CO Q0 ICT8 Mod5 Preparing and Interpreting Technical Drawing

Contempo (Caraga Regional Science High School)

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DEPARTMENT OF EDUCATION

Information and Communication Technology

Computer Systems Servicing (CSS)

Quarter 0-Module 5

Preparing and Interpreting Technical Drawing



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ICT-Computer Systems Servicing – Grade 8
Alternative Delivery Mode
Quarter 0-Module 5: Preparing and Interpreting Technical Drawing (PITD)
First Edition, 2020

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Introductory Message

This Self-Learning Module (SLM) is prepared so that you, our dear learners, can continue your studies and learn while at home. Activities, questions, directions, exercises, and discussions are carefully stated for you to understand each lesson.

Each SLM is composed of different parts. Each part shall guide you step-by-step as you discover and understand the lesson prepared for you.

Pre-tests are provided to measure your prior knowledge on lessons in each SLM. This will tell you if you need to proceed on completing this module or if you need to ask your facilitator or your teacher's assistance for better understanding of the lesson. At the end of each module, you need to answer the post-test to self-check your learning. Answer keys are provided for each activity and test. We trust that you will be honest in using these.

In addition to the material in the main text, Notes to the Teacher are also provided to our facilitators and parents for strategies and reminders on how they can best help you on your home-based learning.

Please use this module with care. Do not put unnecessary marks on any part of this SLM. Use a separate sheet of paper in answering the exercises and tests. And read the instructions carefully before performing each task.

If you have any questions in using this SLM or any difficulty in answering the tasks in this module, do not hesitate to consult your teacher or facilitator.

Thank you.

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What I Need to Know

This module was designed and written with you in mind. It is here to help you master the Technology and Livelihood Education (TLE). The scope of this module permits it to be used in many different learning situations. The language used recognizes the diverse vocabulary level of students. The lessons are arranged to follow the standard sequence of the course. But the order in which you read them can be changed to correspond with the textbook you are now using.

This module is lesson 4 Preparing and Interpreting Technical Drawing (PITD) with the learning objective:

Learning Outcome 1: Identify the different kinds of technical drawing
(TLE_IACSS912PITD-IIf-g13)

After going through this module, you are expected to:

1.1. Select correct technical drawing in accordance with the job requirement;
1.2. Segregate technical drawings in accordance with the types and kinds of drawings

Learning Outcome 2: Interpret technical drawing
(TLE_IACSS912PITD-IIg-h14)

After going through this module, you are expected to:

2.1. Recognize components, assemblies, or objects as required
2.2. Identify dimensions of the key features of the objects depicted in the drawing
2.3 Identify and interpret symbols used in the drawing
2.3. Check and validate drawing against job requirements or equipment in accordance with standard operating procedures

Learning Outcome 3: Prepare/ make changes to electrical/ electronic schematics and drawings
(TLE_IACSS912PITD-IIh-i15)

After going through this module, you are expected to:

3.1. Draw and identify correctly electrical/ electronic schematic

3.2. Identify correct drawing; select and use equipment in accordance with job requirements

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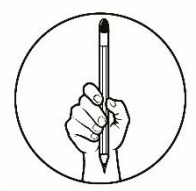
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Learning Outcome 4: Store technical drawings and equipment/ instruments (TLE_IACSS912PITD-IIj-16)

After going through this module, you are expected to:

4.1. Identify tasks to be undertaken for care and maintenance of drawings according to company procedures
4.2 Record technical drawings and prepare an inventory in accordance with company procedures
4.3 identify tasks to be undertaken for proper storage of instruments according to company procedures

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What I Know

Pretest

Directions: Choose the letter of the correct answer. Write the answer in your activity notebook.

1. What discipline of creating drawings that visually projected and communicates how things functions and being constructed?
   A. Graphics designing
   B. Grounding system
   C. Problem solving
   D. Technical drawing

2. Technical drawings are based on the basic principles of _____.
   A. Computation
   B. Malfunction
   C. Projection
   D. Workstation

3. It is drawn as multiview drawings which show flat illustrations of the main views of the subject.
   A. Axonometric projection
   B. Oblique projection
   C. Orthographic projection
   D. Technical projection

4. What do you call a three-dimensional drawings that have different varieties which are isometric, dimetric and trimetric?
   A. Axonometric projection
   B. Oblique projection
   C. Orthographic projection
   D. Technical projection

5. It is a 3D object displays two dimensions that contains one vanishing point.
   A. One-point perspective
   B. Three-point perspective
   C. Two-point perspective
   D. Zero-point perspective

6. It refers to an action in a business flow represented by a rectangle.
   A. Connector
   B. Decision
   C. Process
   D. Sub-process

7. A process step answerable by "yes" or "no" which represented by a diamond symbol.
   A. Connector
   B. Decision
   C. Process
   D. Sub-process

8. It is represented by a small circle and is labeled by letters.
   A. Connector
   B. Decision
   C. Process
   D. Sub-process

