9

Technical Vocational Education

Computer Systems Servicing

Quarter 1-Week 1-Module 1

Assemble Computer Hardware

SPTVE_CSYS9- ICCSIa-c-1

Technical Vocational Education Computer Systems Servicing – Grade 9
Alternative Delivery Mode
Quarter 1 Week 1 Module 1 - Assemble Computer Hardware
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Introductory Message

For the Facilitator:

Welcome to the Technical Vocational Education-Computer Systems Servicing 9 Project CAP-LRE Alternative Delivery Mode (ADM) Module on Assemble Computer Hardware.

This module was collaboratively designed, developed and reviewed by educators both from public and private institutions to assist you, the teacher or facilitator in helping the learners meet the standards set by the K to 12 Curriculum while overcoming their personal, social, and economic constraints in schooling.

This learning resource hopes to engage the learners into guided and independent learning activities at their own pace and time. Furthermore, this also aims to help learners acquire the needed 21st century skills while taking into consideration their needs and circumstances.

In addition to the material in the main text, you will also see this box in the body of the module:

Notes to the Teacher
This contains helpful tips or strategies that will help you in guiding the learners

As a facilitator, you are expected to orient the learners on how to use this module. You also need to keep track of the learners' progress while allowing them to manage their own learning. Furthermore, you are expected to encourage and the learners as they do the tasks included in the module.

For the Learner:

Welcome to the Technical Vocational Education-Computer Systems Servicing 9 Project CAP-LRE Alternative Delivery Mode (ADM) Module on Assemble Computer Hardware

This module was designed to provide you with fun and meaningful opportunities for guided and independent learning at your own pace and time. You will be enabled to process the contents of the learning resource while being an active learner.

This module has the following parts and corresponding icons:

 ***What I Need to Know***	This will give you an idea of the skills or competencies you are expected to learn in the module.
 ***What I Know***	This part includes an activity that aims to check what you already know about the lesson to take. If you get all the answers correctly (100%), you may decide to skip this module.

 **What's In**	This is a brief drill or review to help you link the current lesson with the previous one.
 **What's New**	In this portion, the new lesson will be introduced to you in various ways; a story, a song, a poem, a problem opener, an activity or a situation.
 **What is It**	This section provides a brief discussion of the lesson. This aims to help you discover and understand new concepts and skills.
 **What's More**	This comprises activities for independent practice to solidify your understanding and skills of the topic. You may check the answers to the exercises using the Answer Key at the end of the module.
 **What I Have Learned**	This includes questions or blank sentence/paragraph to be filled in to process what you learned from the lesson.
 **What I Can Do**	This section provides an activity which will help you transfer your new knowledge or skill into real life situations or concerns.
 **Assessment**	This is a task which aims to evaluate your level of mastery in achieving the learning competency.
 **Additional Activity**	In this portion, another activity will be given to you to enrich your knowledge or skill of the lesson learned.
 **Answer Key**	This contains answers to all activities in the module.

At the end of this module, you will also find:

References- This is a list of all sources used in developing this module.

The following are some reminders in using this module:

1. Use the module with care. Do not put unnecessary mark/s on any part of the module. Use a separate sheet of paper in answering the exercises.
2. Don't forget to answer *What I Know* before moving on to the other activities included in the module.
3. Read the instruction carefully before doing each task.
4. Observe honesty and integrity in doing the tasks and checking your answers.
5. Finish the task at hand before proceeding to the next.
6. Return this module to your teacher/facilitator once you are through with it.

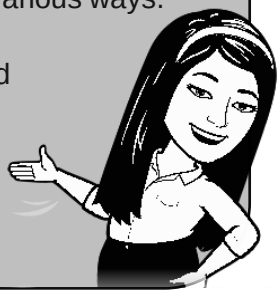
If you encounter any difficulty in answering the tasks in this module, do not hesitate to consult your teacher or facilitator. Always bear in mind that you are not alone.

We hope that through this material, you will experience meaningful learning and gain deep understanding of the relevant competencies. You can do it!

