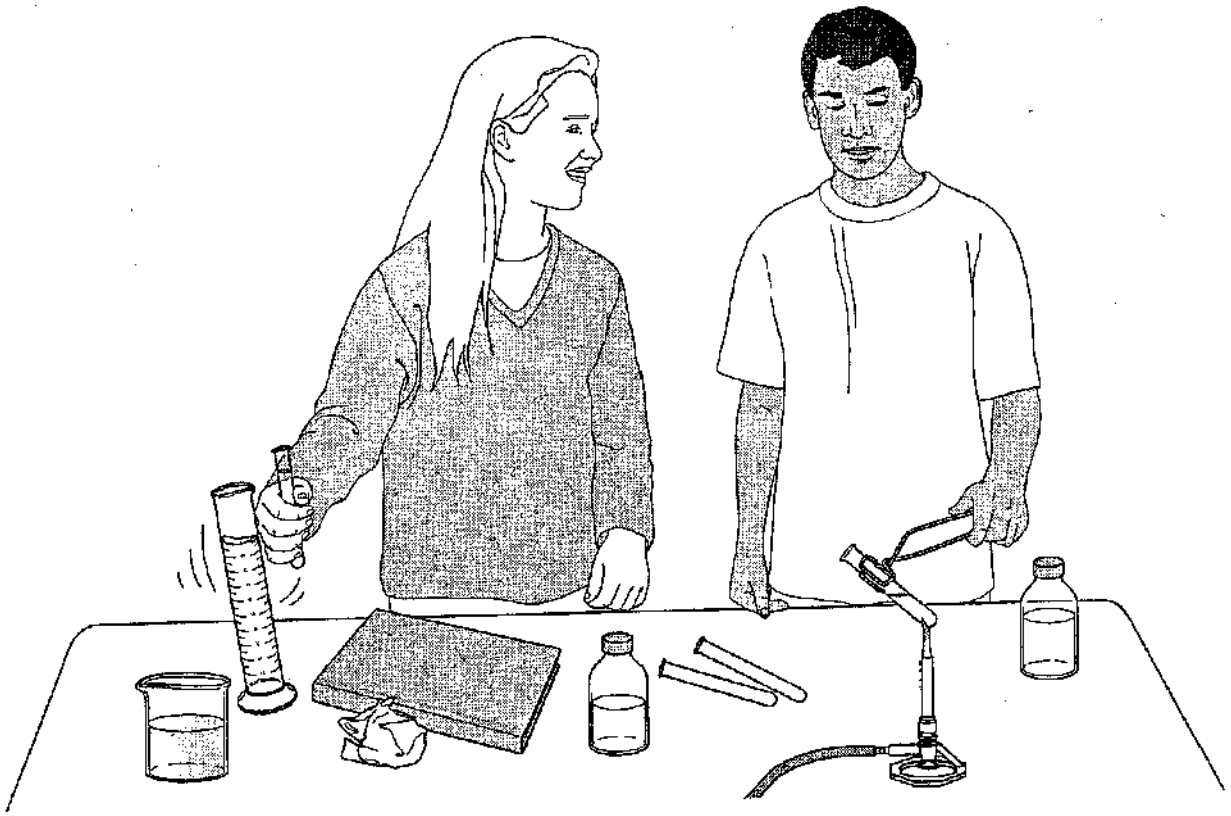
UNIT 01

LAB SAFETY & EQUIPMENT

Hook: What's wrong with this picture?



Lab Safety

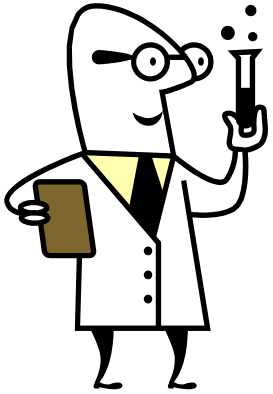
- **1. Conduct yourself in a responsible manner**
  - No horseplay or pranks
  - No wandering or distracting students
  - Never run or push someone
  - No off-task behavior

- **2. ALWAYS wear safety goggles, lab apron, gloves**
  - During lab
  - During clean-up

Examples of Accidents

Lab Safety

- **3. Rinse eyes for 15 minutes at the eyewash station**
- **4. Dress properly for lab**
  - Closed-toe shoes
  - Tie back long hair
  - No dangling jewelry
  - No baggy clothing