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9. Drawn in one direction, preferably from top to bottom to keep a flowchart clear.
   A. Arrow line
   B. Decision
   C. Process
   D. Sub-process

10. Represented by a rectangle with double lines on each side.
   A. Connector
   B. Decision
   C. Process
   D. Sub-process

11. It is an illustration of the components of a system using abstract, graphic symbols rather that realistic pictures?
   A. Electrical circuit
   B. Electronic circuit
   C. Schematic diagram
   D. Technical drawing

12. What is a passive two-terminal electrical component that implements electrical resistance as circuit elements?
   A. Capacitor
   B. Inductor
   C. Resistor
   D. Switch

13. It is a two-terminal electronic component that conducts current primarily in one direction which has low resistance in one direction and high resistance in the other.
   A. Battery
   B. Diac
   C. Diode
   D. Transistor

14. What instrument used to measure the current in a circuit?
   A. Ammeter
   B. Frequency meter
   C. Ohmmeter
   D. Voltmeter

15. What is an electrical polarity usually represented by + sign?
   A. Alternating current
   B. Direct current
   C. Negative polarity
   D. Positive polarity

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Lesson 4 Preparing and Interpreting Technical Drawing

This lesson gives us knowledge that needs precise and exact communication through preparation of a functional document interpreting technical drawing. Technical drawings subjectively interpreted their meaning, and their functions are being determined. Technical drawing should be understandable to be able to communicate and express what is being elaborated and symbolized.



What's In

Directions:

Read the statements below and fill in the blanks with the correct answer from the choices given. Write your answers in your activity notebook.

measuring instrument		wires	length
binary digit	letters	accurate	oxidation
rubber mats	rules	temperature	

1. A _____ is a device used to measure actual quantity of an object.
2. Micrometer is used to measure the diameter of _____ in circular mils.
3. Ruler/Foot rule is used to measure _____, width and thickness of short flat object and in sketching straight lines.
4. The term bit is an abbreviation of _____ and represents the smallest piece of data.
5. Computers used binary codes to represent and interpret _____, numbers and special characters with bits.
6. Proper handling is required to be able to have _____ results.
7. Proper lubrication is important to prevent damage due to corrosion and _____.
8. Placing _____ in workspaces can help protect tools from damage if accidentally dropped.
9. Some institutions may require you to clean your tools more often depending on their _____ and regulations.
10. You need to ensure your devices are stored in the proper _____ and humidity.

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What's New

Activity: Arrange Me!

Directions: Arrange the scrambled letters to come up with words related to technical drawing.

NICALCHET

ECROPOJINT

SPECTIREPVE

MOCSSAP

TARCHWOLF

MARGAID

NECTORCON

TRICALCELE

ORPSSEC

TROCINCELE

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What is It

Technical Drawing

Technical drawing is a discipline of creating drawings that visually projected. It communicates how things functions and being constructed. It is important for connecting ideas in the industry and engineering. To make drawings easy to comprehend, people use symbols, perspectives, units or measurements, notation systems, visual styles, and page layout.

Types of Drawings

There are three simple types of drawings;

1. The artistic drawing
2. The illustration
3. The technical drawing

Types of Technical Drawing

Technical drawings are based on the basic principles of projection. A projection is a drawing or symbol of an object on an imaginary plane. Projection involves four components;

1. Actual drawing
2. The viewer looking at the object
3. The imaginary projection plane
4. Imaginary lines which is the projector.

Parallel Projections

1. **Orthographic Projections** are drawn as multiview drawings which show flat illustrations of the main views of the subject.
2. **Oblique Projections** show the complete size of one view and are of two different projections which are half-scale and full-scale projection.
3. **Axonometric Projections** are three-dimensional drawings and are of three different varieties which are the isometric, dimetric and trimetric.

Perspective Projections

These are drawings which try to copy what the human eye really sees when it views an object. There are four types of perspective projections;

1. **Zero-point Perspective** is also called as elevation mainly a 2D image from one side of an object.

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2. **One-point Perspective** displays a 3D object in two dimensions. It contains one vanishing point.
3. **Two-point Perspective** contains two vanishing points.
4. **Three-point Perspective** contains three vanishing points.

The Perspective Terminologies and Symbols

The Horizontal Line

This is the line that illustrates the edge of the visual range. It should always be 100% straight.

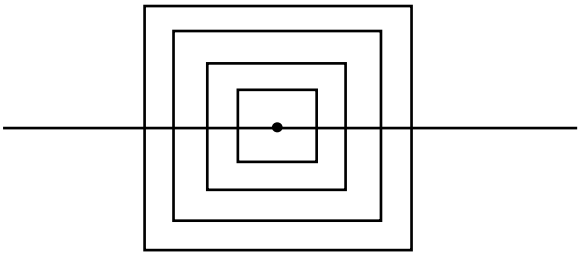
The Vertical Line

This line is very important because it affects the part of the object that is visible from top to bottom and from bottom to top.