What I Need to Know

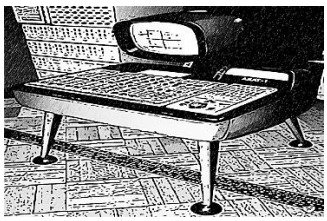
This module encourages you to be familiar on how to validate one's work for quality improvement work. Different activities are provided for you to be able to:

1. Identify the different types of computer.
2. Classify the different types of computers according to various ways.
3. List the different types of computers.
4. Identify the different factors to consider in planning and designing a personal computer (PC).
5. Plan and design a personal computer.
6. Give importance with the essential components when designing a PC.

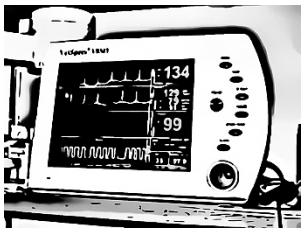


What I Know

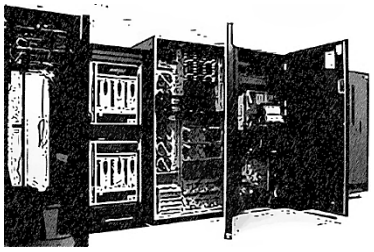
Directions: Choose the best answer inside the box that best describes the illustrations below by arranging the underlined jumbled letters. Write your answer in the given answer sheet.

1. 

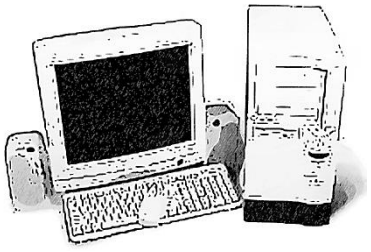
L O A N A G COMPUTER

2. 

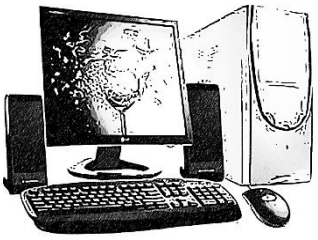
D H Y I B R COMPUTER

3. 

E M M A I N F R A COMPUTER

4. 

M P T R O C C R I U E M O

5 

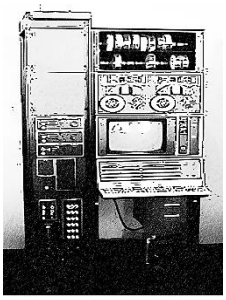
P K T O D E S COMPUTER

6. 

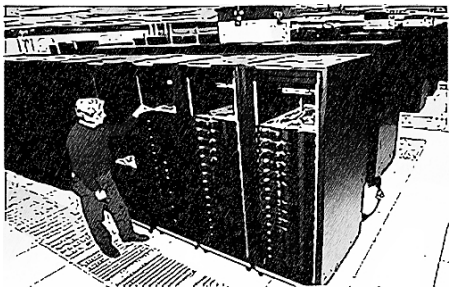
O P L A P T COMPUTER

7. 

N A L S O E P R L D I G A T I S S I S T A N A T

8. 

I N M I COMPUTER

9. 

U P E S R O M C P T E S R U

10. 

E L A R A B W E COMPUTER

What's In

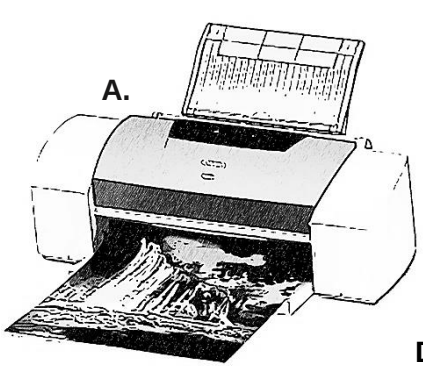
Directions: Write **O** if the given hardware is an output device, **I** if it is an Input Device, **P** if it is a pointing device, and **S** if it is a storage device. Write your answer in the given answer sheet.