- **5. Work only on authorized experiments**
  - Do not do variations of the assigned experiment
  - Do not do experiments at home without teacher and parent permissions

Lab Safety

- **6. Know the location of your safety equipment**
  - Fire extinguisher
  - Fire blanket
  - Safety shower
  - Eyewash station
- **7. Do not eat or drink food in the lab or chew gum**

Lab Safety

- **8. Do not apply makeup**
- **9. Wash your hands at the end of an experiment**
- **10. Read and follow directions as given. Re-read before each part**
  - When in doubt, ask for help
- **11. Notify teacher if any chemicals spill.**

Lab Safety

- **12. Report <u>all</u> accidents**
  - Notify teacher immediately after any injury, cuts, or burns.

Burn Unit

- **13. Never reach across a flame**
  - Never leave flame unattended
  - If a fire starts, notify teacher… then do as teacher says…

Lab Safety

- **14. If a flammable liquid is present, we will use a hot plate**
  - A lighted bunsen burner should not be close to flammable liquids.
- **15. Read reagent labels carefully before using them**
- **16. To avoid contamination, do not return extra chemicals to the original bottle**

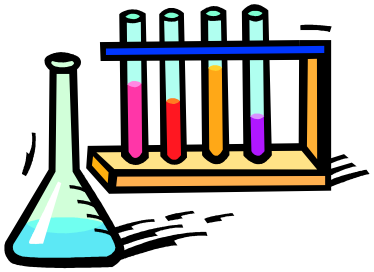
Lab Safety

- **17. Never use broken or chipped glassware**

- **18. When diluting an Acid, always pour the acid slowly into Water, stirring to dissipate the heat generated.**
  - Note: A comes before W

Lab Safety

- **19. Never look directly at the mouth of a test-tube or point it at anyone**
  - Materials can splash out or fumes can come out
- **20. Notify teacher of spills and broken glass immediately.**
  - $$ The cost of broken glassware will be shared by the group evenly. $$



Lab Safety

- **21. Do not touch anything in the lab unless instructed to do so**
  - Leave all materials and chemicals alone until instructed to do so
- **22. Do not enter the chemical stor room.**
- **23. Do not use computers without permission**

Lab Safety

- **24. Work cooperatively with lab partners and help them and yourself learn as much as possible from the lab**
- **25. Use lab equipment and materials appropriately**
  - If it is not working let teacher know.
- **26. Avoid contact lenses and if you do wear them, do not take off goggles at all….**
  - Tell teacher if you wear them…

Lab Safety

- **27. Keep lab area clean and neat**
  - Keep glassware away from the edge of counter
  - Clean up and leave equipment as you found it
- **28. Do not take anything from the lab**
- **29. Never smell a chemical directly**
  - Waft with me, waft with me!
- **30. Ask teacher before discarding anything down the drain**

Lab Safety

- **31. If you are allergic to any substance in the experiment, tell the teacher.**
- **32. Make sure the area is dry before plugging electrical devices**
- **33. Follow teacher's instructions for proper disposal of solid waste.**
- **34. Keep aisles clear for safe exit…**
  - Aisles clear and free of bookbags

Top 5 Lab Hazards

- **Thermal burns**
- **Chemical burns**
- **Cuts from glass**
- **Fire**
- **Poisoning**

FA: What's wrong with this picture?