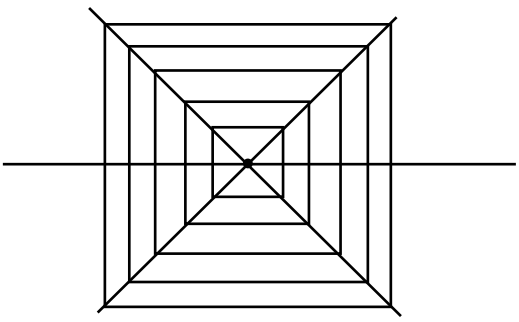
The Vanishing Point

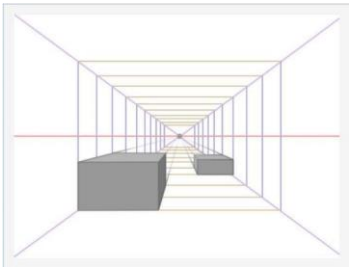
It is called the main point that illustrates the point on the canvas which all the lines have to meet. This indicates the **black** dot lies on the center of the canvas.

The Horizontal and Vertical Lines are lines use to create front-facing sides of the object.



Orthogonal Lines are lines that path from the vanishing point to the edge of the canvas. These lines are applicable for the one-point perspective.





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Purpose of Creating Technical Drawings

Everyone must realize the design process to understand technical drawings. The process is a systematic and organized steps used in completing a required design. All products that are to be manufactured, fabricated, assembled, constructed or subjected to any type of conversion process must come to a design first. For example, a residential house must be designed before it can be constructed.

The Design Process

It is an organized, step-by-step procedure in which mathematical and scientific based principles are followed such as:

1. Identify the problem or the need.
2. Formulate initial solutions to solve the problem.
3. Select the best possible solution.
4. Develop and test the samples or prototypes.
5. Improve the actual drawings.

Technical Drawing Working with Instruments

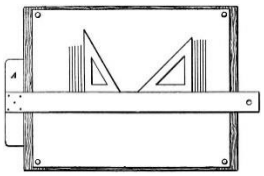
In technical drawing, lines are drawn using drawing tools and instruments. In order to have a good drawing, one must have complete set of standard tools so that the desired result will be done right and effective.

When acquiring technical drawing tool from the consistent supplier, proper care must be taken into consideration to maintain quality instrument.

Drawing Paper is a white paper on which an object is drawn and is available in different sizes.



Drawing Board is made of soft wood in a rectangular shape with a minimum size of 24” x 36”. It is used to support the drawing paper.



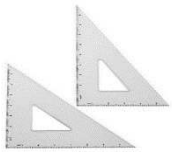
T-square is used to draw horizontal and vertical lines on a drawing paper. The vertical part of T is called as blade and the horizontal part of T is called as head.



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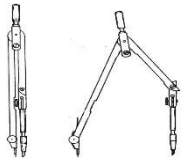
Triangle a 45° triangle and 30° x 60° triangle, used as straightedge to draw lines vertically and diagonally.



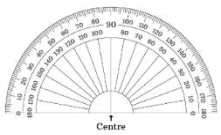
Compass is used to draw an arc or circle.



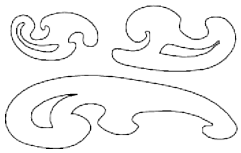
Divider is similar with compass except that it has a needle point on its leg. It is used to divide lines or curves into equal parts.



Protractor is used to measure and lay out angles in the drawing.



French Curves is a plastic instrument used to draw irregular shapes, curves and arcs which cannot be drawn by the compass.



Eraser is used to remove the unnecessary lines or spots drawn by mistake and wrong measurements.



Drawing Pencil is used to draw objects and lines in the drawing paper.



Ruler is made of plastic, wood or metal used to draw lines and measure distances.



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Schematic Diagrams and Drawings

A schematic diagram is an illustration of the components of a system using abstract, graphic symbols rather that realistic pictures. It is commonly ignoring all information that are not important to the main information the diagram is intended to deliver, and may include over basic elements in order to make the important meaning easier to understand.

In electrical and electronic industry, a schematic diagram is repeatedly used to describe the design of the instrument. Schematic diagrams are frequently used for the maintenance and repair of electronic system. Original schematics were made by hand, using standardized patterns or pre-printed adhesive symbols, but currently electronic design computerize software (EDA or electrical CAD) is often used. Below is a basic electrical and electronic schematic diagram.