___1. CRT (Cathode Ray Tube)
___2. Digitizer Tablet
___3. DVC/CD Disc
___4. flash drive
___5. hard drive
___6. Ink-Jet
___7. Keyboard
___8. Laser Printer
___9. LED (Light-Emitting Diodes)
___10. Light Pen
___11. Mouse
___12. Scanning Devices
___13. Speakers
___14. Touch screen
___15. Voice- Input Devices

What's New

A **computer** is a machine that accepts data as input, processes that data using programs, and outputs the processed data as information. Many computers can store and retrieve information using hard drives.

Directions: Match the parts of the computer listed below by writing the letter of the correct answer the given answer sheet.



PARTS OF THE COMPUTER

1. Keyboard - _____
2. Monitor - _____
3. Mouse - _____
4. Printer - _____
5. System unit - _____

What is It

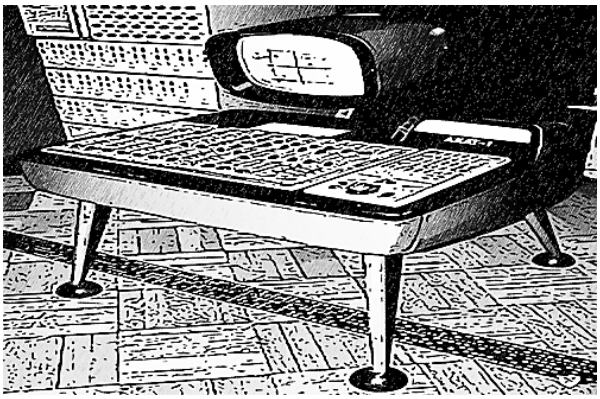
Proper planning on what to buy is very important in computer system including the specification. This is for computer before and today comes with different sizes, shapes, and function. Familiarize yourselves with the different type of computers.

TYPES OF COMPUTERS

A. Base on Principle of Operation:

Types of the computer by structure, speed, architecture:

1. **Analog of computer**
   - ✓ These are almost extinct today
   - ✓ Can perform several mathematical operations simultaneously.
   - ✓ It uses continuous variables for mathematical operations and utilizes mechanical or electrical energy.



Example:

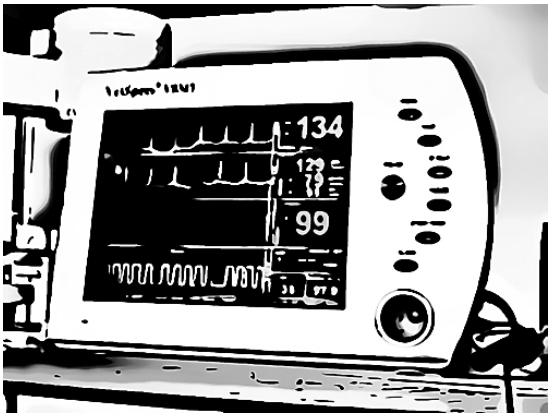
- *Thermometer*
- *Traditional Clock*

2. ***Digital Computer***
   - ✓ It uses a binary number system in which there are only two digits 0 and each one is called a bit. It
   - ✓ can perform arithmetic operations like addition, subtraction, multiplication and division, and also logical operations.

Example:

- *Accounting machines*
- *Calculators*

3. Hybrid Computer



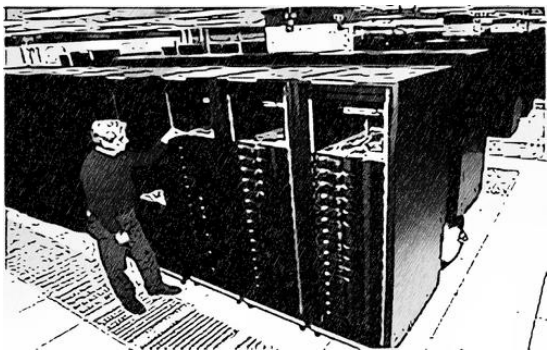
- ✓ These computers are a combination of both digital and analog computers.
- ✓ The digital segments perform process control by conversion of analog signals to digital ones.

