. Text height ranges from 3 – 4 mm.
7. Extension lines are used to give dimension line a space from the object to avoid confusion. It should be drawn from the nearest points to be dimensioned. Extension beyond dimension line is 2-3 mm.
8. Offset from origin is 2-3mm.
9. Rooms are dimensioned from the center line of partitions. In some cases, they maybe dimensioned from wall to wall, exclusive of wall thickness.
10. In dimensioning stairs, the number of risers is placed on a line with an arrow indicating the direction (up or down).
11. Architectural dimensions always refer to the actual size of the building regardless of the scale of the drawing.
12. Never crowd dimensions. To free the plan of excessive dimensions, the sizes of doors and windows are given in the door and window schedule.
13. Refrain from double entry dimensions and omit obvious dimensions.

E What is more?

Learning Task 4: Check this out!

- A. Determine the measurements based on the given scale. Show your solution in a clean sheet of paper.
- Luigi is inspecting a 1cm.:1m. scale floor plan of his new house. The dimensions of his bedroom in the scaled plan are 3cm x 4 cm. What is the area of Luigi's actual bedroom in square meters?
 - A drawing of a TV shows that its height is 2cm. and its width is 4cm. The drawing is drawn using the scale of 1:25. What is the actual width and height of the TV in meters?
 - A drawing of a cabinet shows that its dimensions are 9cm. by 4cm. The drawing indicates 1:50 scaling. What are the actual dimensions of the cabinet?
- B. Determine what practices and rules in dimensioning were not followed in the given figure below.



What I can do?

In a clean sheet of Oslo paper (paper orientation: portrait, no border) redraw the given floor plan below using the scale of 1:50. Apply the guidelines in proper dimensioning.

0.20

distance.



Your output will be graded using the given performance rubrics:

Criteria	7 points	5 points	3 points
Line Technique/ Layout	Application of (all) various lines was according to standards and drawing was laid out properly	At least 3-5 lines were not according to standards and drawing was laid out fairly well	More than 5 lines were not according to standards and drawing was improperly laid out
Accuracy	All measurements and notations/symbols needed were accurately done	At least 3-5 measurements and notations/symbols needed were inaccurately done	More than 5 measurements and notations/symbols needed were inaccurately done
Criteria	3 points	2 points	1 point
Neatness	Finished output was neatly done, with no erasures nor any smudges	Erasures/smudges are observable on the finished output	Finished output has so many erasures/smudges present
Time Management	Finish the task ahead of the given time/date	Finish the task on the given time/date	Unable to finish the task on the given time/date

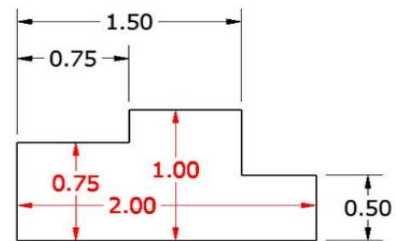
E *What else can I do?*

Learning Task 6: Additional practice

Do the following activity in an Oslo paper with border and title block described in the previous lesson.

- Measure your house's
 - Main Entrance Door *Height: ____m. Width: ____m.*
 - Living Room's Window *Height: ____m. Width: ____m.*
 - Bathroom/Bedroom's Door *Height: ____m. Width: ____m.*
- Draw the following using the provided scale
 - Main Entrance Door *1:100*
 - Living Room's Window *1:50*
 - Bathroom/Bedroom's Door *1:75*
- Add details on each drawing based on the actual appearance
- Dimension each drawing according to its actual measurements. Follow the guidelines in dimensioning.

6. Overall dimensions of the building are placed _____ all other dimensions.
- A. inside B. outside C. between D. before
7. What will be the actual length and width (in meters) of 4.0 (L) x 5.0 (W) bedroom drawn in 1:50 scale?
- A. L = 2.0 m, W = 2.0 m C. L = 2.0 m, W = 2.5 m
B. L = 4.0 m, W = 5.0 m D. L = 1.0 m, W = 2.0 m
8. Which of the following statement is wrong about dimensions?
- A. Every dimension must be given, but none should be given more than once
B. Every dimension should be written to the left side of the drawing
C. Dimensions should be placed outside the views
D. A center line should not be used as a dimension line
9. Which dimensioning guideline is being ignored in the given drawing?
- A. Avoid dimensioning to hidden lines
B. Avoid dimensioning inside the object
C. Avoid unnecessary dimensions
D. Avoid duplicate dimensions
10. What is the minimum standard text height in dimensions?
- A. 1 – 2 mm. B. 2 – 3 mm. C. 3 – 4 mm. D. 4 – 5 mm.



LESSON 4

Draft Site Development Plan

LO 3: Draft site development plan (*TLE_ICTTD912AL-Ic-e-3*)

- Draw a technical description of a lot according to the approved lot survey
- Draw a building footprint according to the architectural drafting standards

What I need to know?

This lesson is designed to introduce you to the techniques and processes of plotting the site development plan guided by the National Building Code Standards.

The Site Development Plan is the outline and measurements of the proposed building and its placement on the property. This shows the position and the location of the building with property line, setbacks, approaches, grade contours, landscape and other pertinent data in relation to the site. A site development plan is drawn using a scale not smaller than 1:200 meters so that other features found in the plan will not be greatly affected.

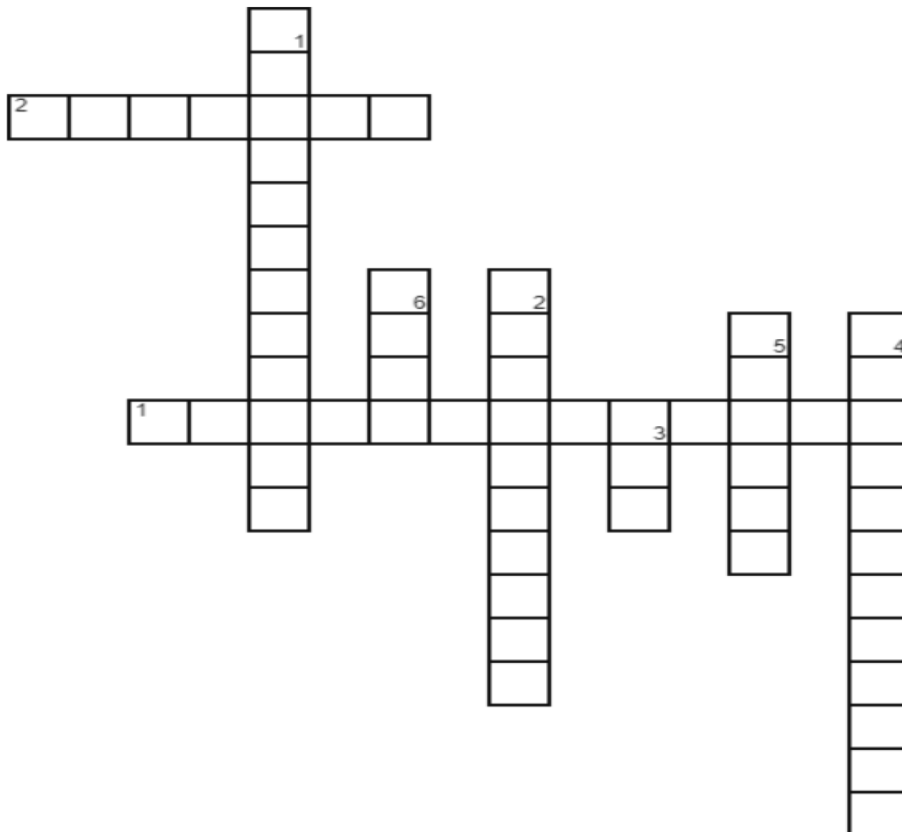
After going through this lesson, you are expected to:

1. differentiate a lot to a site;
2. determine the planning considerations in developing a site;
3. identify different types of lots; and
4. perform lot mensuration and lot plotting.

I *What is new?*

Learning Task 1: Crossword Puzzle

Complete the crossword by filling in a word that fits each clue.



Across

1. lines showing the exact area of the acquired lot
2. horizontal arc or angle measured from a north reference line

Down

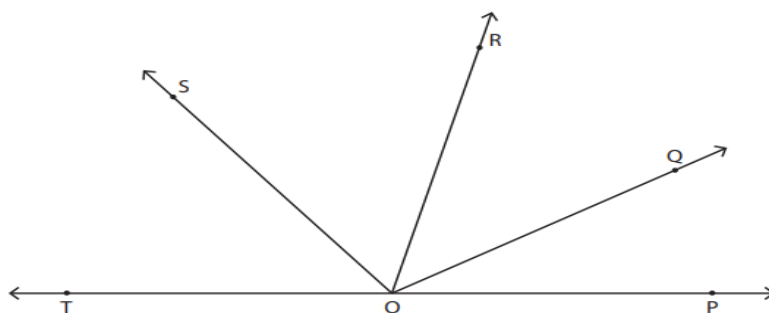
1. collection of local laws that regulate the building of homes and other structures
2. measuring tool used to plot angles
3. a piece of ground of specific size
4. the placement, location and arrangement of each room unit in relation with each other as to function and coordination
5. legal restrictions on size, location, and type of structures to be built on a designated area
6. lot on which a building is constructed

D What I know?

Learning Task 2: Can you still remember?

Do you still know how to measure and read angles? How about using a protractor? Below is an activity that will help you refresh your knowledge in measuring and reading angles.

A. Find the measure of given angles using a protractor.



a) $\angle POQ =$ _____

d) $\angle POR =$ _____

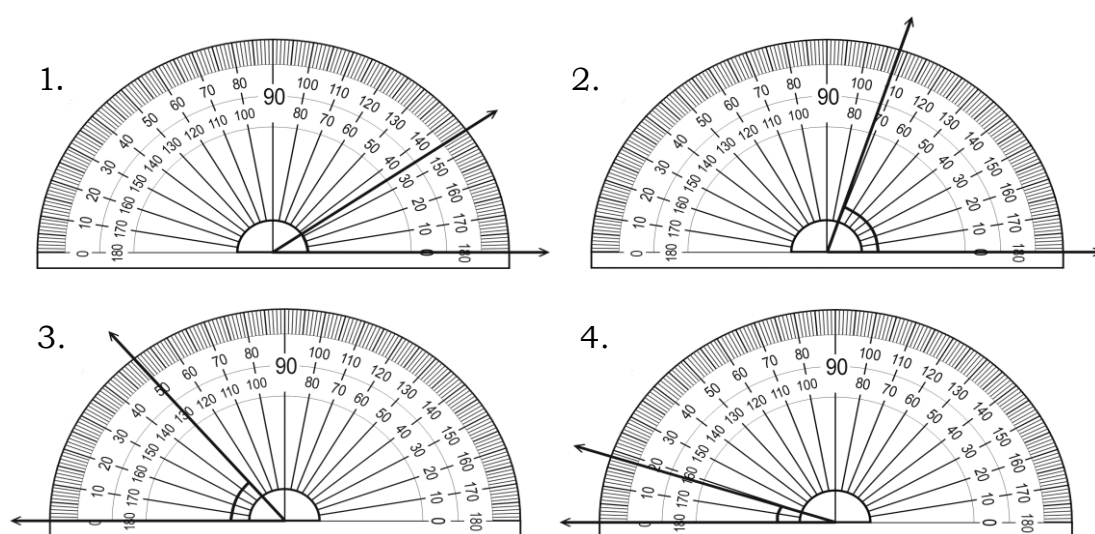
b) $\angle QOR =$ _____

e) $\angle POS =$ _____

c) $\angle ROS =$ _____

f) $\angle ROT =$ _____

B. Provide the angle measurement of each protractor.





What is in?

Learning Task 3: Jumbled Letters

Arrange the letters based on the description written below each number. Write your answer on the space provided.

1. ESIT _ _ _ _

This is an area of land available for construction or the lot on which a building is constructed.

2. TOL _ _ _

It is a piece of ground of specific size.

3. VBODISUISIN _ _ _ _ _

It is a large tract of land that is being developed.

4. PYROPERT NLIES _ _ _ _ _ - _ _ _ _

These are lines that shows the exact area of the acquired lot.