Basic Electrical Schematic Diagram

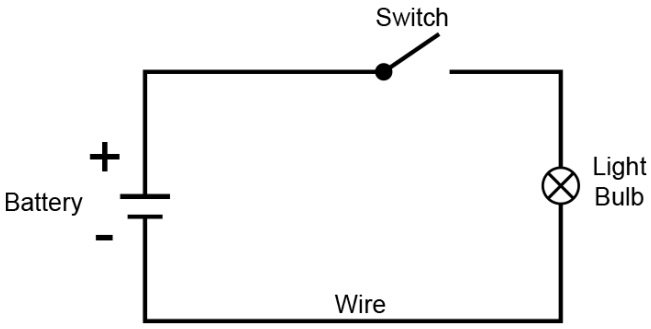


Figure 1 Basic Schematic Diagram

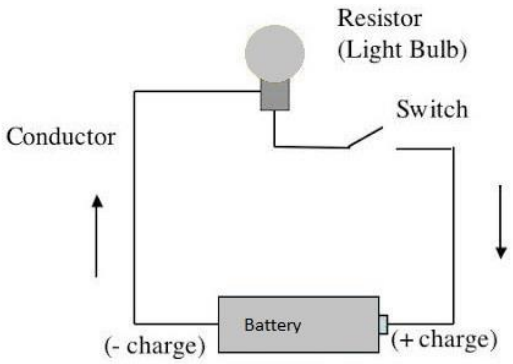


Figure 2 Basic Schematic Diagram

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Basic Electronic Schematic Diagram

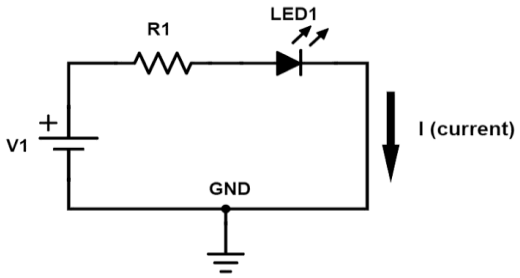


Figure 3 Basic Electronic Schematic Diagram

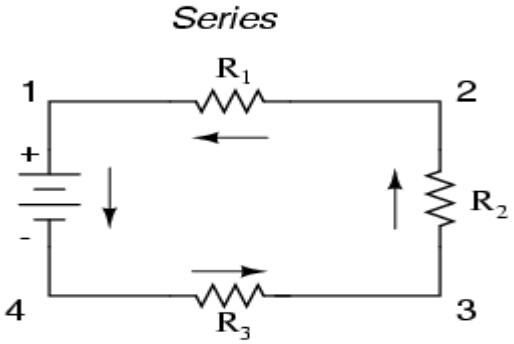


Figure 4 Basic Electronic Schematic Diagram (Series Circuit)

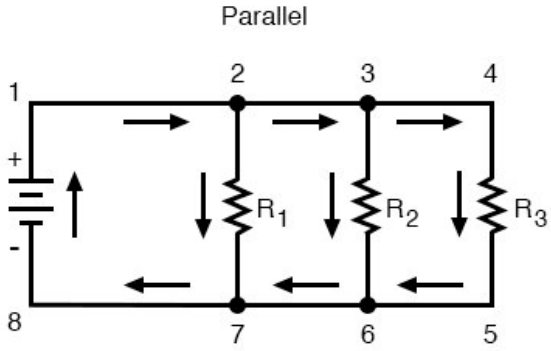


Figure 5 Basic Electronic Schematic Diagram (Parallel Circuit)

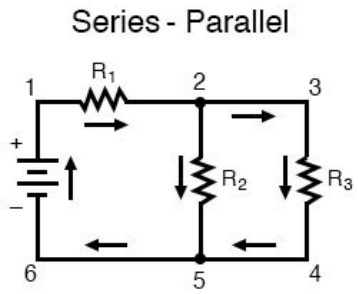


Figure 6 Basic Electronic Schematic Diagram (Series-parallel Circuit)

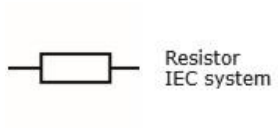
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Common Electrical/Electronic Schematic Symbols

Electrical and electronic diagrams consist of different symbols that need to be familiarized first before dealing with the preparation or reading of schematic diagrams. Here are some of the common symbols used in making a diagram.

Basic Electrical and Electronic Symbols (Passive Components)

Passive Components cannot introduce net energy into the circuit. They also can't rely on a source of power, except for what is available from the (AC) circuit they are connected to. As a consequence, they cannot amplify (increase the power of a signal), although they may increase a voltage or current (such as is done by a transformer or a resonant circuit).



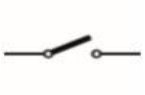
A resistor is a passive two-terminal electrical component that implements electrical resistance as circuit elements. In electronic circuits, resistors are used to reduce current flow, adjust signal levels, to divide voltages, bias active elements and terminate transmissions lines.



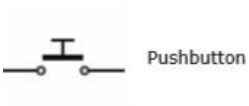
An inductor, also called a coil, chokes, or reactor, is a passive two-terminal electrical component that stores energy in a magnetic field when electric current flows through it.



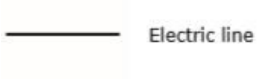
A device used to store an electric charge, consisting of one or more pairs of conductors separated by an insulator.



A device used to interrupt the flow of electrons in a circuit.



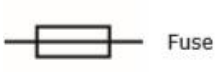
A push-button is a simple switch mechanism to control some aspects of a machine or a process. Buttons are typically made out of hard materials usually plastic or metal.



Is an electrical wiring where electricity flows.



