**Lab practice 1: Working in the laboratory. Skills and Safety**

**Assessed criterion: AIE**

**Task**

## To revise and learn the name and uses of laboratory lab ware as well as laboratory safety measurements.

**Remember!**

In the laboratory, we carry out most of the steps of the scientific method, especially the experimentation.

To work in the laboratory, it is important to follow a set of rules. Not following these rules can result in failure of the experiment, a loss of time – and most important: a health hazard.

**Some of the main rules to follow are these:**

- Make sure you have the necessary **apparatus, instruments** and **material**, that they are clean and in perfect condition.

- **On the working bench**, put only the material you need to carry out the experiment. Do not place the materials close to the edge of the table to avoid accidents.

-During a lab practice you must always, **pay close attention** and **focus on the task**, especially when working with any hazard materials. Your working area should be clean at all times. **Any spillages or accidents should be taken care off immediately!**

- You are to have a laboratory notebook. In the notebook, you should note: the lab practice of the day as well as the date, and any observations and collection of data, as needed.

- When you finish, the working areas **must be** **clean and tidy.**

- If you have worked with any chemicals or hazard materials **wash your hands** before you leave the laboratory!

Task: Lab material

Look up the function of the following lab material (equipment) and draw a picture.

|  |  |  |
| --- | --- | --- |
| Measuring cylinder | Measuring pipette and bulb | Dropper (Pasteur pipette) |
| Beaker | Erlenmeyer flask | Test tube |
| Test tube rack | Funnel | Tweezers |
| Volumetric flask | Watch glass | spatula |
| Stirring rod | Tripod | gauze |
| Bunsen burner | Clamp stand  | clamp |
| Safety goggles | Wash bottle | Test tube holder |
| Electronic scale | Weighing boat | Petri dish |
| Crucible and lid |  |  |

You will have a Criterion A summative assessment on recognizing different laboratory material and equipment as well as their proper use.

**Measuring volumes: pipetting and reading a meniscus**

**Use of the pipette and error calculation**

**Objectives**

* To learn how to use the bell-bulb pipette.
* To practice reading the meniscus.
* To learn about errors in measurements.
* To develop collaborative skills.
* To develop self-management skills such as reflection.

**Materials**

* Measuring pipette and pipette bulbs
* Measuring cylinder of 10 mL
* Beaker
* Water
* Lab Notebook

**Procedure (work in pairs)**

1. Pay attention to the teacher’s instructions on how to use the pipette and pipette bulb, how to read the volume (meniscus), the information you get on the glass labware.

2. Observe the different pipettes you have, and for each note the error written on the glassware. (Make a table and a quick drawing to remember where you can find this information).

3. Practice taking the following volumes with the pipettes: 5 mL, 3.5 mL, 7.4 mL, 1.5 mL, 8 mL, and 1.8 mL.

Make sure you use the proper pipette for each measurement. You can place the water from the pipette back in the beaker. As you are working in pairs, make sure you give feedback to each other. (PEER FEEDBACK. Collaborative skill)

4. The teacher will come around asking you to withdraw a specific water volume to see how you do it and correct possible mishandling.

**Questions**

1. Fill in the following table:

|  |  |  |  |
| --- | --- | --- | --- |
|  | Using a 5 mL pipette | Using a 2 mL pipette | Using a 10 mL measuring cylinder |
| Glassware error |  |  |  |
| What is the glassware error if you want to measure 4 mL? |  |  |  |

1. Which pipette would you use in order to take 4 mL of a liquid? And why?
2. If you had to measure 8mL of a liquid, would you use a 5mL pipette and use it twice or would you use a 10mL pipette? Do you think it would make any difference? Give a brief explanation referring to errors.
3. What is the difference between a measuring cylinder and a measuring pipette?
4. A student is measuring different volumes in lab. One of the volumes he needs to pipet is 8 mL of water. However, as he is still learning how to use the measuring pipettes, instead he keeps pipetting 7.5 mL, 0.5 mL less than the needed volume. Are his measurements accurate? Are his measurements precise? Explain both answers and the difference between accuracy and precision.

1. Reflect on your lab work today and think about whether or not you feel confident with an **accurate** use of the pipettefor future practices or if you need more practice. Share your reflection with your partner.