5. KCESTAB _ _ _ _ _

This refers to the distance at how far a building can be built within the property lines.

6. IONTENATORI _ _ _ _ _

It is the position and direction of the sunrise and the sunset.

7. CARUNTICOIL _ _ _ _ _

This is the term that entails to the unhampered movement of the occupants inside the building.

8. VOTINETILAN _ _ _ _ _

It refers to the movement or the exchange of indoor and outdoor air.

9. ZINONG _ _ _ _ _

These are the legal restrictions on size, location, and type of structures to be built on a designated area.

10. BILUNDIG DECO _ _ _ _ _ - _ _ _ _

It refers to the collection of local laws that regulate the building of homes and other structures.

D What is it?

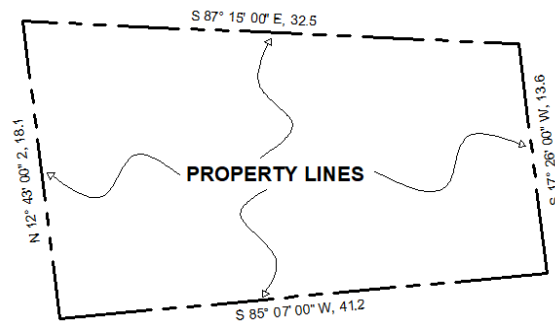
The following are the terminologies used in discussing matters about site development plan.

SITE refers to the area of land available for construction or the lot on which a building is constructed. The building site may be a single lot, a series of lots, or a subdivision.

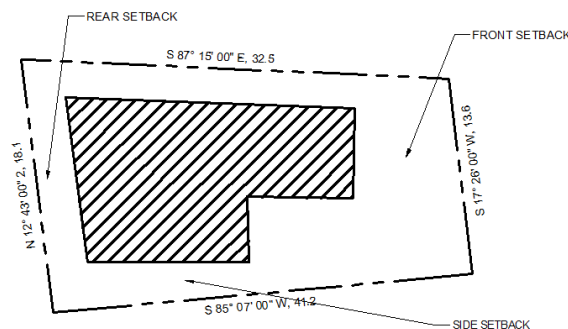
LOT is a piece of ground of specific size.

SUBDIVISION refers to a large tract of land that is being developed.

PROPERTY LINES are those lines showing the exact area of the acquired lot.



SETBACK refers to the distance at how far a building can be built within the property lines.



PLANNING AND DESIGNING

A master plan is defined as the visual presentation of conceptual ideas supported by mathematical calculations aimed at giving convenience and comfort to the users or occupants. Good plans are those that are functional and economical following the principle of "Form Follows Functions."

PLANNING CONSIDERATION IN DEVELOPING THE SITE

- **DISTRIBUTION** refers to the placement, location, and arrangement of each room unit in relation with each other as to function and coordination.

Example: The relation between the dining and the kitchen which primarily requires accessibility on food servicing. These areas are interrelated and should not be far from each other.

- **ORIENTATION** refers to the position and direction of the sunrise and the sunset.

Example: Many want their bedrooms to face the sunrise which is on the eastern side of the lot. Others, especially those who work at night, prefer their bedrooms located on the west side. The breeze at the site may determine the location of the living room and toilet or bathrooms.

- **SIZES, AREAS, and SHAPES.** All rooms are intended for human use; therefore, it should be planned according to human scale. Good design always provides ample areas to accommodate furniture, appliances, and other related facilities, including the critical and important lanes or pathways for routine movements inside the house.

Rule VIII of the New National Building Code under the 2005 Implementing Rules & Regulations (No. 7) provides the minimum sizes of rooms and their least horizontal dimensions as follows:

- ✓ Rooms for human habitation 6.00 sq. m. with at least dimension of 2.00 m.
 - ✓ Kitchen 3.00 sq. m. with at least dimension of 1.50 m.
 - ✓ Toilet and Bath 1.20 sq. m. with at least dimension of 0.90 m.
- **CIRCULATION.** Circulation and movement of the occupants inside the building should not be hampered by any obstacles nor be detoured as result of poor planning.
 - **LIGHT and VENTILATION.** There is no substitute for a good daylight and fresh natural air entering and circulating inside the building. Artificial lighting and ventilation are very costly to those who cannot afford these. Others prefer it for maximum comfort regardless of costs.

Rule VIII of the New National Building Code under the 2005 Implementing Rules & Regulations provides

“Rooms intended for any use not provided with artificial ventilation shall be provided with a window with a total free area equal to least 10% of the floor area of the room but not less than 1.00 sq.m. Toilet and bathrooms and laundry rooms shall be provided with windows with an area not less than 1/20 of the floor area but not less than 240 sq.mm. Such windows shall open directly to a court, yard, public street or alley or open watercourse.”

- **HEIGHT.** A moderate height ceiling allows fresh air circulations, comfortable atmosphere, and preserve aesthetic value of the room. Room with low ceiling has warm atmosphere that requires artificial ventilation.

Rule VIII of the New National Building Code under the 2005 Implementing Rules & Regulations (No. 6) Ceiling Heights provides

- ✓ Habitable rooms provided with artificial ventilation shall have ceiling heights not less than 2.40 m. For buildings of more than 1 storey, the minimum height of the first storey shall be 2.70 m., for the second storey, 2.40 m., and for the succeeding storeys, 2.10 m. Above mentioned rooms with natural ventilation shall have ceiling height of not less than 2.70 m.
 - ✓ Mezzanine floors shall have a clear ceiling height of not less than 1.80 m. above and below it.
- **LIKE AND DISLIKES OF THE FAMILY MEMBERS.** This factor is usually considered when the family is rich and can afford to pay for the services of an architect. Before he designs the house, the architect must first interview the members of the family to get information about their interests, hobbies, and the like.

ZONING refers to the legal restrictions on size, location, and type of structures to be built on a designated area.

ZONING LAWS are set of laws that are designed to keep different areas of a community from interfering with each other. In some cities or towns, separate areas are set aside for specific uses. Examples are residential, commercial, and industrial. These are established and protected by zoning laws. In addition, zoning laws establish standards for construction in different sizes and uses.

One of the first things an architect must do before designing a building is to read the building codes. The intended use of the building must be within the limits of zoning laws. Also, the size of the lot must be large enough to meet the requirements.

BUILDING CODES are local laws that set standard for structural design within the community. It is also defined as the collection of local laws that regulate the building of homes and other structures. These legal requirements are intended to protect the safety and health of the people who live and work in the buildings. They regulate restrictions concerning the construction of buildings to provide safety to the occupants.

All constructions in an area must meet the requirements of building codes. Some of the designs and construction features covered by building codes include:

- ✓ Qualifications of persons who can design buildings within the area
- ✓ Structural design that can be used
- ✓ Lot sizes for certain types of buildings
- ✓ Types and sizes of materials that can be used

National Building Code Rules:

1. For one-storey wooden or frame house, the height of the floor plan from the ground should not be less than 1.50 m.
2. Walls with window opening should not be less than 2.00 m. from the lot line of fence. In other words, adjacent houses should not be at least 4.00 m. from each other.
3. The front part of a house should not be less than 3.00 m. from the lot line along the street.
4. No windows should be constructed along a wall of a house if this wall is flush with or exactly on the lot line.

LOT PLOTTING is the process of drawing the exact shape (square, rectangle, trapezoid) and measurement of a particular lot from the technical descriptions shown in the title.

The boundaries and lot orientation on the North, East, West, and South are also attained.

Lot plotting involves the use of lot bearings. Lot **bearings** are horizontal arc or angle measured from a north reference line, in a clockwise direction, to a point of interest some distance away from the point of measurement.

****In land navigation the terms bearing and azimuth are interchangeable.*

Example.	N30°W	- read as "30 degrees North due West"
	N76°56'W	- read as "76 deg 56 min North due West"
	S34°14'16"W	- read as "34 deg 14min 16sec South due West"
	S25°04'00"E	- read as "25 deg 4min South due East"

How to manually plot individual bearings:

Step 1: Place the center point of your protractor on the known point. This point will serve as your Point 1.

Step 2: Layout and draw the given angle. Rotate the protractor so that it is aligned with the north reference line. In this case, the 0 degree should be pointing towards the North and the 90 degrees at the West direction as illustrated. Mark the angle along the edge of the protractor at the desired bearing

Step 3: Extend the bearing line by using the given distance.

CARDINAL DIRECTION	PROTRACTOR POSITION	
	0 degrees	90 degrees
NORTH	North	
NORTHEAST	North	East
NORTHWEST	North	West
SOUTH	South	
SOUTHEAST	South	East
SOUTHWEST	South	West

Protractor Position for each Cardinal Direction

In order to draw the exact shape of a lot, you have to get the lot points presented in the technical descriptions of the lot title.

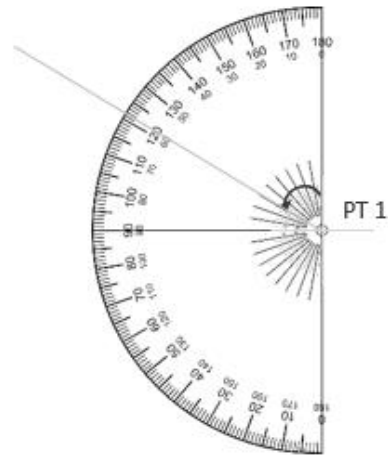
Below is the step-by-step procedure on how to manually plot lot points.

POINTS	BEARING	DISTANCE
1-2	N 61° 54' W	13.89
2-3	N 24° 08' E	16.68
3-4	S 68° 03' E	11.00
4-1	S 19° 25' W	17.43

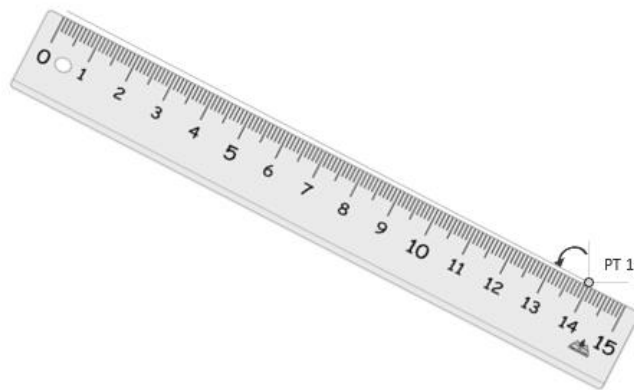
Step 1: Designate the North reference line. As a rule, North is always to be pointed vertical up with respect to the paper.



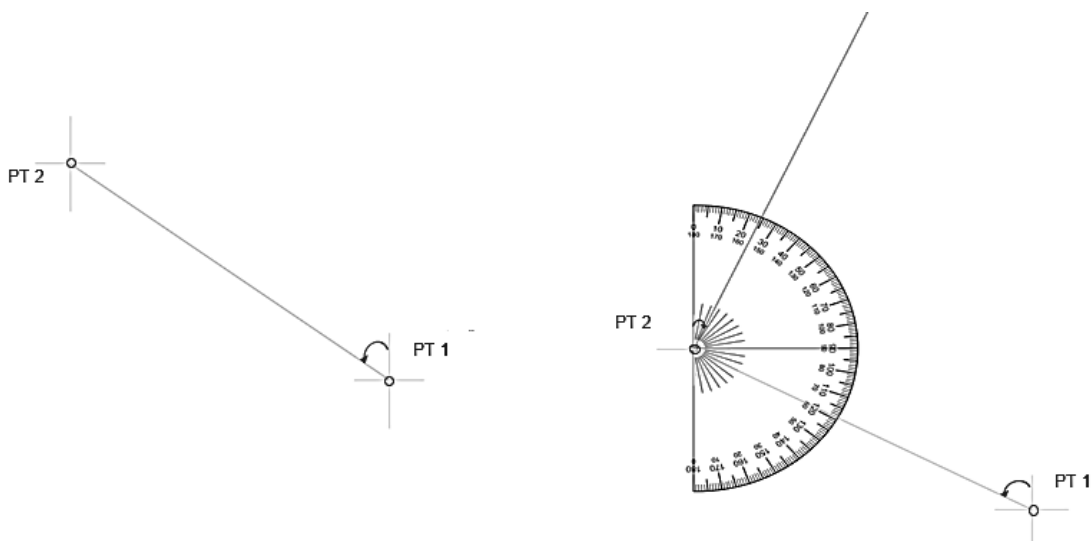
Step 2: Place the center point of the protractor on a known point and mark the desired bearing. Rotate the protractor so that it is aligned with the north reference line.