Ground is the reference point in an electric circuit from which voltages are measured, a common return path for electric current, or a direct physical connection to the ground.



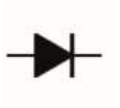
Fuse is an electrical safety device that operates to provide overcurrent protection of an electrical circuit.

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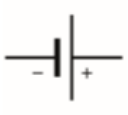
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Basic Electrical and Electronic Symbols (Active Components)

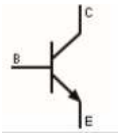
Active components rely on a source of energy (usually from the DC circuit) and usually can inject power into a circuit.



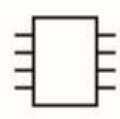
A diode is a two-terminal electronic component that conducts current primarily in one direction (asymmetric conductance); it has low resistance in one direction and high resistance in the other.



A battery is a device consisting of one or more electrochemical cells with external connections for powering electrical devices.



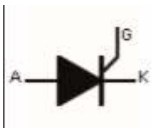
A transistor is a semiconductor device used to amplify or switch electronic signals and electrical power. It is composed of semiconductor material usually with at least three terminals for connection to an external circuit.



An integrated circuit or monolithic integrated circuit is a set of electronic circuits on one small flat piece of semiconductor material that is normally silicon.



Diac is given to a symbol of two diodes connected in parallel and opposite to one another and has two terminals.



Thyristor is a solid-state semiconductor device with four layers of alternating P- and N-type materials. It acts exclusively as a bistable switch, conducting when the gate receives a current trigger, and continuing to conduct until a voltage across the device is reverse biased, or until the voltage is removed.

Basic Electrical and Electronic Symbols (Electrical Test & Control Equipment)



Ammeter (from Ampere Meter) is a measuring instrument used to measure the current in a circuit. Electric current is measured in amperes (A), hence the name.



A voltmeter is an instrument used for measuring electrical potential difference between two points in an electric circuit. Analog voltmeters move a pointer across a scale in a proportion to the voltage of the circuit; digital voltmeters give a numerical display of voltage by use of an analog-to-digital converter.

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Ohmmeter is an electrical instrument that measures electrical resistance.

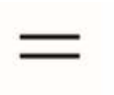


A frequency meter is an instrument that displays the frequency of a periodic signal.

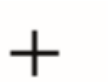


A wattmeter is an instrument for measuring the electric power (or the supply rate of electrical energy) in watts of any given circuit.

Basic Electrical and Electronic Symbols (Other Electrical Test & Control Equipment)



Direct current is an electric current flowing in one direction only.

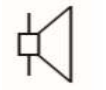


Positive polarity is an electrical polarity usually represented by + signs.

Negative polarity is an electrical polarity usually represented by - signs.



An antenna is the interface between radio waves propagating through space and electric currents moving in metal conductors, used with a transmitter or receiver.



Speaker is a device that can be connected to a computer that is capable for audio uses e.g. for an MP3 player.



Alternating current is an electric current that reverses its direction many times a second at regular intervals, typically used in power supplies.

Proper Care and Maintenance of Drawings According to Company Procedures

After creating drawings and sketches, it is vital to know important practices in preserving and storing paper drawings in the archive. It is very important to do such steps so that you can easily locate or find those drawings for future purposes.

Different types of papers react differently to sunlight, temperature and humidity. Over time, certain substances that either naturally come from the paper itself or maybe formed during the manufacturing process may become triggered and destroying the quality of the paper.

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Handle Infrequently

Unless it is done properly, constant handling of the drawings can really damage them. Dirt or naturally oils on hands and fingers can blotch or even destroy the drawing. Never bring food or beverages closer to a drawing because it can cause destruction when watery substance spill away to the paper.

Store Smartly when Preserving Drawings

Most works of art on paper should be stored flat rather than rolled up, because it can crumple or fold the image. It is necessary to put the drawings in large envelops to avoid damage. It is recommended that each drawing be stored in its own individual enclosure to minimize handling and the potential for ruining

Proper Storage for Technical Drawing Instruments

It is essential to store technical drawing instruments in a proper way to avoid damage and these can continuously give a precise and accurate outcome in creating drawings.

It is important to spend time to take proper care and maintenance of our drawing instruments in order to prolong service life.

1. **Pencil**
   Never sharpen the pencil on the drawing or close to any of the equipment. Always keep the lead sharp.

2. **T-square, Triangles, Protractor and French Curves**
   Do not use these instruments for any uneven purposes. Never cut paper along its working edge, these are made of plastics can easily be damaged.

3. **Ruler**
   Ruler should not be pierced with sharp pointed objects of either the divider or the compass when measurements are taken. Do not use ruler as a hammer or substitute to any instruments rather than its specific uses.

4. **Divider and Compass**
   Do not put oils or any lubricants to the joints of the legs of these instruments. Never use these instruments as pushpins in fastening the drawing paper on the drawing board. The needle points must be sharp and of equal length.