Example:

- In the hospital's ICU (Intensive Care Unit)
- Devices used in petrol pump

B. Based on Configuration (Size and Capability)

1. Supercomputers

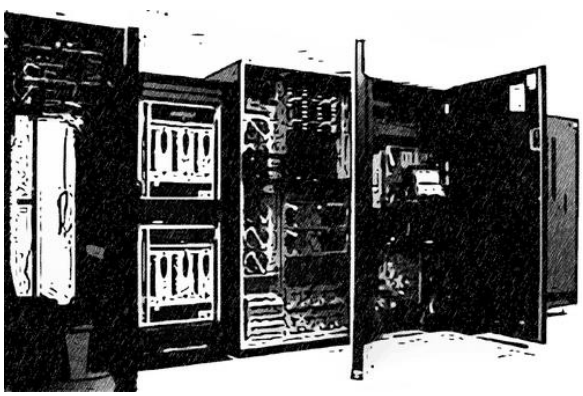


- ✓ The highly calculation-intensive tasks.
- ✓ Quantum physics, mechanics, weather forecasting, molecular theory are best studied utilizing supercomputers.

Example:

- GRAPE (Gravity Pipe) – used for gravitational computations
- Anton – used for studying molecular dynamics:
- Cray XT5 – used for various applications that need great ability to
- process information. One of the world's most powerful supercomputers

2. Mainframe



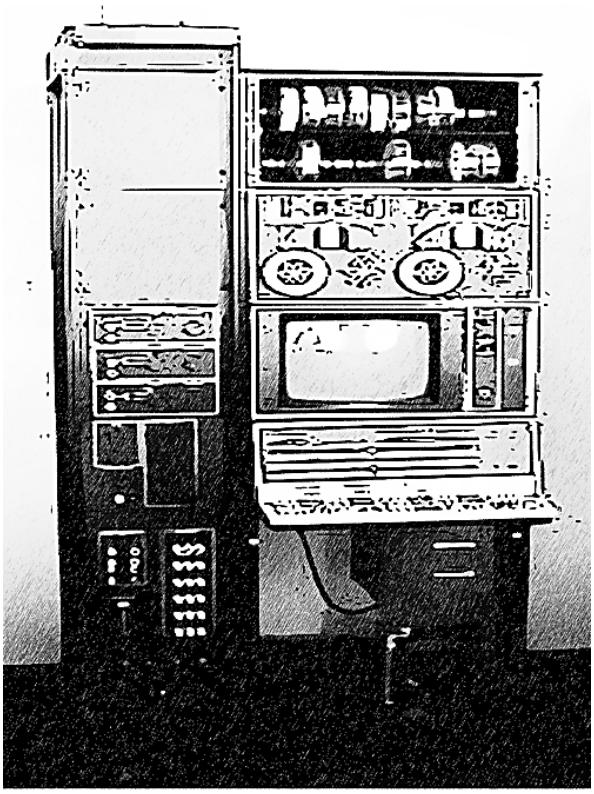
- ✓ Large organizations use mainframes for highly critical applications such as bulk data processing and ERP.
- ✓ Most of the mainframe computers have the capacities to host multiple operating systems and operate as several virtual machines and can thus substitute for several small servers.

Example:

- Bank transactions
- Census and consumer statistics
- Airline ticketing
- Large management and payroll needs

3. Minicomputer

- ✓ also called mid-range systems or workstations.
- ✓ They took up the space that would be needed for a refrigerator or two and used transistor and core memory technologies.