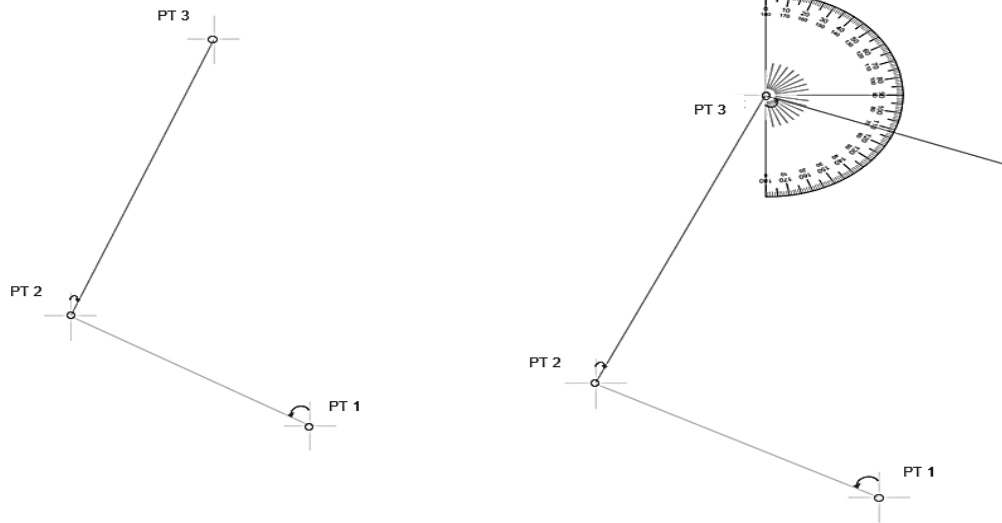
Step 3: Extend the bearing line (distance/magnitude) using a ruler.



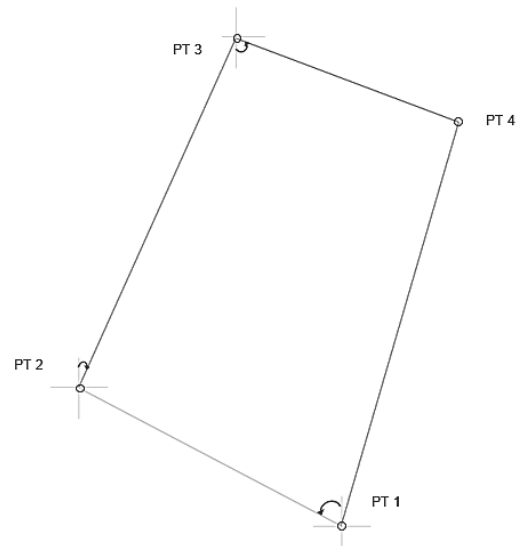
Step 4: Plot the second point, N 24° 08' E, 16.68. Follow step 1-3.



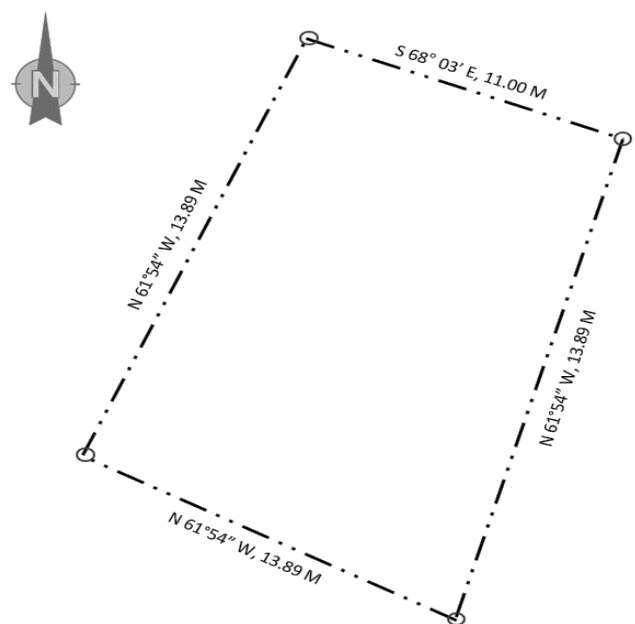
Step 5: Plot the next point, S 68° 03' E, 11.00.

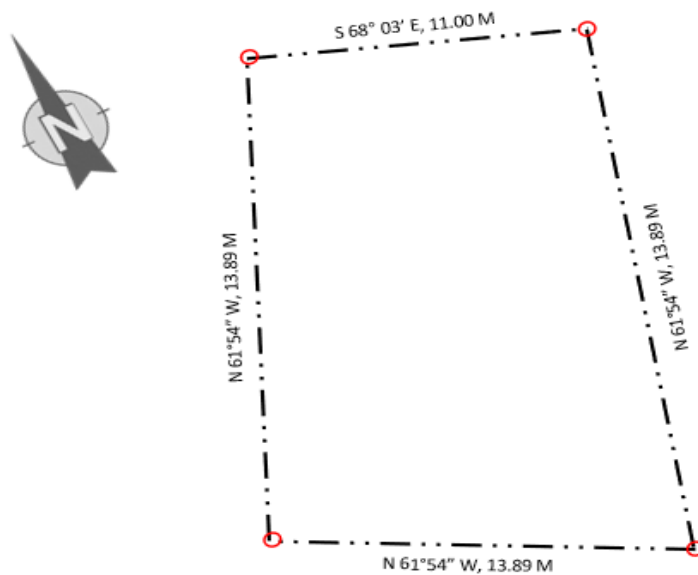


Step 6: Connect Point 4 to Point 1.



Step 7: Finalize your drawing by using the appropriate line type to indicate the property lines. Label each property line using the given bearing magnitude as illustrated.





Recommended presentation of lot plot

(North orientation is changed to fit the drawing on the paper)

DRAFTING PRACTICES IN LOT PLOTTING

1. NORTH is always to be pointed vertical up with respect to the paper.
2. Bearing is read, plotted and marked off directly as, DUE NORTH, DUE SOUTH, DUE WEST, or DUE EAST.
3. PLOTTING starts with point 1 and ends with point.
4. Compass axes North-South and West-East are zeroed in each point and bearing marked off.
5. All drawings and labels are inked.
6. Use only standard plotting paper if submitted as part of Contract Document.
7. Lot points are represented by small circle and point no. indicated near it within the lot whenever possible.
8. Bearing and Magnitude are centered to lot line and within the lot whenever possible.
NOTE: Bearing and Magnitude must be written and readable from South West quadrant.
9. Lot No. and Block No. are written at the center of lot.
10. Subdivision streets are indicated as Street Lot No. _____. It is directly centered and parallel to respective streets.
11. Scale is indicated under the NORTH symbol for non-documentary work and proper position for documentary Plotting Paper.

E *What is more?*

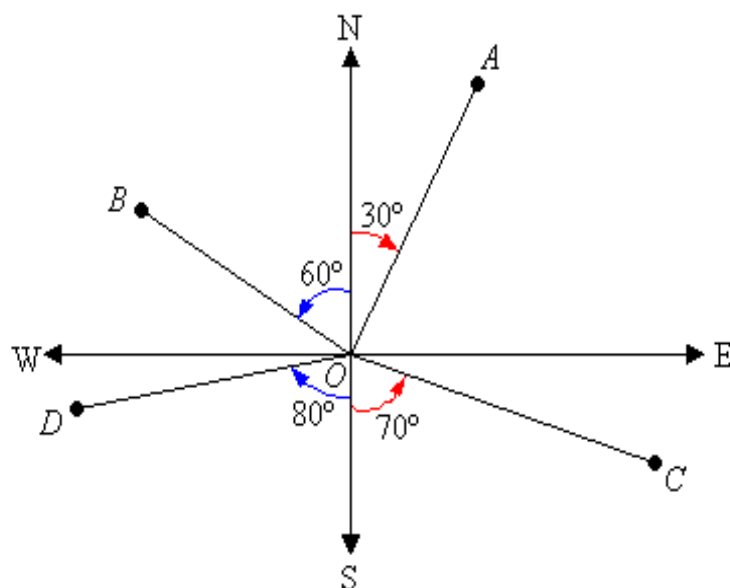
Learning Task 4: Check this out!

A. Identify what is referred to in each number. Write your answer on a separate sheet of paper.

1. The outline and measurements of the proposed building and its placement on the property
2. The legal restrictions on size, location, and type of structures to be built on a designated area
3. A piece of ground of specific size
4. Local laws that set standard for structural design within the community
5. Designed to keep different areas of a community from interfering with each other
6. Space requirement from the lot line along the street
7. The distance at how far a building can be built within the property lines
8. Space requirement of walls with window opening from the lot line of fence
9. Space requirement to each other of adjacent houses according to National Building Code
10. Lines showing the exact area of the acquired lot

B. Provide the bearing of the following lines.

1. Line A
2. Line B
3. Line C
4. Line D



E *What I can do?*

Learning Task 5: Lot Plotting

In a clean sheet of paper, mark-off the given sample bearings using the protractor and a ruler and apply the procedures in lot plotting.

Bearing Magnitude: (Use scale dimension: 1 cm. = 1 m.)

1.

POINTS	BEARING	DISTANCE
1-2	E 25° 45' N	10.00
2-3	W 10° 30' S	15.00
3-4	S 18° 15' E	8.00
4-5	N 7° 20' W	20.00

2.

POINTS	BEARING	DISTANCE
1-2	N 61° 54' W	13.89
2-3	N 24° 08' E	16.68
3-4	S 68° 03' E	11.00
4-5	S 19° 25' W	17.43

E *What else can I do?*

Learning Task 6: Draft Site Development Plan

Materials needed:

- Oslo paper
- Ruler/triangles
- Protractor
- Pencil and eraser

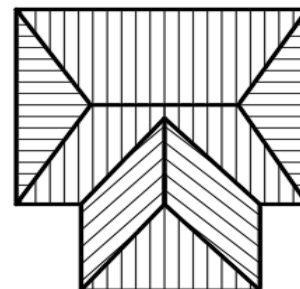
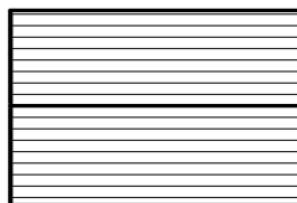
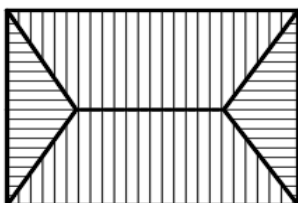
Instructions:

1. Plot the given bearings. Scale: 1 cm. = 1 m.

POINTS	BEARING	DISTANCE
1-2	N 30° 55' E	10.25
2-3	S 68° 03' E	5.70
3-4	S 24° 08' W	11.10
4-1	N 55° 47' W	4.60

2. On the plotted lot, assign and draw the following:

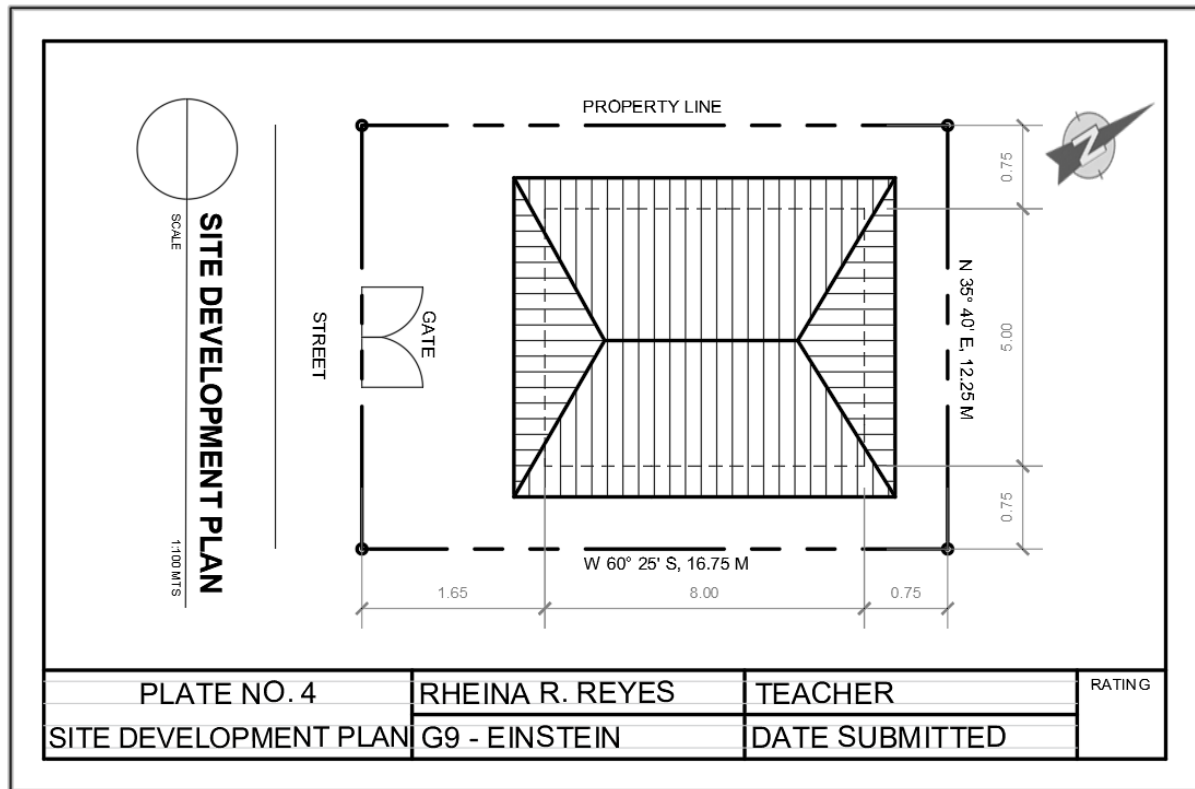
- A setback space from all the sides of the lot to produce lot occupancy
- One or two streets along the sides of lot
- Pick an appropriate roofing for the lot occupancy



- Assume the location of the gate entrance to be in front of the lot adjacent to the street.

3. Finalize your drawing.

Sample output:



Your output will be graded using this performance rubrics:

Criteria	7 points	5 points	3 points
Accuracy	Finished output was plotted with all measurements, notations and specifications appropriately scaled and labelled, respectively.	Finished output was plotted with 2-3 measurements, notations and specifications inappropriately scaled and labelled, respectively.	Finished output was plotted with majority of the measurements, notations and specifications inappropriately scaled and labelled, respectively.
Line Technique /Legibility	All lines were drawn/sketched legibly and clearly.	Few lines were drawn/sketched illegibly and unclearly.	Most of the lines drawn/sketched illegibly and unclearly.
	3 points	2 points	1 point
Time Management	Task was finished 5 minutes ahead of the given time.	The task was finished on time.	The task was not finished on the given time.
Cleanliness	The finished output was neatly done and pleasing with no erasures/smudges.	The finished output was pleasing but erasures and smudges are observable.	The finished output contains a lot of erasures and smudges.

A *What I have learned?*

Learning Task 7: Establish your understanding

In a clean sheet of paper, prepare a 250-word essay by using the guide questions listed below.

- ✓ How do you describe a site development plan?
- ✓ What concepts and terms need to be considered in developing a plan?
- ✓ What are the steps involved in lot plotting?
- ✓ If not, what do you think would be the consequences of using inappropriate drafting tools and materials?

A *What can I achieve?*

Learning Task 8: Posttest

Choose the letter of the best answer. Write the chosen letter on a separate sheet of paper.

1. An area of land for construction or the lot on which a building is constructed.
A. Subdivision B. Lot C. Site D. Property Lines
2. It is a lot bounded on all sides by streets or pathways.
A. Corner Lot B. Open Lot C. Site D. Through Lot
3. It is a lot with at least two adjacent sides meeting at the corner made at the juncture of two streets.
A. Corner Lot B. Open Lot C. Site D. Through Lot
4. It is a piece of ground of specific size.
A. Subdivision B. Lot C. Site D. Property Lines
5. What do you call the restrictions on size, location, and type of structures to be built on a designated area
A. Building Code B. Set Back C. Site D. Zoning

6. What is the bearing of Line B?

A. N 60° W C. S 60° W

B. W 60° S D. W 60° N

7. What is the bearing of Line C?

A. E 70° W C. E 60° S

B. S 70° W D. S 70° E

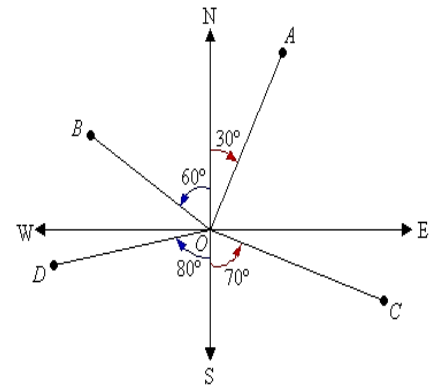
8. Which of the following is true about Line D?

A. bearing is at 80 degrees South due West

B. bearing is at 80 degrees West due South

C. bearing is at 70 degrees South due West

D. bearing is at 70 degrees West due South



9. Which of the following is NOT included in the construction features covered by the building code?

A. Qualifications of persons who can design buildings within the area

B. Structural design that can be used

C. Types and sizes of materials that can be used

D. Financial capability of the owner

10. Which of the following is being considered in lot planning if you are referring to the position and direction of the sunrise and the sunset?

A. Size and Shape B. Circulation C. Distribution D. Orientation

LESSON 5

Draft Floor Plan

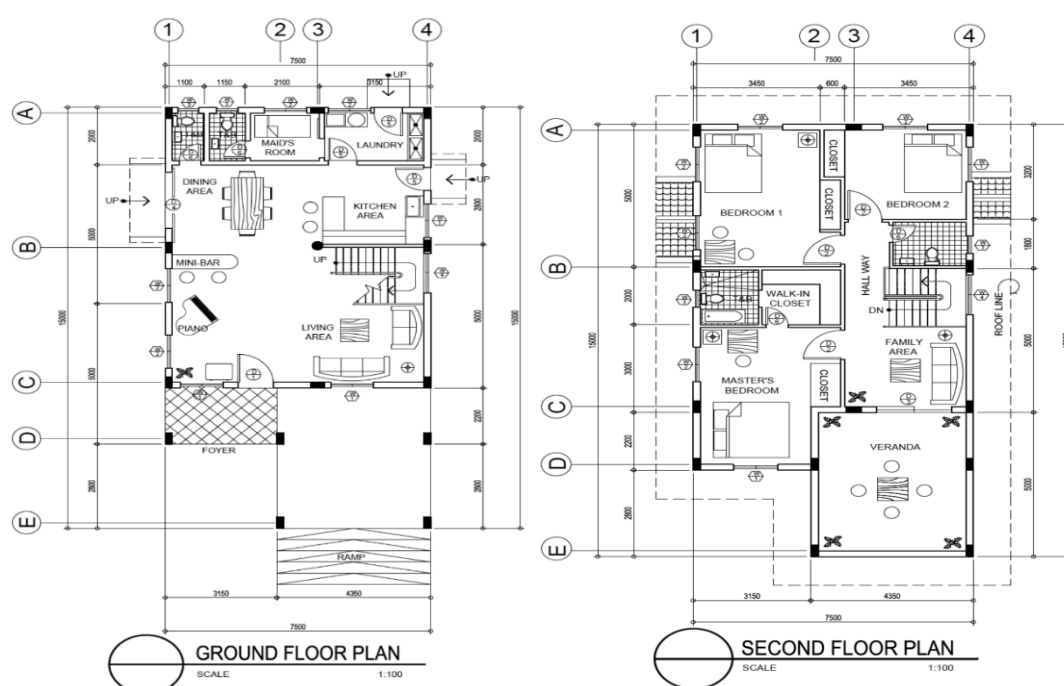
LO 4: Draft floor plans (TLE_ICTTD912AL-If-j-4)

- Draw walls, windows, doors, fixtures, and fittings according to architectural design standards;
- Identify sizes of doors, walls, and rooms following the schedule;

I What I need to know?

The best way to illustrate a desired house is through a floor plan.

Floor plan is the top cross-sectional view of the floor area of a house. The horizontal cutting plane line for this top view passes between the upper and lower windowsills or one meter above the floor line. It shows the size and arrangement of the rooms. It also presents the sizes and locations of the stairs, door and windows openings, and partitions and walls. Sometimes, it includes the kind of furnishings in each room. However, the materials required for constructing permanent or integral parts of each room such as bedroom closets, kitchen cabinets, etc., should also be accounted for in the bill of materials.



Sample Two-Storey Floor Plan

After going through this module, you are expected to:

1. identify the different features of a floor plan;
2. identify standards in drafting architectural designs;
3. recognize symbols used in floor plans;
4. adhere to the rules in dimensioning a floor plan; and
5. draft a floor plan based on job requirements.

I *What is new?*

Learning Task 1: Your Dream house

Everyone, whether you're a child, a student, or someone who is already working, has a dream house. The design of your dream house maybe formed out of those houses that you have been or from what you have seen from a tv drama scene or internet.

With that dream house in your mind, answer the following activity. Write your answers in your notebook.

- | | |
|---------------------------|-------|
| 1. Number of storeys | _____ |
| 2. Number of bedrooms | _____ |
| 3. Details of living room | _____ |
| 4. Shape of the kitchen | _____ |
| 5. Details of dining area | _____ |
| 6. Number of bathrooms | _____ |
| 7. Other details | _____ |

Learning Task 2: What went wrong

Look and observe the details in each picture. List down some of the points that you think make each structure reasonably different.



After observing the given pictures, answer the following questions:

1. Are the structures built properly? Why?
2. What are the implications of improperly built structures in the overall performance of a building?

What I know?

Learning Task 3: Pretest

Read each item carefully. Write True if the statement is correct and False if it is not. Write your answers on a separate sheet of paper.

- _____ 1. A garage is an enclosed structure designed primarily to shelter an automobile.
- _____ 2. A carport is different from a garage with exterior walls all around.
- _____ 3. Special-Purpose Entrances provide movement from the inside bedrooms out of the house.
- _____ 4. Service Entrance provides access to the house through which supplies can be delivered to the service areas going through other parts of the house.
- _____ 5. Main Entrance provides access to the house where guests are welcomed.
- _____ 6. Bathroom door could be as small as 55-60 cm.
- _____ 7. L-shaped Kitchens are also called “straight kitchen”,
- _____ 8. There should be a storage hanging kitchen cabinet with a minimal width of 0.45 meter.
- _____ 9. Dining Area should be located between the living room and kitchen.
- _____ 10. The service area includes the kitchen, laundry, garage workshops, storage room, and utility room.
- _____ 11. There should be a toilet and bath in master’s bedroom and built-in cabinets or closets.
- _____ 12. Living area should be located beside the kitchen and bathroom for easy access of these areas.
- _____ 13. L-shaped kitchen is very efficient and ideally suited to smaller rooms or open-plan kitchens.
- _____ 14. The service area includes the kitchen, laundry, garage workshops, storage room, and utility room.
- _____ 15. The toilet and bath are generally located between bedrooms.

D What is in?

Learning Task 4: Sneak Peek

A. Written below are features which a house may have. If you are to build your own two-storey house, where would you place these features, in the first or second floor? Write your answers in boxes A and B.