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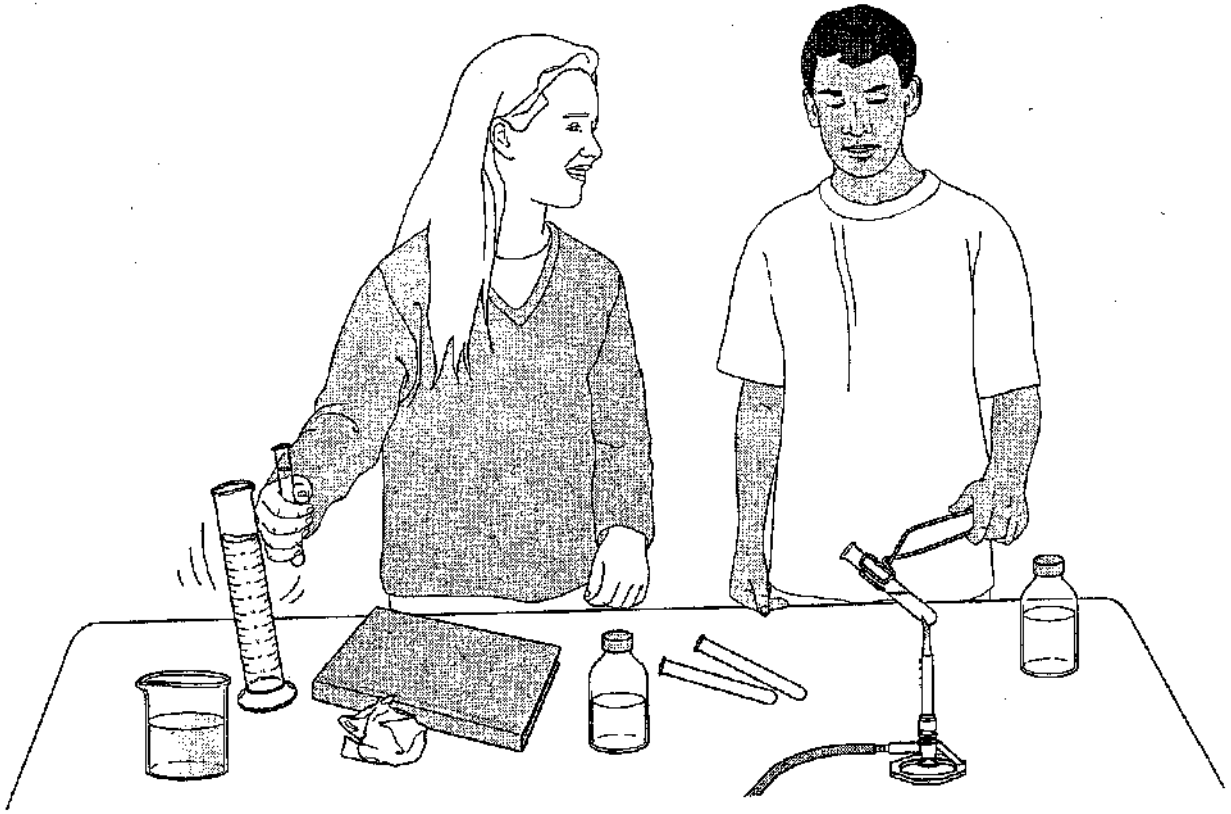