5. **Drawing Paper**
   It should be kept in flat form. Never crumpled or placed in wet area or cold place. Oslo papers and bond papers should be kept in a large envelop to maintain its smoothness. Masking tape or scotch tape, eraser and erasing shield should be kept together with other supplies to avoid losing it.

6. **Drawing Board**
   It should always be in a good drawing condition. The board should be clean before and after using. Do not put any marks on the board to maintain its smoothness.

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Technical Flow Chart

Flow chart is a diagrammatic representation of an algorithm and essential part of planning the system. Flow charts are widely used in technical analysis and programming for easy writing programs and explaining them to others. So, one of the most popular type of flow charts is Technical Flow Chart.

Technical flow chart is constructed from the set of commonly used elements. Different elements are used for different states in flow chart.

Flowchart

A flowchart is a diagram that uses graphic symbols to depict the nature and flow of the steps in a process. Another name for this tool is "flow diagram." It shows the steps as simple rectangles, with directional connectors that shows the sequence of steps. It graphically represents process from beginning to end. Because flowchart is simple, it allows viewers to follow through the flow easier and without experiencing complications.

Flowchart consists of only simple and standard symbols such as, the simple rectangles, ovals, diamonds, and other shapes which is easy to understand and only need to take very little time to learn.

Flowchart symbols are universally recognized across multiple disciplines, and will allow us to communicate a great deal of information accurately and efficiently.

Flowchart shows every step of a process in clear and explicit detail. The top-down and left-to-right flow of steps on the chart have a natural order and are easy to follow.

The Elements of a Flowchart

A flowchart is commonly used by system analysts to visualize the series of processes in a business system. A flowchart is a useful tool to design an efficient business system and to troubleshoot or improve an existing system. It consists of elements such as the terminator, process, sub process, decision, arrow lines, and connectors.

1. Terminator is represented by a small rectangle with curved corners. It appears at the start and at the end of a flowchart. The end terminator appears only once on a single flowchart.

2. Process refers to an action in a business process and is represented by a rectangle. It can be described clearly and concisely by using a single verb noun phrase. For example, "Order Office Supplies." The same level of detail must be kept in processes on a single flowchart.

3. Sub-process is a major process that could be broken up into simpler processes developed into another flowchart. It is represented by a rectangle with double lines on each side.

4. Decision is a process that can answer a decision of "yes" or "no" which requires a decision box. It is represented by a diamond.

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5. Connector ensures that the processes are connected logically and correctly on several pages. It is represented by a small circle or a connector box and is labeled using letters.

6. Arrow Lines are drawn in one direction preferably from top to bottom to keep a flowchart clear. Avoid arrow lines that loop because this could indicate redundancy in the business process.

When can you use flowcharts?

At the beginning of your process improvement efforts, flowchart helps you and others involved in the process to understand how it currently works. You may find it helpful to compare this flowchart with a diagram of the way the process is supposed to work. Later, you will develop a flowchart of the modified process again, to record how it actually functions. At some point, you may want to create an ideal flowchart to show how you would ultimately like the process to be performed.

Benefits of Using Flowcharts

1. Promote understanding of a process

   People may have different ideas about how a process works. It can help you gain agreement about the sequence of steps. It can promote understanding in a way that written procedures cannot do. One good flowchart can replace pages of words.

2. Provide a tool for training employees

   Because of the way they visually lay out the sequence of process steps, flowcharts can be very helpful in training employees to perform the process according to standardized procedures.

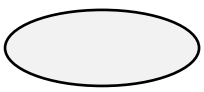
3. Identify problem areas and opportunities for process improvement

   Once you break down the process steps and diagram them, problem areas become more visible. It is easy to spot opportunities for simplifying and refining your process by analyzing decision points, redundant steps, and rework loops.

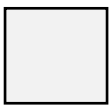
Basic Flowchart Symbols

The symbols that are commonly used in flowcharts have specific meanings and are connected by arrows indicating the flow from one step to another:

1. **Oval** indicates both the starting point and the ending point of the process steps.

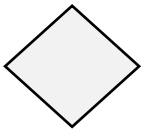


2. **Box** represents an individual step or activity in the process.

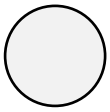


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3. **Diamond** shows a decision point, such as yes/no or go/no-go. Each path emerging from the diamond must be labeled with one of the possible answers.



4. **Circle** indicates that a particular step is connected to another page or part of the Flowchart. A letter placed in the circle clarifies the continuation.



5**. Triangle** shows where an in-process measurement occurs.