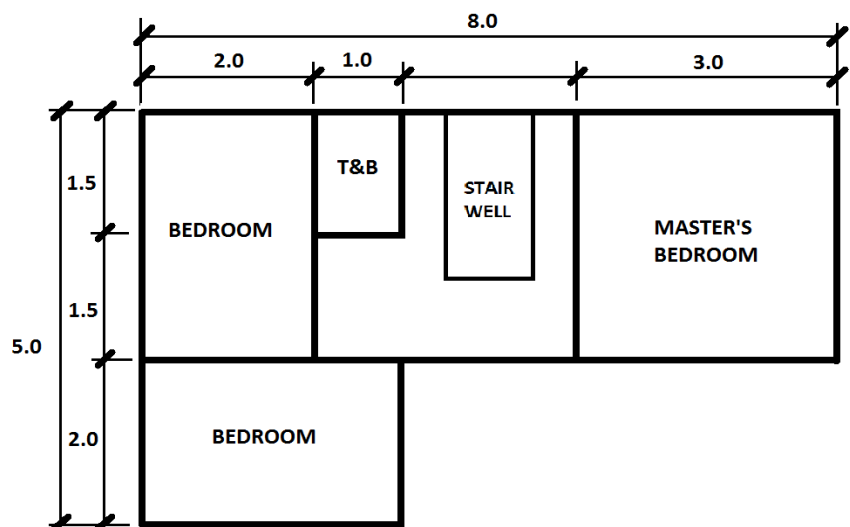
Living Room	Kitchen	Toilet & Bath	Storage Room
Stair (up)	Bedroom	Toilet	Balcony
Garage	Laundry	Main Entrance	Guest Room
Stairs (down)	Porch	Dining Area	Garden

A – First Floor

B – Second Floor

B. The image below is an example of a Second Floor plan. Using the given measurements, calculate the following:

1. Area of Master's Bedroom
2. Area of each bedroom
3. Total area of all bedrooms
4. Area of the Toilet and Bath
5. Total Floor area of the Second floor
6. Floor Area of Free Space



Note: Image is not drawn in scale.



What is it?

Below are the essential parts of a floor plan.

Three Major Functional Areas of a House

1. The Living Area
2. The Sleeping Area
3. The Service Area

Room Requirements and pointers in planning a floor plan

1. **LIVING AREA.** It is the center of the living area in most homes. It should be centrally located and should be adjacent to the outside entrance and to the dining area, but the entrance should not lead directly into the living room.

Recommended sizes should be at least 2.00 m x 3.00 m small, 3.7 m. x 5.5 m. average or optimum size would be 6.1 x 7.9 m. in rectangular shape.

2. **SLEEPING AREA / BEDROOM.** It is a room for sleeping and taking rest of the family. Ideal number of rooms for low cost housing should be two bedrooms, master's bedroom and bedroom. Preferably, there should be a toilet and bath in master's bedroom and built-in cabinets or closets.

3. **SERVICE AREA.** It includes the kitchen, laundry, garage workshops, storage room, and utility room. Since great number of activities take place in the service area, it should include facilities for the maintenance and serving the other areas of the house. The function of the living and sleeping areas is greatly dependent upon the efficiency of the service area.

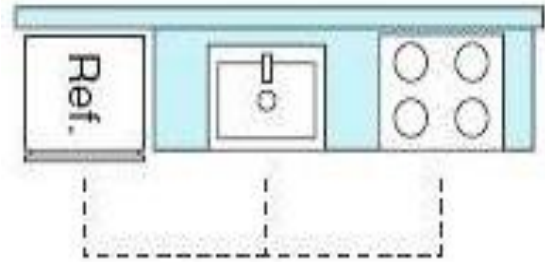
- a. **Dining Area.** It is where occupants gather to eat their meals. This should be located between the living room and kitchen. Its size and shape are determined by the size of the family.

- b. **Kitchen.** It is where food is prepared. It is connected to the work triangle area for storage and mixing center, preparation and cleaning center, and cooking center. There should be a storage hanging kitchen cabinet with a minimal width of 0.60 meter.

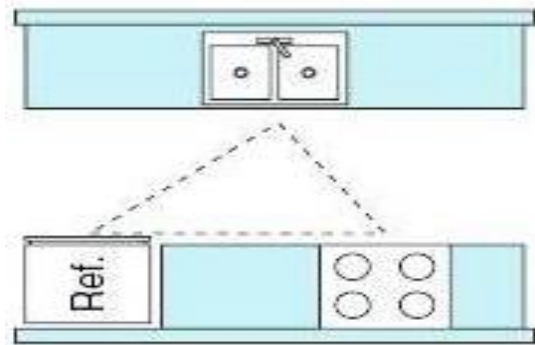
- **Function.** The preparation of food is the basic function of the kitchen. The proper placement of appliances, storage cabinets, and furniture is important in planning to eliminate wasted motion.
- **Location.** Since the kitchen is the core of the service area, it should be located near the service entrance and near the waste-disposal area.

Common Kitchen Layouts

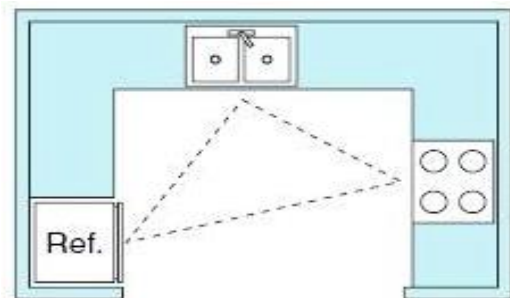
- **Single-Wall Kitchen.** In single wall houses, all of the major kitchen work areas are arranged in a single line. This is the ideal layout for a narrow space because you can maximize the height by installing wall units, and you need not compromise storage.



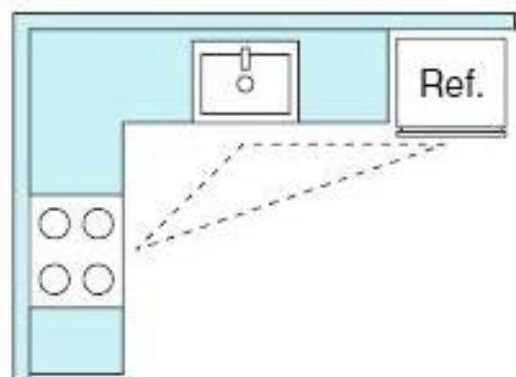
- **Galley / Corridor Kitchen.** Also referred to as “straight kitchen”, it is a type of kitchen where the counters are arranged in two facing lines. This saves space while still maintaining the work triangle.



- **U-Shaped Kitchen.** It features a U-shaped counter that takes up three walls. This allows for more work space, less traffic, and the inclusion of a kitchen island.



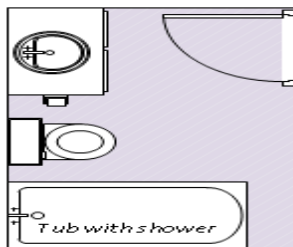
- **L-Shaped Kitchen.** This layout is very efficient and ideally suited to smaller rooms or open-plan kitchens. The work triangle can be easily integrated to minimize unnecessary movement through the space and the 2 walls can provide ample storage options.



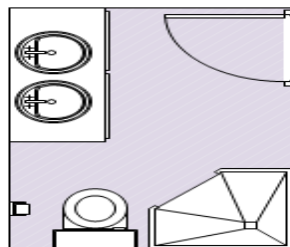
- c. **Bathroom.** It is where the toilet and tub or shower are separated to save economically in plumbing. As much as possible, keep the toilet near the kitchen. The bath and toilet must be near the bedrooms, accessible to the living room even without passing through other rooms. The toilet and bath are generally located between bedrooms. In a two-storey residential house, the bedrooms, toilet, and bath are often located on the second floor. In this case, the stair must go up from the living room or hall, if there is any. The stair is generally L or U-shaped and has a landing.

Bathroom door could be small as 55-60 cm. except for utility bathroom which requires not less than 70 cm. wide to allow passage of equipment as required. In general, bathroom wall contains only one door.

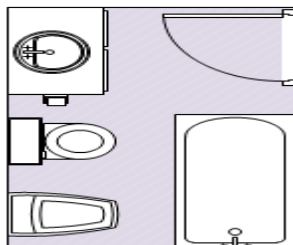
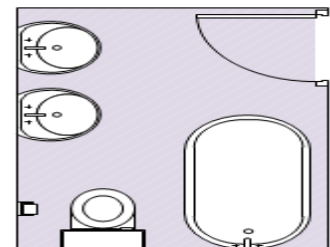
Sink, toilet,
bathtub/shower combo



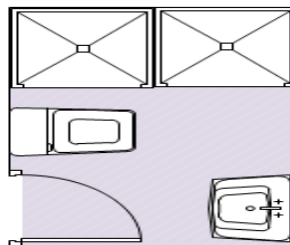
Sink, sink,
toilet, shower



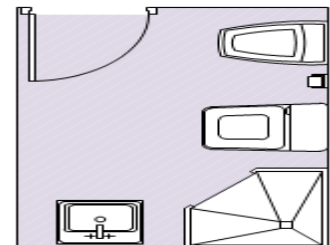
Sink, sink,
toilet, bathtub



Sink, toilet,
bidet, bathtub



Sink, toilet,
double shower
(combined as one unit)



Sink, toilet,
bidet, shower

Common Four-Piece Bathroom Layouts

- d. **Entrances.** They provide for and control the flow of traffic into and out of a building. It is composed of an outside waiting area like the porch, marquee or lanai and an inside waiting area like foyer or entrance hall.

Different Types of Entrances

- **Main Entrance.** It provides access to the house. It is the one through which guests are welcomed and from which all major traffic patterns radiate. The main entrance should be readily identifiable. It should provide shelter to anyone awaiting entrance.
- **Service Entrance.** It provides access to the house through which supplies can be delivered to the service areas going through other parts of the house. It should also provide access to parts of the service area like the garage, laundry or workshop.
- **Special-Purpose Entrances and Exits.** They do not provide for outside traffic. Instead, they provide for movement from the inside living area of the house to the outside living areas. A sliding door from the living area to the patio is a special-purpose entrance. It is not an entrance through which street, drive, or sidewalk traffic would have an access.

e. **Garage and Carports.**

A **garage** is an enclosed structure designed primarily to shelter an automobile. It may be used for many secondary purposes – as a workshop, as a laundry, or as a storage space. It is usually attached to the house in some manner to provide a sheltered entry.

A **carport** is a garage with one or more of the exterior walls removed. It may consist of a free-standing roof completely separate from the house, or it may be built against the existing walls of the house.

Architectural Drafting Standards

Architectural design standards are centered on the criteria set by the National Building Code and should be followed even during the design process. Safety and the wellbeing of tenants and residents is the ultimate goal of these regulations.

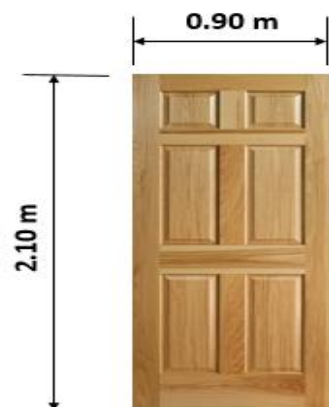
Legal provisions:

▪ **Section 806 of the National Building Code (NBC). Size and Dimension of Rooms:**

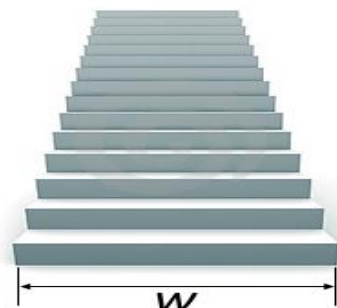
- a. Room for human habitations should be 6.00 square meters with at least a dimension of 2.00 meters.
- b. Kitchens should be 3.00 square meters with at least a dimension of 1.50 meters.
- c. Bath and toilet should be 1.20 square meters with at least a dimension of 0.90 meters.

▪ **Section 1207. Stairs, Exit, and Occupant Loads.**

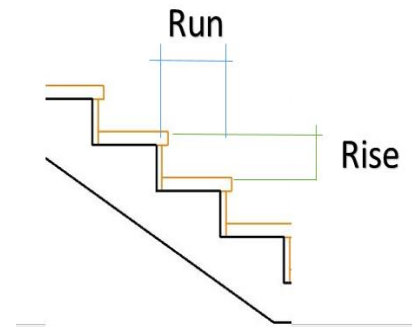
Width and Height. Every required exit doorway shall have a size to permit the installation of a door not less than 900 mm (90 cm) in width and not less than 2.00 meters in height.



Stairways width. Stairway serving an occupant load of more than 50 shall not be less than 1.10 meters, while stairway serving an occupant load of 50 or less shall be 900 millimeters wide.