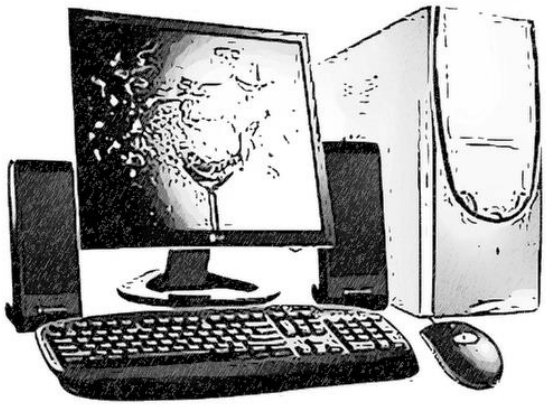
4. Microcomputers

- ✓ A computer with a microprocessor and its central processing unit is known as a microcomputer.
- ✓ Supplemented with a keyboard and a mouse, microcomputers can be called personal computers.
- ✓ These computers can fit on desks or tables and serve as the best choices for single-user tasks.

TYPES OF MICROCOMPUTER

a. Desktops

- ✓ intended to be used on a single location
- ✓ The spare parts of a desktop computer are readily available at relatively lower costs.
- ✓ Power consumption is not as critical as that in laptops.
- ✓ Desktops are widely popular for daily use in workplaces and households



b. Laptop/Netbook Computers

- ✓ are miniaturized and optimized for mobile use.
- ✓ Run on a single battery or an external adapter that charges the computer batteries.
- ✓ Enabled with an inbuilt keyboard, touchpad acting as a mouse, and a liquid crystal display.

c. Personal Digital Assistants (PDAs)

- ✓ A handheld computer and popularly known as a palmtop.
- ✓ It has a touch screen and a memory card for storage of data.
- ✓ PDAs can also be effectively used as portable audio players, web browsers, and smartphones.
- ✓ Most of them can access the Internet utilizing Bluetooth or Wi-Fi communication.

d. Wearable Computer

- ✓ A record-setting step in the evolution of computers was the creation of wearable computers.
- ✓ These computers can be worn on the body and are often used in the study of behavior modeling and human health.
- ✓ Are of great help in tracking human actions.

  Example:
  - Smart Watch
  - Smart Jacket
  - AR/VR (Augmented Reality/ Virtual Reality)
  - Smart Glasses

Activity:

Directions: Identify the given computer devices below. Write the letter of the correct answer in the given answer sheet.

A. Base on Principles of Operation B. Base on Configuration

___1. Analog computer
___2. Desktop computer
___3. Digital Computer
___4. Hybrid computer
___5. Laptop/Netbook Computer
___6. Mainframe
___7. Microcomputer
___8. Minicomputer
___9. Supercomputer
___10. Wearable computer

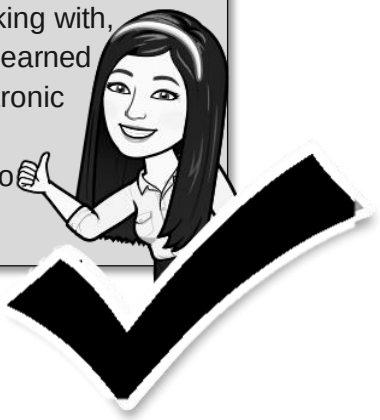
What's More

Understanding and familiarizing yourselves with the different types of computer is important, that is for you to know how are you going to plan and prepare prior to assembling the computer system.

As a part of this lesson, to avoid injuries and accidents, **Occupational Health and Safety (OHS) Policy** is a student should know. This is on how to behave when working inside the computer laboratory, as well as to follow the implemented safe way of accomplishing every task.

For your protection as well as the people you are working with, and of the devices you are using, safety practices should be learned early and always stick in working with any electrical and electronic devices including personal computers and its peripherals.

Analyze the following some precautionary measures to take before working with any computer equipment below.



Independent Activity1:

Directions: Write **T** if the statement is true and **F** if it is false. Write your answer in the given answer sheet.