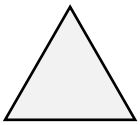
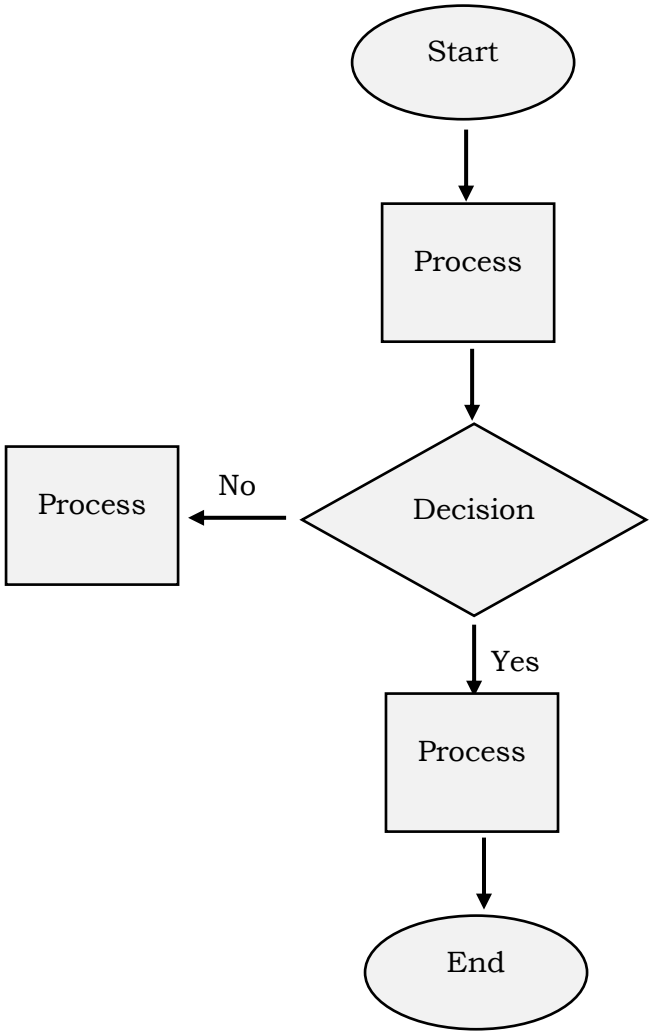
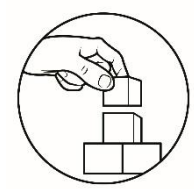


Fig 1. Example of a Simple Flowchart



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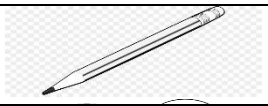
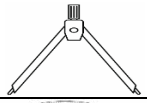
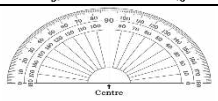
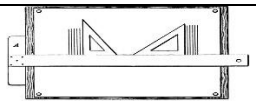


What's More

Activity 1: Knowing Me 'n You!

Directions: Choose from the technical drawing instruments inside the box that corresponds to the illustration in the column. Write your answer in your activity notebook.

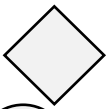
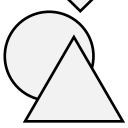
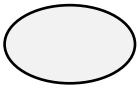
Drawing board	**Compass**	**Drawing pencil**
Protractor	**French curves**	

Name of Instrument	Technical Drawing Instruments
	1. 
	2. 
	3. 
	4. 
	5. 

Activity 2: Match Me!

Directions:

Match the descriptions in column A with their symbols in column B. Write your answer in your activity notebook.

Column A	Column B
1. Connector	a. 
2. Decision	b. 
3. Starting point and the ending point.	c.
4. In-process measurement occurs.	d. 
5. Process	e. 

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Activity 3:

Directions: Write **True** if the statement is correct and **False** if it is not. Write your answer in your activity notebook:

1. Different types of papers react differently to sunlight, temperature and humidity.
2. Unless it is done properly, constant handling of the drawings can really damage them.
3. Dirt or naturally oils on hands and fingers can blotch or even destroy the drawing.
4. It is necessary to put the drawings in dusty cabinets to avoid damage.
5. It is not important to spend time to take proper care and maintenance of our drawing instruments.
6. Never sharpen the pencil on the drawing or close to any of the equipment.
7. Never cut paper along its working edge, these are made of plastics can easily be damaged.
8. Drawing papers should be kept in flat form.
9. Dirt or naturally oils on hands and fingers can blotch or even destroy the drawing.
10. Different types of papers are safe to sunlight, temperature and humidity.



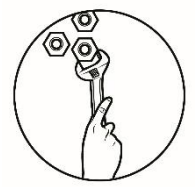
What I Have Learned

Directions: Read each statement and fill in the blank with the correct answer. Write it in your activity notebook.

1. Technical drawing is a discipline of creating drawings that visually _____.
2. Axonometric Projections are _____ drawings and are of three different varieties.
3. The three-point perspective contains three _____ points.
4. A flowchart is a diagram that uses _____ to depict the nature and flow of the steps in a process.
5. In technical drawing, lines are drawn using _____ tools and instruments.
6. T-square is used to draw _____ and vertical lines on a drawing paper.
7. A schematic diagram is repeatedly used to _____ the design of the instrument.
8. Switch is a device used to _____ the flow of electrons in a circuit.
9. Ammeter is a measuring instrument used to measure the _____in a circuit.
10. Unless it is done properly, constant _____ of the drawings can really damage them.

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What I Can Do

Directions: Choose between the electrical or electronic schematic diagram either series, parallel, series-parallel circuit and using the basic symbols draw it on a piece of bond paper.

