

* **Lab Safety**

**Part 1: Personal Safety**

* What other simple precautions can you take to prevent injury or cause equipment damage while working with computer hardware?

When I work with computer hardware, I should remove anything that could cause damage to equipment or people around me.

**Part 2: Electrical Safety**

* What can you do to prevent injury or damage to printer parts?

If some part becomes hot during use, I can use the printer less often, or we can have some break to avoid over-heating parts.

* What can you do to prevent injury or damage to power supplies for computers?

I can wait a few minutes to check power supplies because they still have energy even if they are turned off, also I can clean around the power supply.

**Equipment Grounding**

**Perform an internet search to answer the following questions:**

* How do you ground devices, such as PCs and printers?

I need to ground devices to earth to increase safety.

* How are large metal equipment racks grounded?

Most of them are grounded from the rack frame to copper bus bar.

**Part 3: Fire Safety**

Use a web browser or a fire extinguisher to review the proper procedure to use a fire extinguisher to answer the following questions.

Questions:

* How does the memory aid P-A-S-S help with remembering the basic rules of fire extinguisher operation?

If the fire is small, we can use the basice rules of fire extinguisher

* Pull. Remove the safety pin.
* Aim. Put the hose or nozzle of the extinguisher at the base of the fire to have better use.
* Squeeze. Press the trigger.
* Sweep. Move the nozzle in two directions: backward and forward around the fire

If the fire is big enough

* Assess the fire, exit the premises and call 911.
* ***Type your answers here.***
* Each type of fire extinguisher has specific chemicals to fight different types of fires. List the different types of fire extinguishers used in your country or region.
* Type A: cloth, wood, rubber, plastics.
* Type B: gasoline, grease, oil.
* Type C: electrical fires.
* Type D: combustible metals.
* Type K: kitchen fires.

**Part 4: Compliance with Government Regulations**

**Health and Safety Laws**

* Perform an internet search to locate the governing body for health and safety in the workplace for your country. Record the official title and link to the website.

Benemérito Fire Department from Guayaquil are the oldest firefighter institution in Ecuador and Latin America. They stay away 24 hours a day to face any emergency that threatens the city and its inhabitants. In addition, it works on fire prevention through the issuance of fire service fees from premises, after complying with strict safety regulations.

Link: https://www.bomberosguayaquil.gob.ec/

**Building Codes**

* Perform an internet search for your local building codes. List of some of the building codes that are adopted locally.

It is important following these building codes in my city:

* We must have an architecture design.
* Obtain permission for construction before a house or something else is created.
* The fire department needs to check and approve how this project would be.
* Finally, find a professional architect to make all documents on time.

**Environmental Regulations**

* A business has replaced 50 laptops and is looking for a way to dispose of them properly. Find a local facility that can dispose of them properly and describe what will the local facility do with the laptops.

The City of Toronto collects unwanted electronics for free to ensure they are disposed of safely, recycled and kept out of landfill. Electronic items can be put out on garbage day for pickup, brought to a [Drop-Off Depot](https://www.toronto.ca/?page_id=43758) or [Community Environment Day](https://www.toronto.ca/?page_id=47748) or [donated](https://www.toronto.ca/reduce-reuse/) for reuse.

**Reflection Questions**

In your opinion, what is the most important safety rule when servicing a computer? Explain.

If I work with computers, all safety matters (time value money), but it is so important to avoid fire or damage to devices when we do correctly the electrical safety.

**2 - Ohm's Law**

Answer the following questions based on electricity and Ohm’s Law. Show all steps when solving problems.

* What are the four basic units of electricity? Provide the variable name and symbol, and unit name and symbol.

|  |  |  |  |
| --- | --- | --- | --- |
| Variable name | Symbol | Unit name | Symbol |
| Voltage | V | Volts | v |
| Current | I | amperes | A |
| Resistance | R | ohms | O |
| Power | P | watts | W |

* Write the equation for Ohm’s Law.

**V=IR.**  **When V=voltage, I=current, and R=resistance**

***Type youranswers here.***

* Re-arrange the Ohm’s Law equation to solve the following:

**I =**  **I=R/V**

**R =** **R= V/I**

* Power is equal to voltage multiplied by current. Add the missing information in each of the following power equations.

~~P=V~~ P=IV

~~P = R~~ P = I²R

~~P = V²~~ P = V²/R

* The yellow wire connected to a power supply carries 12V. If the power supply provides 60W of power to the yellow wire, how much current is passing through the yellow wire?

**I=R/V I=60/12**  **I=5**

* There is 3.3V passing through an orange power supply cable, and there is 0.25 ohms of resistance in the orange wire. How much power is supplied to the orange wire by the power supply?

P=V²/R = 3.3²/0.25 = 10.89/0.25= 43.56 W

* A wire from the power supply carries 120W of power and 24A of current. What is the voltage supplied to the wire by the power supply?

P=120W I=24A V=?

V=P/I. V=120/24=5.

* **Inside view of a desktop computer**
* Open the desktop computer and observe the different components installed. And fill the table below for easiness of the reader first row is already filled.

|  |  |
| --- | --- |
| **Observation** | **Usage** |
| 1. RAM | Used to store and retrieve information at a faster rate. |
| 2. POWER SUPPLY | Used to convert the power that the computer needs. It sends energy through cables to the motherboard and other components. |
| 3.HARD DRIVE | It is where your software, documents, and other files are stored. |
| 4. MOTHERBOARD | It is a thing plate that holds other components such as CPU, memory, connectors for the hard drive. |
| 5.CPU | It is called a processor, or the brain of the computer |
| 6.EXPANSION CARDS | It is used to boost the performance of your computer by adding expansion cards, namely video or sound card. |
| 7.COOLING FAN | Used to avoid computer overheating. Many computers have more than one. |
| 8.VIDEO GRAPHICS ARRAY PORT | This port is a video input, we use to connect to monitors. |
| 9. CMOS BATERRY | This baterry helps the BIOS or UEFI to store the hardware configuration settings. |
| 10. Chassis | Alternatively called the case, system unit. It is the housing that helps protect and organize all the components in a computer. |

* Observe the cables and connectors inside a computer and fill in the table below.

For the easiness of the reader, the first row is already filled. You may need the Internet in this exercise to answer the questions.

|  |  |  |
| --- | --- | --- |
| **Cable name** | **Where does it connect?** | **Number of pins** |
| 1. Molex | Used to power hard drives, optical drives, etc. | 4 pins |
| 2. Serial ATA (SATA) | Connect hard drives or optical drives from the motherboard. | 15 pins |
| 3. 4/8PIN CPU Connector | It is close to your pc’s cpu socket | 4+4 pins |
| 4.20/24PIN Motherboard | It is the most important cable that give povwe to your pc. | 24 pins |
| 5. 4PIN Fan | Used to prevent damage to the cpu, it is connected to the motherboard. | 4 pins |