Rise and run. The rise of every step in a stairway shall not exceed 200 millimeters and the run shall not be less than 250 millimeters.

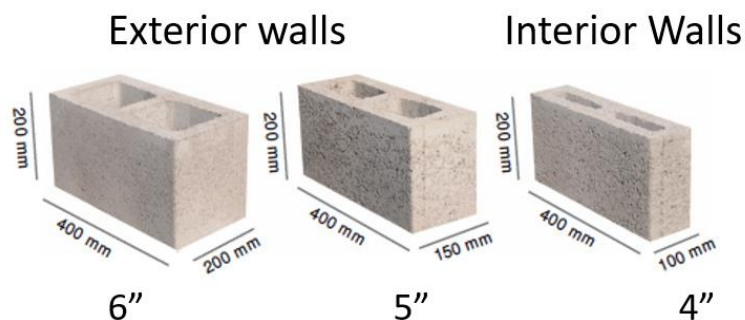


- Other guidelines must be observed in the arrangement of rooms in drawing the floor plan.
 1. Built-in cabinets or closets are usually found in the bedrooms, kitchen, and dining room. Open shelves may be constructed in the kitchen and dining room.
 2. In some one-storey houses, the bedroom's toilet, and bath are elevated from the other rooms. In this case, the stairs leading to these rooms must be indicated on the floor plan. Two or three steps, each has 18 cm. or 19 cm. high from each other and 25 cm wide, may be shown in the plan. All these measurements must be drawn to scale.
 3. Since most of the time is spent by the members of a family in the bedrooms at home, these rooms must be located far from noise, dust, and polluted air coming from garbage pits or from the kitchens and toilets of the neighboring houses.
 4. If furniture and house appliances are to be shown in each room, these furnishings should be drawn on the same scale in the floor plan.
 5. If the floor plan will be traced on tracing paper in order to indicate the electrical or water connections, furnishings should not be shown on the tracing.
 6. In presentation drawings, the landscaping around the floor plan may be added.
 7. It is on the floor plan where the cutting plane lines for at least two full-sectional elevations (cross and longitudinal) are indicated. These sectional elevations are usually labeled as Section A-A and Section B-B, depending on the capital letter used at the extremities of the cutting plane lines. These cutting plane lines need not be continuous or straight. They are often drawn in color ink.
 8. Window and Door symbols should be indicated in the outer walls of the floor plan opposite to door and window openings to determine the total number and specification.

- **Entrance and Exit.** There shall be at least one entrance and another one for exit. Windows opening should be 10% of the total floor square area according to the National Building Code.

*Example: Bedroom size of 3.00 m. x 4.00 m. = 12 sq. m x 10% = 1.20 m.
(window width opening)*

- **Concrete Hollow Blocks (CHB) for Walling and Partitions' Sizes:**
 - a. CHB - 0.10 T x 0.40 W. x 0.20 H. (4" T x 16"W x 8"H) is used for interior walls or sometimes exterior wall with no heavy loads.
 - b. CHB - 0.15 x 0.20 x 0.40 (6" x 8" x 16") is used for exterior wall sometimes for interior wall.



Plastering of CHB wall should not be less than 0.015 mm. or not more than to 0.05 cm in thickness.

Note:

In making a layout of floor plan walls, it should be scaled with same sizes of all actual materials to be used. If the occupancy wants to use 0.10 x 0.20 x 0.40 CHB plus plastering of 0.015 mm thickness on both side walls, the total thickness of the wall is 0.13 cm. On the other hand, if it intends to use 0.15 x 0.20 x 0.40 CHB plus plastering of 0.015 mm thickness on both sides a total average is 0.018 cm. Since it is very hard to layout the accurate scale of 0.18 wall thickness, so most draftsman prefer to use 0.20 cm. wall in making a layout of a floor plan.

- **Wall openings:**

Entrance door is preferably with 0.90 cm. to 1.00 m. width.

Bedroom door has a minimum width of 0.80 cm.

Toilet and Bath door has a minimum width of 0.70 cm. to 0.80 cm.

Minimal width of windows is preferably 0.60 cm. (Please refer to Schedule of Doors and Windows.)

Other appliances and fixtures are required to be drawn in the floor plan for space requirements.

Eave lines are hidden roof lines which also indicated in the floor plan.

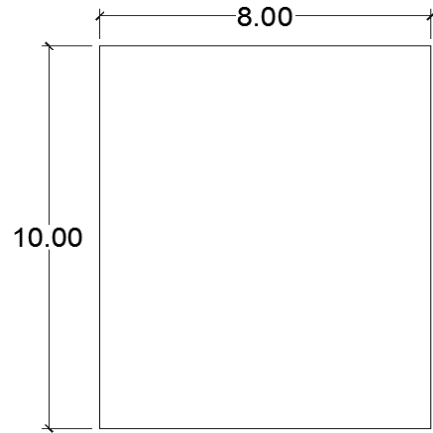
Trees and Plants symbols are required to be drawn in the development of site plan if needed.

Steps in Drafting a Floor Plan

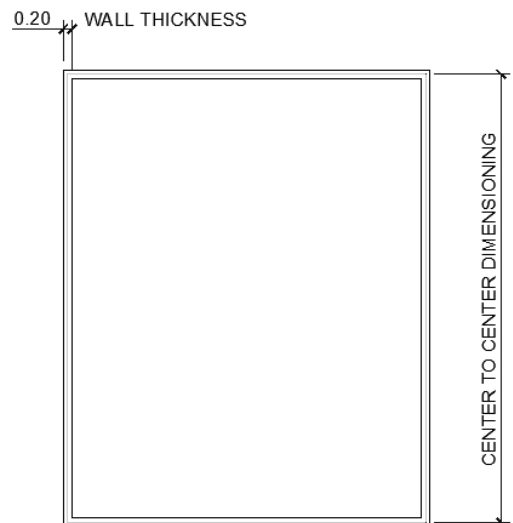
In order to produce a good floor plan, one must follow a step-by-step procedure.

Here are the steps in drafting a floor plan.

1. Prepare the needed tools and materials.
Use 1:100 scale.
2. Draw 8.0 x10.0 rectangle.



3. Starting from the center of the wall, construct a 0.20 cm wall thickness (0.15 cm CHB).



4. Divide the floor area into other areas of the house. Use 10 cm interior wall partitions. Compute for each area of the house, then check the total floor area.

Area = Length x Width

$$\begin{aligned}\text{Toilet \& Bath} &= 1.90 \times 2.80 \\ &= 5.32\end{aligned}$$

$$\begin{aligned}\text{Bedroom 1} &= 4.00 \times 4.00 \\ &= 16.0\end{aligned}$$

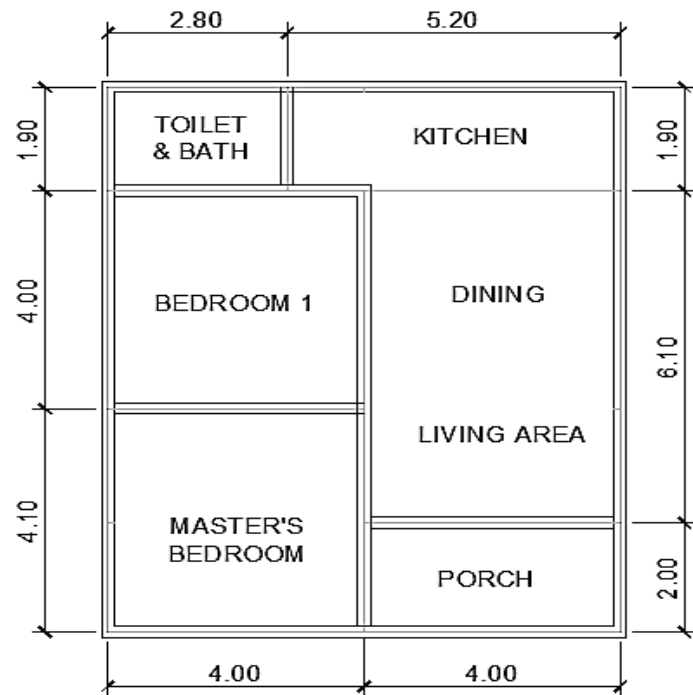
$$\begin{aligned}\text{Master's Bedroom} &= 4.10 \times 4.00 \\ &= 16.4\end{aligned}$$

$$\begin{aligned}\text{Kitchen} &= 1.90 \times 5.20 \\ &= 9.88\end{aligned}$$

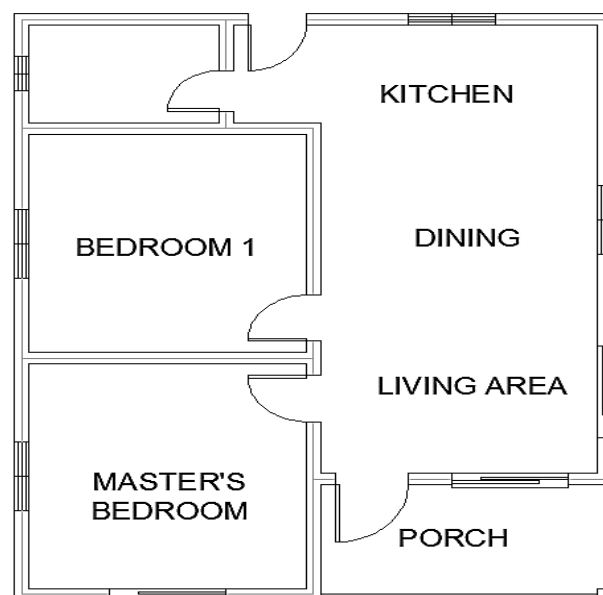
$$\begin{aligned}\text{Dining \& Living} &= 6.10 \times 4.00 \\ &= 24.4\end{aligned}$$

$$\begin{aligned}\text{Porch} &= 2.00 \times 4.00 \\ &= 8.00\end{aligned}$$

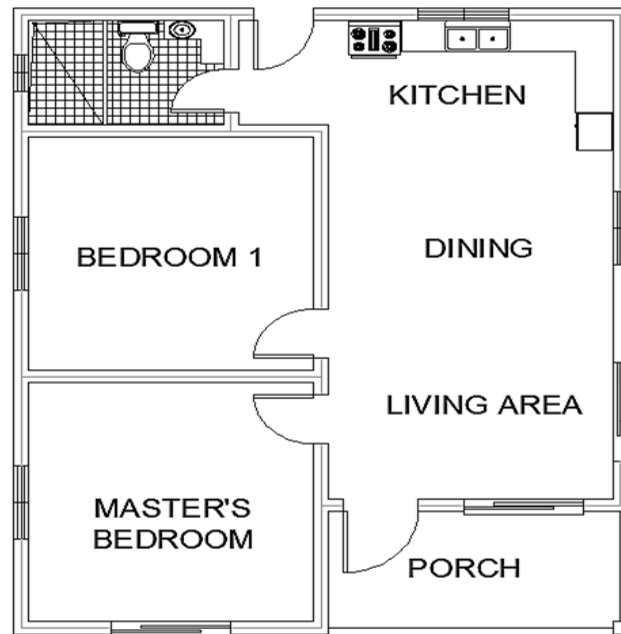
$$\begin{aligned}\text{Total Floor Area} &= 5.32 + 16.0 + 16.4 + 9.88 + 24.4 + 8.00 \\ &= 80.0 \text{ square meters}\end{aligned}$$



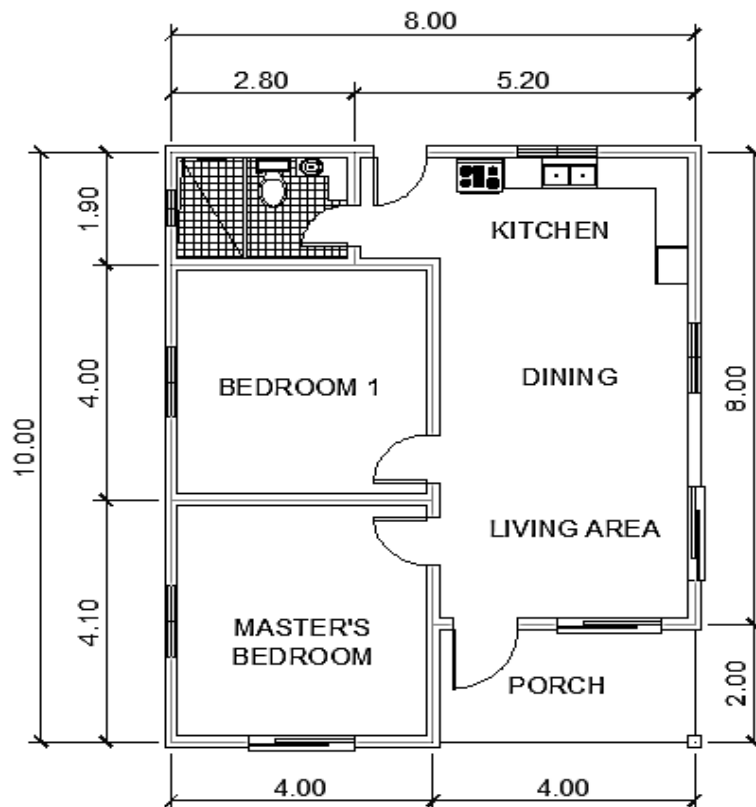
5. Lay out the position of doors and windows by center line and by their widths with a 4H pencil. The standard width of doors is 90-95 cm like the main entrance door. The standard width is 80 cm. for bedrooms and service doors and 0.75 cm. for toilet and bath doors.