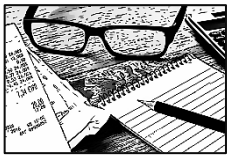
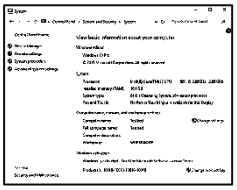
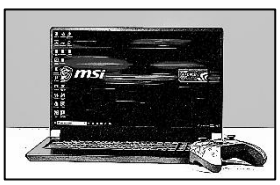
___1. Always pull the cable connector on the handle and not on the cable itself
___2. Always ground or discharge yourself before touching any part of the computer.
___3. Always power off and unplug the computer before working on it.
___4. Be careful with the tools that may cause a short circuit.
___5. Contingency measures during workplace accidents, fire, and other emergencies are recognized.
___6. Use excessive force if things do not quite slip into place.
___7. Work alone so that there is someone who can take care of you in case of an accident or emergency.

___8. Hazard/risks in the workplace and their corresponding indicators are identified to minimize or eliminate risk to co-workers, workplace, and environment.
___9. Hold the components by edges and touch the IC's.
___10. Make sure that the pins are properly aligned when connecting a cable connector.
___11. Personal protective equipment is correctly used by organization procedures and practice.
___12. Read and follow instructions on the manual carefully.
___13. Take away any liquid such as mineral water or soft drinks near your working area or near computers.
___14. Take necessary precautions to protect the component of the computer from damaged caused by Electrostatic Discharge (ESD).
___15. Use only school shoes when standing on the ground or a concrete floor.

Independent Activity2:

Directions: Supply the missing column with the correct answer. Write your answer in the given answer sheet

Cost	Intended to use	Life span	Personal Preferences	Reputation

Factors to Consider when Planning a Personal Computer		
	1.	decide how much you can afford to spend on the entire project. Later on, you can use this budget to help you make decisions about individual components
	2.	Plan in doing with the device/materials/machine. Is it for gaming, online class, business, or work.
	3.	To check the reviews, newsgroups, and message boards to see what others think of the components you are considering.
	4	How long do you want the computer to last?
	5	That is your right to choose which companies' parts will go into your computer, because It's your machine

What I Have Learned

Directions: Answer the following questions.

1. In your own opinion, what are the other factors that you can consider in planning and designing your computer?

   _____
   _____
   _____

2. Cite some other safety precautions you can implement to avoid accidents or injuries. Give at least five(5).

   _____
   _____
   _____
   _____
   _____
   _____

What I Can Do

Directions: With the supervision and help of your parents/siblings, plan and design your personal computer by answering the following guide questions.

Guide Questions	Answer
1. Why do you need to build your computer?	
2. Specify your needs in building your computer	
a. How much is your budget?	
b. How long do you want to last your computer?	
c. What Operating System do you prefer?	
d. Do you consider a high-end computer? Why?	

Assessment

A. Directions. Choose the letter of the correct answer. Write your answer in the given answer sheet.

1. It uses continuous variables for mathematical operations and utilizes mechanical or electrical energy.
   a. analog b. hybrid c. mainframe d. microcomputer

2. Large organizations uses _____ for highly critical applications such as bulk data processing and ERP.
   a. analog b. hybrid c. mainframe d. microcomputer

3. These computers are a combination of both digital and analog computers.
   a. analog b. hybrid c. mainframe d. microcomputer

4. A computer with a microprocessor and its central processing unit is known as a _____.
   a. analog b. hybrid c. mainframe d. microcomputer

5. The power consumption of this type of computer is not as critical as that in laptops and it is widely popular for daily use in workplaces and households
   a. desktop b. minicomputer c. laptop d. PDA's

6. It runs on a single battery or an external adapter that charges the computer batteries.
   a. desktop b. minicomputer c. laptop d. PDA's

7. They took up the space that would be needed for a refrigerator or two and used transistor and core memory technologies.
   a. desktop b. minicomputer c. laptop d. PDA's

8. Most of them can access the Internet using Bluetooth or Wi-Fi communication and popularly known as a palmtop.
   a. desktop b. minicomputer c. laptop d. PDA's

9. Which of the following are types of computers?
   a. analog, hybrid, desktop, embedded
   b. analog hybrid, microcomputer, mainframe
   c. desktop, embedded, mainframe, microcomputer
   d. desktop, laptop, embedded, PDA, supercomputer

10. What does OHS stand for?
    a. Occupational Home Safety
    b. Occupational Health Safety
    c. Occupational Health Security
    d. Occupational Home Security

B. Directions. Supply the missing word(s) by choosing the correct answer inside the box. Write your answer in the given answer sheet.