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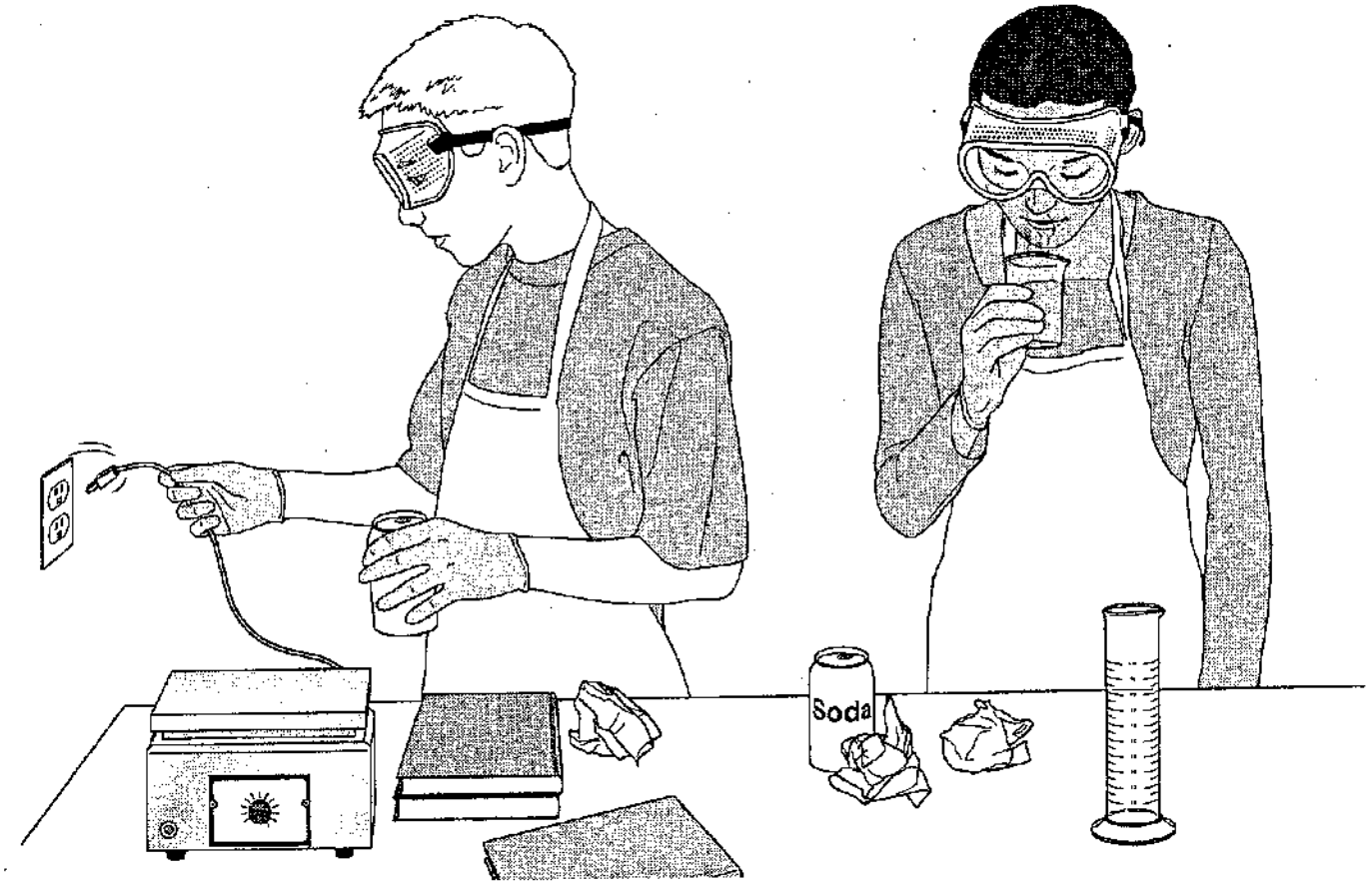
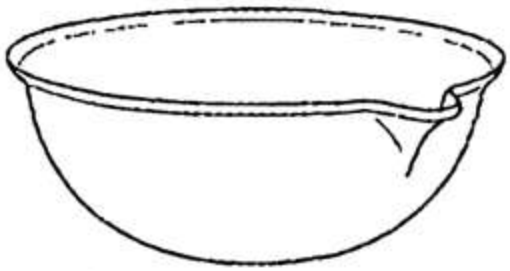


What's wrong with these statements?

- Hal says that his teacher is solely responsible for preventing laboratory accidents.
- Keshia started the lab activity before reading it through completely.
- Ricardo decided to do a lab activity that he read about in a library book before the teacher came into the classroom.
- Stephanie says that the safety goggles mess up her hair and give her raccoon eyes. She refuses to wear them.
- Barbie and Ken accidentally break a beaker full of some chemical. Instead of risking getting in trouble they quickly clean up the mess with paper towel and throw it in the garbage.