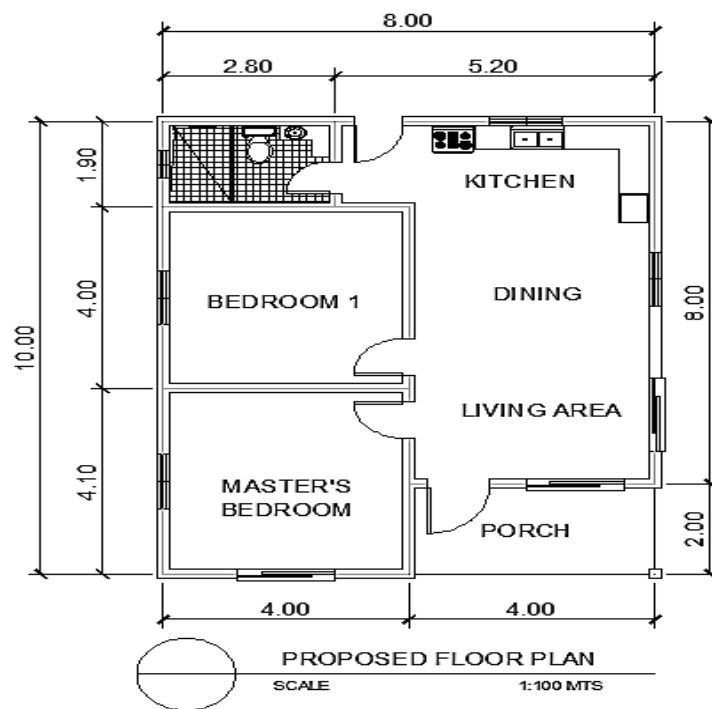
6. Label each part of the floor plan. Draw the kitchen and apply the work triangle principle in designing the kitchen. Draft the toilet and bath. Draw the fixtures properly.



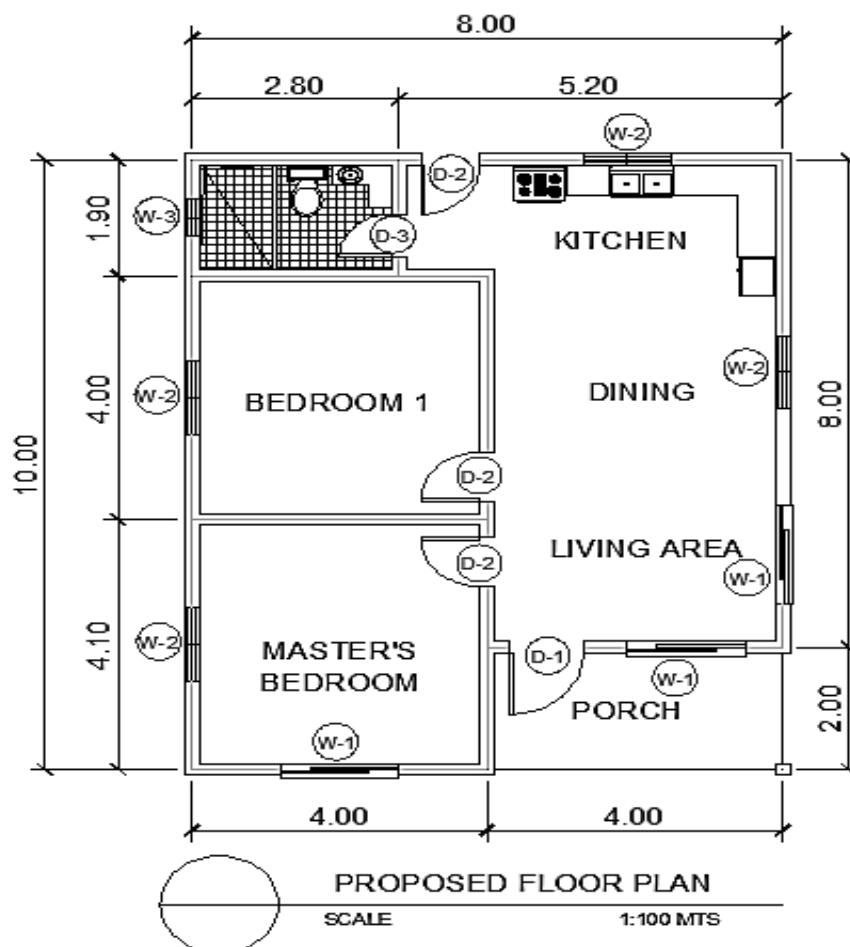
7. Layout extension lines. Use any dimension limits and lay out dimensions legibly and never repeat dimensions.



8. Finalize your drawing by erasing unnecessary lines.



9. Draw the schedule of doors and windows. Name the doors and windows by sizes.





What is more?

Learning Task 5: Check this out!

A. Multiple Choice: Read each item carefully. Choose the letter of the answer and write it on a separate sheet of paper.

1. It is a part of the house used for eating and relaxing
A. Porch B. Living Area C. Bedroom D. Dining Area
2. It provides for and controls the flow of traffic into and out of a building.
A. Special Purpose Exit B. Door C. Entrance D. Exit
Door
3. This room is generally located between the bedrooms.
A. Bathroom B. Dining Area C. Kitchen D. Foyer
4. This has access to kitchen and living room.
A. Bathroom B. Dirty Kitchen C. Dining Hall D.
Dining Area
5. It is an enclosed structure designed primarily to shelter an automobile.
A. Carport B. Garage C. Dining Hall D. Kitchen

B. Identify the following.

- i. Kinds of Kitchen Layout (4)
- ii. Fixtures in kitchen “work triangle” (3)
- iii. Different Types of Entrances (3)

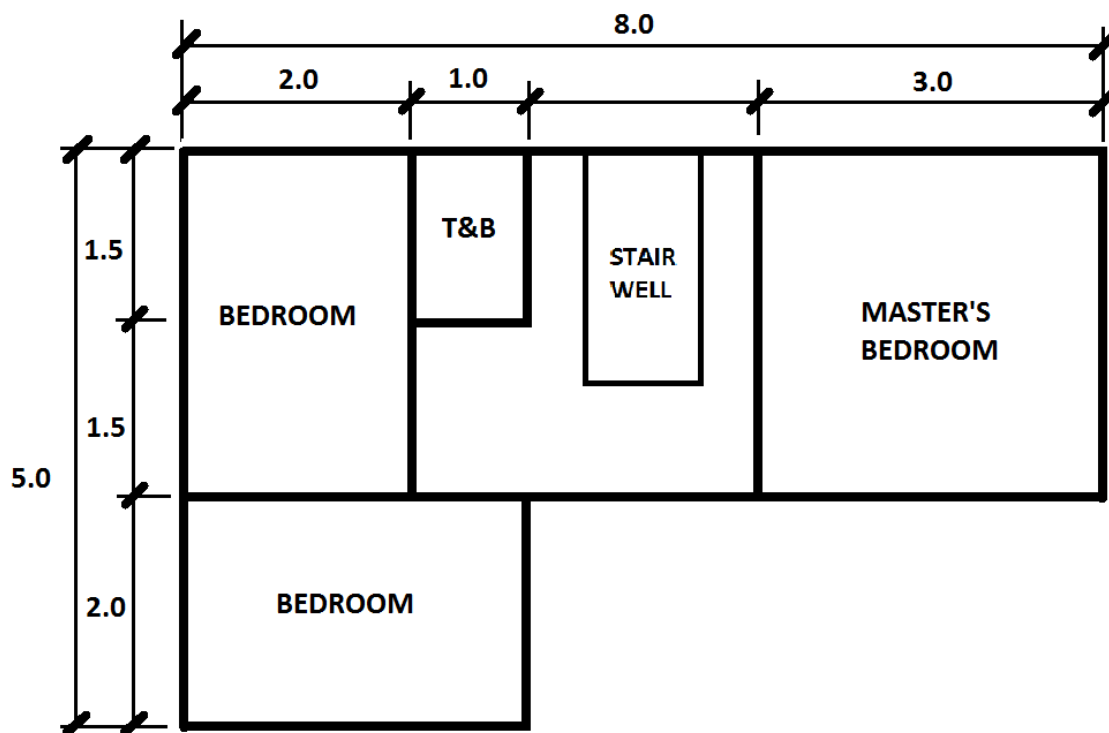
C. Identify what part of specific architectural design corresponds to measurements given below. Write your answers in the space provided.

- a. 1.20 square meters minimum
- b. 20 centimeters maximum
- c. 250 millimeters minimum
- d. 6.0 square meters minimum
- e. 0.10 T x 0.40 W. x 0.20 H
- f. 10% of the total floor square area
- g. minimum width of 0.70 cm. to 0.80 cm.
- h. minimum width of 0.80 cm.
- i. with 0.90 cm. to 1.00 m. width
- j. 0.015 mm thickness on both side

E *What I can do?*

Learning Task 6: Apply the standards

In a clean sheet of paper, redraw the given plan below. Use 1:100 scale. Give emphasis on using proper thickness of walls (interior and exterior plus plastering). Apply the recommended sizes for doors and windows and use the appropriate symbol for each. You may exclude the stair well.



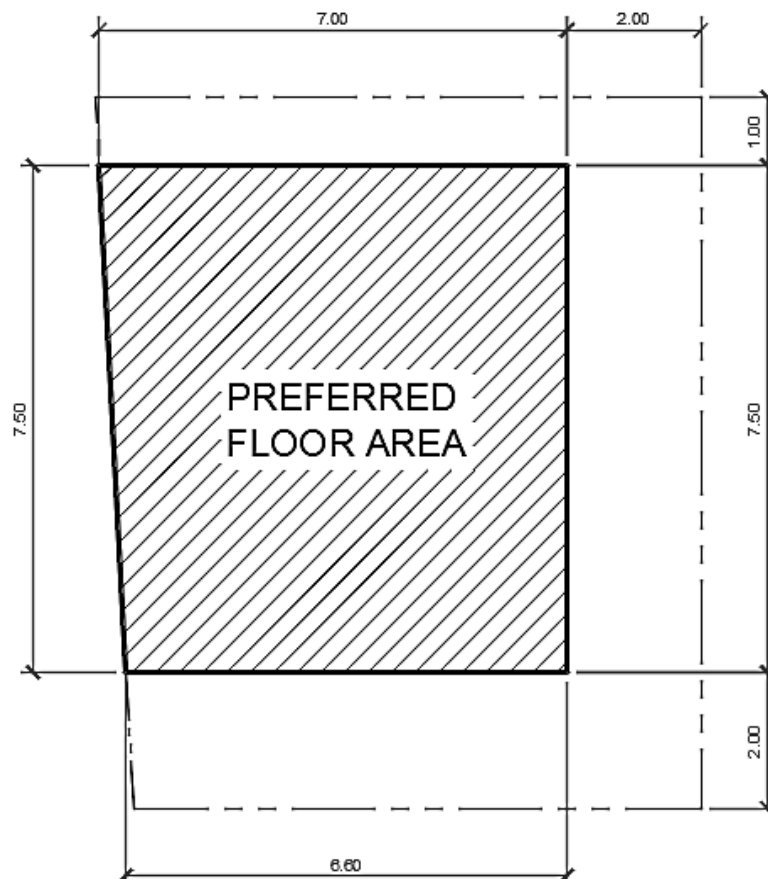
E *What else can I do?*

Learning Task 7: Draft Floor Plan

Using all the knowledge you have learned in this module, draft a two-storey floor plan using the given floor area as shown in the figure.