1. Pull the cable connector on the _____ and not on the cable itself
2. Always power off and _____ the computer before working on it.
3. Do not work _____ so that there is someone who can take care of you in case of accident or emergency.
4. Hazard/risks in the workplace and their corresponding indicators are identified to minimize or eliminate _____ to co-workers, workplace, and environment.
5. Hold the components by _____ and do not touch the IC's.
6. Make sure that the pins are properly aligned when connecting a _____.
7. Read and follow _____ on the manual carefully.
8. Take away any _____ such as mineral water or soft drinks near your working area or near computers.
9. Take necessary precautions to protect the component of the computer from damaged caused by _____ Discharge (ESD).
10. Use only _____ when standing on the ground or in a concrete floor.

alone
cable
connector
edges
electrostatic
handle
instructions
liquid
risk
rubber shoes
unplug

Additional Activity

Directions: Conduct an interview with your parents/sibling who is skilled in the computer, and ask the following guide questions:

1. What are your preparations for your safety when working?
   _____
   _____

2. What are the other safety precautions that you apply when working?
   _____
   _____

3. What are your tips for beginners like us in adhering to the safety precautions?
   _____
   _____

Answer Key

What I Know

1. Analog
2. Hybrid
3. Mainframe
4. Microcomputer
5. Desktop
6. Laptop
7. Personal Digital Assistant
8. Mini
9. Supercomputer
10. Wearable

What's In

1. O
2. I
3. S
4. S
5. S
6. O
7. I
8. O
9. O
10. I
11. I
12. I
13. O
14. I
15. I

What's New

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

What Is It?

1. A
2. B
3. A
4. A
5. B
6. B
7. B
8. B
9. B
10. B

Independent Activity1

1. F
2. F
3. T
4. T
5. T
6. F
7. F
8. T
9. F
10. T
11. T
12. T
13. T
14. T
15. F

Independent Activity2

1. Cost
2. Intended to Use
3. Reputation
4. Life Span
5. Personal Preferences

What I Have Learned % What I Can Do

CRITERIA	RUBRICS				
	10	**8**	**5**	3	**1**
Quality of Answer with Correct Usage of Grammar	*The students are able to understand and answer the questions correctly and clearly explained*	*The students are able to understand and answer the questions correctly*	*The students are able to understand and answer the questions slightly correct*	*The students are able to understand and answer the questions slightly correct with a minimal error in usage grammar*	*The students are able to answer questions but has a difficulty in constructing ideas*
Ideas and Explanation	*The students are able to explain and expand his/her ideas extremely*	*The students are able to explain his/her ideas thoroughly*	*The students are able to explain his/her ideas slightly*	*The students are able to explain his/her idea*	*The students have the hardship to explain his/her idea*

Assessment-A

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

Assessment-B

1. handle
2. unplug
3. alone
4. risk
5. edges
6. connector
7. instructions
8. liquid
9. electrostatic
10. Rubber shoes

Additional Activity

CRITERIA	RUBRICS				
	10	**8**	**5**	3	**1**
Quality of Answer with Correct Usage of Grammar	*The students are able to understand and answer the questions correctly and clearly explained*	*The students are able to understand and answer the questions correctly*	*The students are able to understand and answer the questions slightly correct*	*The students are able to understand and answer the questions slightly correct with a minimal error in usage grammar*	*The students are able to answer questions but has a difficulty in constructing ideas*
Ideas and Explanation	*The students are able to explain and expand his/her ideas extremely*	*The students are able to explain his/her ideas thoroughly*	*The students are able to explain his/her ideas slightly*	*The students are able to explain his/her idea*	*The students have the hardship to explain his/her idea*

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K to 12 Basic Education Curriculum- Technology and Livelihood Education

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