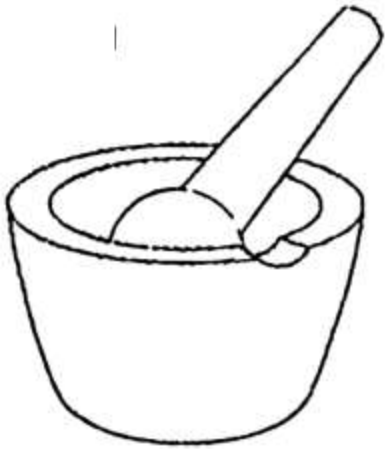
LAB EQUIPMENT – holds chemicals



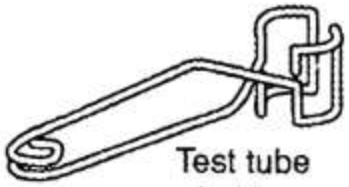
Evaporating dish

Watch glass

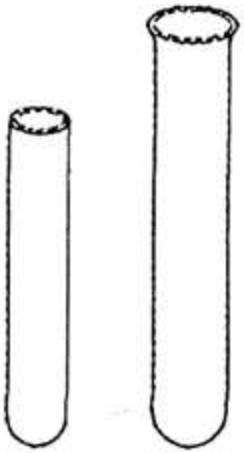
Wash bottle



Mortar and pestle



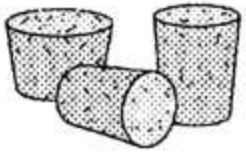
Test tube holder



Test tubes

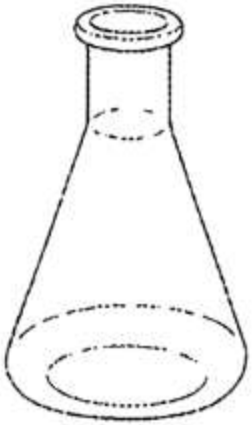
Lab equipment

Safety goggles

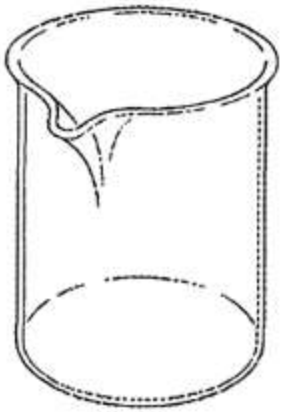


Corks

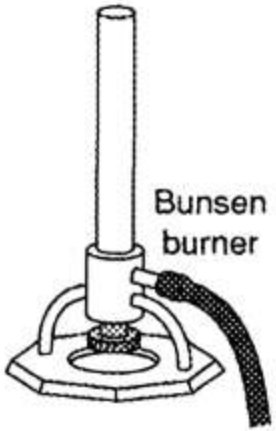
Assorted rubber stoppers



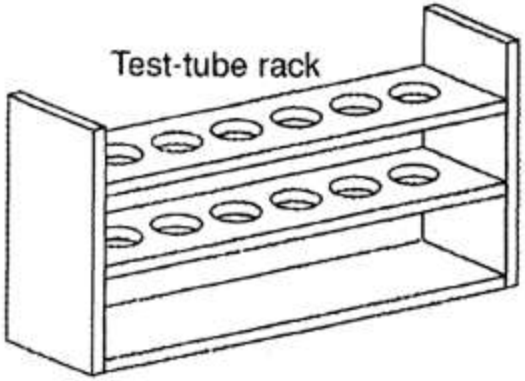
Erlenmeyer flask



Beaker



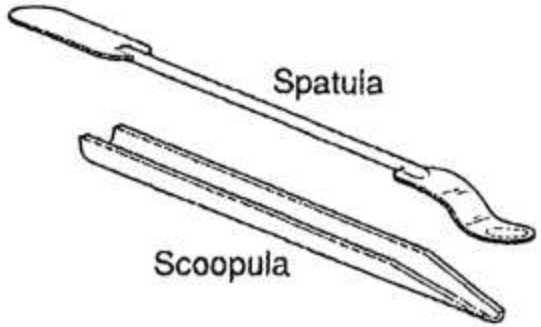