Instructions:

1. Redraw the given figure in a clean sheet of paper. Follow the measurements as provided. The floor area must only be within the shaded part.
2. Your floor plan must have the following requirements and provisions:
 - a. Total Floor area of 60 sq. m – 80 sq. m
 - b. 3 bedrooms
 - c. 2 toilet and bath (one GF and one for 2F)
 - d. Balcony
 - e. Garage (can house at least 1 car)



Your output will be graded using the given performance rubrics:

Criteria	7 points	5 points	3 points
Line Technique/Layout	Application of (all) various lines was according to standards and drawing was laid out properly	At least 3-5 lines were not according to standards and drawing was laid out fairly well	More than 5 lines were not according to standards and drawing was improperly laid out
Accuracy	All measurements and notations/symbols needed were accurately done	At least 3-5 measurements and notations/symbols needed were inaccurately done	More than 5 measurements and notations/symbols needed were inaccurately done
Criteria	3 points	2 points	1 point
Neatness	Finished output was neatly done, with no erasures nor any smudges	Erasures/smudges are observable on the finished output	Finished output has so many erasures/smudges present
Time Management	Finish the task ahead of the given time/date	Finish the task on the given time/date	Unable to finish the task on the given time/date

What I have learned?

Learning Task 8: Establish your understanding

In a clean sheet of paper, prepare a 250-word essay by using the guide questions listed below.

- ✓ How did you find the features of floor plan? What ideas will help you shape your dream house? How will you describe your dream house?
- ✓ Since you are about to draft your own plan, what are the things you should consider in designing your floor plan as you have learned from this module?
- ✓ What are the difficulties you have encountered in drafting your floor plan?



What can I achieve?

Learning Task 9: Posttest

Choose the letter of the best answer. Write the chosen letter on a separate sheet of paper.

1. What part of the house provides for and controls the flow of traffic into and out of a building?
A. Special Purpose Exit B. Service Area C. Entrance D. Foyer
2. What part of the house is generally located between bedrooms?
A. Toilet and Bath B. Dining Area C. Kitchen D. Foyer
3. _____ has access to the kitchen and the living room.
A. Bathroom B. Dirty Kitchen C. Dining Hall D. Dining Area
4. What will be the window width opening of a 4 x 5 bedroom?
A. 0.02 B. 0.20 C. 2.0 D. 20.0
5. Which of the following size will permit the installation of a door for every required exit doorway?
A. not less than 900mm. in width and not less than 2.00 meters in height
B. greater than 900mm. in width and not less than 2.00 meters in height
C. not less than 900mm. in width and greater than 2.00 meters in height
D. greater than 900mm. in width and greater than 2.00 meters in height
6. Which of the following is the recommended height of doors?
A. 2.00 m. B. 2.10 m. C. 2.20 m. D. 2.30 m.
7. Which of the following is the standard size of an entrance door opening?
A. 0.90 m. B. 0.80 m. C. 0.75 m. D. 1.00 m.
8. Minimum area for T&B = 1.2 sq. m; Minimum area for kitchen = _____.
A. 4.00 sq. m. B. 3.00 sq. m. C. 5.00 sq. m. D. 7.00 sq. m.
9. Which of the following are the three major appliances considered in the work triangle?
A. stove, sink, oven C. sink, stove, refrigerator
B. refrigerator, sink, oven D. oven, refrigerator, sink
10. According to the National Building Code, windows opening should be how many percent of the total floor square area?
A. 5 % B. 10 % C. 15 % D. 20 %
11. What does NBC stands for?
A. National Building Corporation C. National Building Code
B. Natural Building Code D. National Building Construction

- 86



Answer Key

LESSON 1 – Drafting Tools, Materials, and Equipment

WHAT IS NEW?

Learning Task 1: Word Hunt

BRUSH	COMPASS	DIVIDER
DRAWING	DRAWINGTABLE	EQUIPMENT
PEN	PROTRACTOR	SCALE
SHARPENER	SHIELD	TEMPLATE
TOOLS	TRACING	TRIANGLE

WHAT I KNOW?

Learning Task 2: Pretest

- | | |
|------|-------|
| 1. D | 6. D |
| 2. D | 7. B |
| 3. B | 8. C |
| 4. B | 9. A |
| 5. C | 10. A |

WHAT IS MORE?

Learning Task 4: Check It!

- | | | |
|-----------------|---------------------------|--------------------|
| 1. Triangle | 6. T-square | 11. Technical pen |
| 2. Divider | 7. Tracing Paper | 12. Divider |
| 3. Templates | 8. Triangular Scale/Scale | 13. Sharpener |
| 4. Masking Tape | 9. Drafting machine | 14. Erasing shield |
| 5. Compass | 10. Eraser | 15. Protractor |

WHAT CAN I ACHIEVE?

Learning Task 8: Posttest

1. French Curve
2. Compass
3. Triangle
4. Template
5. French Curve, Pen

LESSON 2 – Architectural Working Drawings

WHAT IS NEW?

Learning Task 1: Sneak Peek

- | | |
|---------------|---|
| A. | B. |
| 1. Floor Plan | 1. GSIS – Government Service Insurance System |
| 2. Elevation | 2. Knowledge Channel |
| 3. Roof | 3. TESDA – Technical Education and Skills Development Authority |
| 4. Living | 4. PTV – People’s Television Network |
| 5. Truss | 5. Pepsi Cola |
| 6. Footing | 6. MERALCO |
| 7. Draftsman | |
| 8. CAB | |
| 9. CHB | |
| 10. LAV | |

WHAT I KNOW?

Learning Task 2: Pretest

1. General Notes
2. Roof Plan
3. Window Schedule
4. Sewage System Plan
5. Construction Notes

WHAT IS IN?

Learning Task 3: Jumbled Letters

- | | | |
|-----------------|---------------|-----------------|
| 1. Architecture | 6. Site | 11. Rooms |
| 2. Lot | 7. Details | 12. Roofing |
| 3. House | 8. Specs | 13. View |
| 4. Design | 9. Dimensions | 14. Perspective |
| 5. Schedule | 10. Floor | 15. Location |

WHAT IS MORE?

Learning Task 5: Check this out!

- | | | |
|----------------------------------|--------------------------|-----------------|
| 1. Architectural Sheet | B. | |
| 2. Site Development Plan | 1. Elevation | 6. Floor |
| 3. Location Plan | 2. Finish Floor Line | 7. Ground Line |
| 4. Title Page and Index | 3. Down | 8. Not to Scale |
| 5. Schedule of Doors and Windows | 4. On-center | 9. Floor Line |
| | 5. Concrete Hollow Block | 10. At |

WHAT CAN I ACHIEVE?

Learning Task 9: Posttest

- | | | |
|------|-------|-------------------|
| 1. C | 6. C | 11. Kitchen Sink |
| 2. A | 7. A | 12. Bi-fold door |
| 3. D | 8. D | 13. Refrigerator |
| 4. B | 9. C | 14. Awning Window |
| 5. B | 10. B | 15. Vanity Sink |

LESSON 3 – Scaling and Dimensioning

WHAT IS NEW?

Learning Task 1: Recall the basics

- | | |
|------|-------|
| 1. T | 6. F |
| 2. T | 7. T |
| 3. T | 8. F |
| 4. T | 9. F |
| 5. T | 10. F |

WHAT I KNOW

Learning Task 2: Pretest

- | | |
|------|------|
| A. | B. |
| 1. D | 1. T |
| 2. B | 2. F |
| 3. A | 3. F |
| 4. C | 4. T |
| 5. B | 5. T |

WHAT IS MORE

Learning Task 4: Check this out!

- A.
- 12 sq. m.
 - $L = 0.5 \text{ m.}, W = 1 \text{ m.}$
 - $4.5 \text{ m.} \times 2.0 \text{ m.}$
- B.
- Dimension lines should be lined up and group together, first dimension line should be 10 mm, away from the object, space between dimension lines should be 10 mm. apart, overall dimension should be placed outside all other dimensions
 - Crowded and double entry of dimensions, measurements not written above the dimension line, spacing between dimension lines, text height
 - Dimensions should be drawn from the nearest points to be dimensioned
 - Offset origin of extension from the object

WHAT CAN I ACHIEVE?

Learning Task 8: Posttest

- | | |
|------|-------|
| 1. B | 6. B |
| 2. D | 7. C |
| 3. A | 8. B |
| 4. B | 9. B |
| 5. A | 10. C |

LESSON 4 – Draft Site Development Plan

WHAT IS NEW?

Learning Task 1: Crossword Puzzle

Across

1. Property Lines
2. Bearing

Down

1. Building Code
2. Protractor
3. Lot
4. Distribution
5. Zoning
6. Site

WHAT I KNOW

Learning Task 2: Can you still remember?

A.

- a. 35°
- b. 47°
- c. 65°
- d. 78°
- e. 138°
- f. 111°

B.

- a. 35°
- b. 73°
- c. 50°
- d. 18°

WHAT IS IN

Learning Task 3: Jumbled Letters

1. Site
2. Lot
3. Subdivision
4. Property lines
5. Setback

6. Orientation
7. Circulation
8. Ventilation
9. Zoning
10. Building code

WHAT IS MORE

Learning Task 4: Check this out!

A.

1. Site Development Plan
2. Zoning
3. Lot
4. Building Code
5. Zoning Laws

6. 3.00 m.
7. Setback
8. 2.00 m.
9. 4.00 m.
10. Property Lines

B.

1. N 30° E
2. N 60° W
3. S 70° E
4. S 80° W

WHAT CAN I ACHIEVE?

Learning Task 8: Posttest

2. C
3. B
4. A
5. B
6. D

7. A
8. D
9. A
10. D
11. D

LESSON 5 – Draft Floor Plan

WHAT I KNOW

Learning Task 3: Pretest

- | | | |
|----------|----------|-----------|
| 1. True | 6. True | 11. True |
| 2. False | 7. False | 12. False |
| 3. False | 8. False | 13. True |
| 4. True | 9. True | 14. True |
| 5. True | 10. True | 15. True |

WHAT IS IN

Learning Task 4: Sneak Peek

1. Area of MB = 9.0 sq. m.
2. Bedroom 1 = 6.0 sq. m.
Bedroom 2 = 6.0 sq. m.
3. Total Area of all Bedrooms = 21 sq. m.
4. T&B = 1.5 sq. m.
5. Total Floor Area = 24 sq. m.
6. Free space = 4.5 sq. m.

WHAT IS MORE

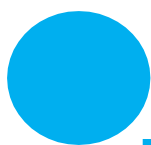
Learning Task 5: Check this out!

- | A. | B. | C. | |
|------|----------------------------|----------------|-------------------|
| 1. B | a. L-shaped, U-shaped, | 1. Kitchen | 6. Window opening |
| 2. C | Galley, Single - wall | 2. Wall | 7. T&B door |
| 3. A | b. Sink, refrigerator, | 3. Stair (run) | 8. Bedroom Door |
| 4. D | stove | 4. Bedroom | 9. Main door |
| 5. B | a. Main entrance, | 5. CHB for | 10. Wall |
| | Service entrance, special- | Interior wall | thickness |
| | Purpose entrance | | (with plaster) |

WHAT CAN I ACHIEVE?

Learning Task 9: Posttest

- | | | |
|------|-------|-------|
| 1. C | 6. B | 11. C |
| 2. A | 7. D | 12. C |
| 3. D | 8. B | 13. D |
| 4. B | 9. C | 14. C |
| 5. A | 10. B | 15. C |



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