1. Basic electrical schematic diagram.

2. Basic electronic schematic diagram.

    a. Series circuit
    b. Parallel circuit
    c. Series-parallel circuit



Assessment

Post test

Directions: Choose the letter of the correct answer. Write the answer in your activity notebook.

1. It is an illustration of the components of a system using abstract, graphic symbols rather that realistic pictures?
    C. Electrical circuit
    D. Electronic circuit
    C. Schematic diagram
    D. Technical drawing

2. What is a passive two-terminal electrical component that implements electrical resistance as circuit elements?
    A. Capacitor
    B. Inductor
    C. Resistor
    D. Switch

3. It is a two-terminal electronic component that conducts current primarily in one direction which has low resistance in one direction and high resistance in the other.
    A. Battery
    B. Diac
    C. Diode
    D. Transistor

4. What instrument used to measure the current in a circuit?
    A. Ammeter
    B. Frequency meter
    C. Ohmmeter
    D. Voltmeter

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5. What is an electrical polarity usually represented by + sign?
   A. Alternating current
   B. Direct current
   C. Negative polarity
   D. Positive polarity

6. What discipline of creating drawings that visually projected and communicates how things functions and being constructed?
   C. Graphics designing
   D. Grounding system
   C. Problem solving
   D. Technical drawing

7. Technical drawings are based on the basic principles of _____.
   A. Computation
   B. Malfunction
   C. Projection
   D. Workstation

8. It is drawn as multiview drawings which show flat illustrations of the main views of the subject.
   A. Axonometric projection
   B. Oblique projection
   C. Orthographic projection
   D. Technical projection

9. What do you call a three-dimensional drawings that have different varieties which are isometric, dimetric and trimetric?
   A. Axonometric projection
   B. Oblique projection
   C. Orthographic projection
   D. Technical projection

10. It is a 3D object displays two dimensions that contains one vanishing point.
   A. One-point perspective
   B. Three-point perspective
   C. Two-point perspective
   D. Zero-point perspective

11. It refers to an action in a business flow represented by a rectangle.
   C. Connector
   D. Decision
   C. Process
   D. Sub-process

12. A process step answerable by "yes" or "no" which represented by a diamond symbol.
   A. Connector
   B. Decision
   C. Process
   D. Sub-process

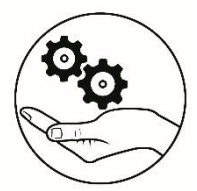
13. It is represented by a small circle and is labeled by letters.
   A. Connector
   B. Decision
   C. Process
   D. Sub-process

14. Drawn in one direction, preferably from top to bottom to keep a flowchart clear.
   A. Arrow line
   B. Decision
   C. Process
   D. Sub-process

15. Represented by a rectangle with double lines on each side.
   A. Connector
   B. Decision
   C. Process
   D. Sub-process

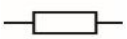
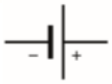
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Additional Activities

Directions: Identify the different elements of a flowchart through the given symbols below and give its functions. Write the answer in your activity notebook.

		Elements	Functions
1.		_____	_____
2.		_____	_____
16.		_____	_____
17.		_____	_____
18.		_____	_____
19.		_____	_____
20.		_____	_____
21.		_____	_____
22.		_____	_____
23.		_____	_____

1.

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Answer Key

Assessment

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

What I Have Learned

1. Projected
2. Three-dimensional
3. Vanishing
4. Graphic symbol
5. Drawing
6. Horizontal
7. Describe
8. Interrupt
9. Current
10. Handling

What's More

Activity 1: Know Me

1. Drawing pencil
2. French curves
3. Compass
4. Protractor
5. Drawing board

Activity 2: Match Me

1. B
2. A
3. D
4. C
5. E

Activity 3

1. True
2. True
3. True
4. False
5. False
6. True
7. True
8. True
9. True
10. False

What I Know

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

Additional Activities

	Elements	Functions
1.	Resistor	A resistor is a passive two-terminal electrical component that implements electrical resistance as circuit elements.
2.	Switch	A device used to interrupt the flow of electrons in a circuit.
3.	Battery	A battery is a device consisting of one or more electrochemical cells with external connections for powering electrical devices.
4.	Ground	Ground is the reference point in an electric circuit from which voltages are measured, a common return path for electric current, or a direct physical connection to the ground.
5.	Capacitor	A device used to store an electric charge, consisting of one or more pairs of conductors separated by an insulator.
6.	Fuse	Fuse is an electrical safety device that operates to provide overcurrent protection of an electrical circuit.
7.	Diode	A diode is a two-terminal electronic component that conducts current primarily in one direction.
8.	Ammeter	Ammeter (from Ampere Meter) is a measuring instrument used to measure the current in a circuit.
9.	Ohmmeter	Ohmmeter is an electrical instrument that measures electrical resistance.
10.	Negative Polarity	Negative polarity is an electrical polarity usually represented by - signs.

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