Bunsen burner

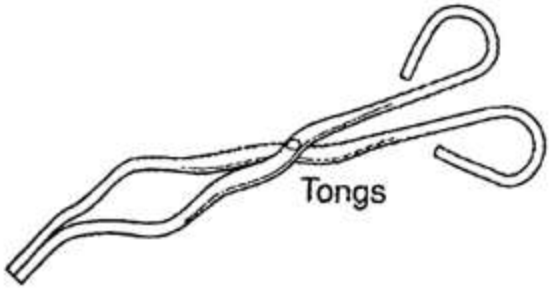


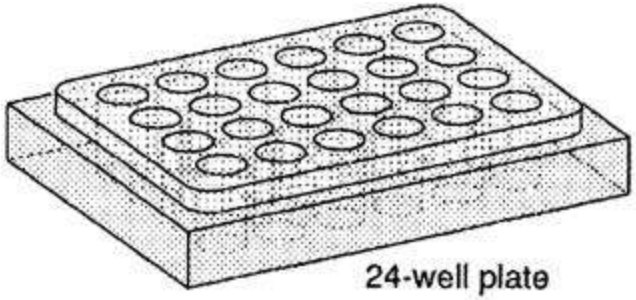
Test-tube rack

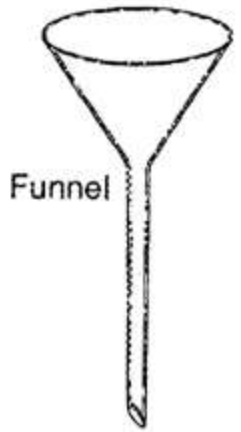
Crucible and cover

Lab equipment



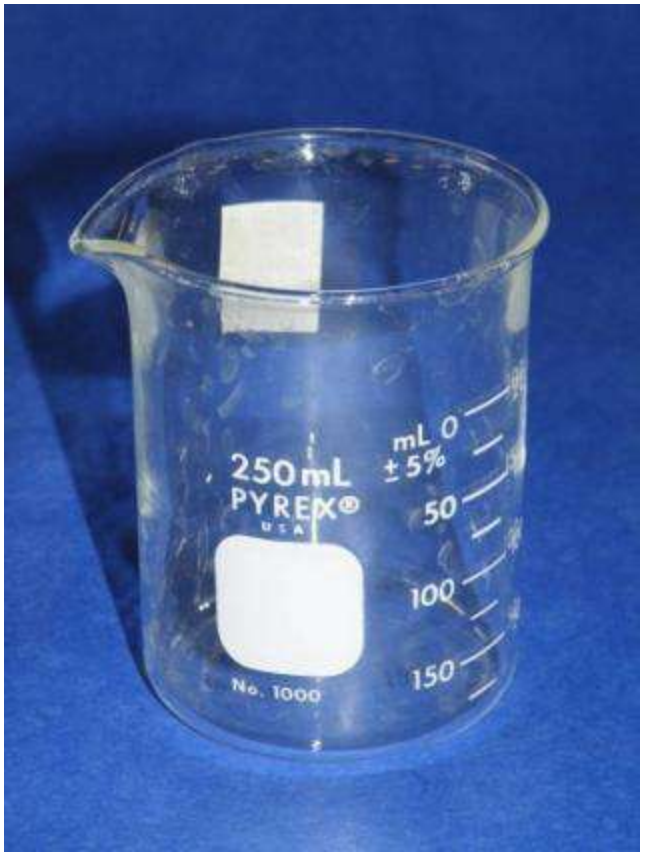






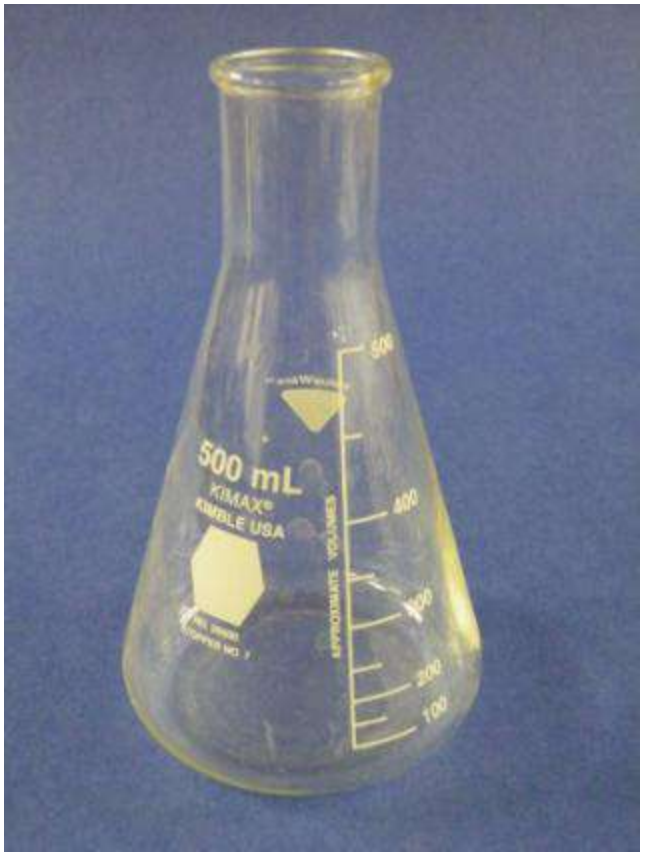
Beaker

- **The beaker is used to measure and pour "non-exact", or approximate amounts of liquids. Liquids may also be heated in a beaker. The most common unit is *milliliter* (mL)**



Erlenmyer flask

- **This container has the same general uses as the beaker. It's units are also *milliliters* (mL).**



Funnel

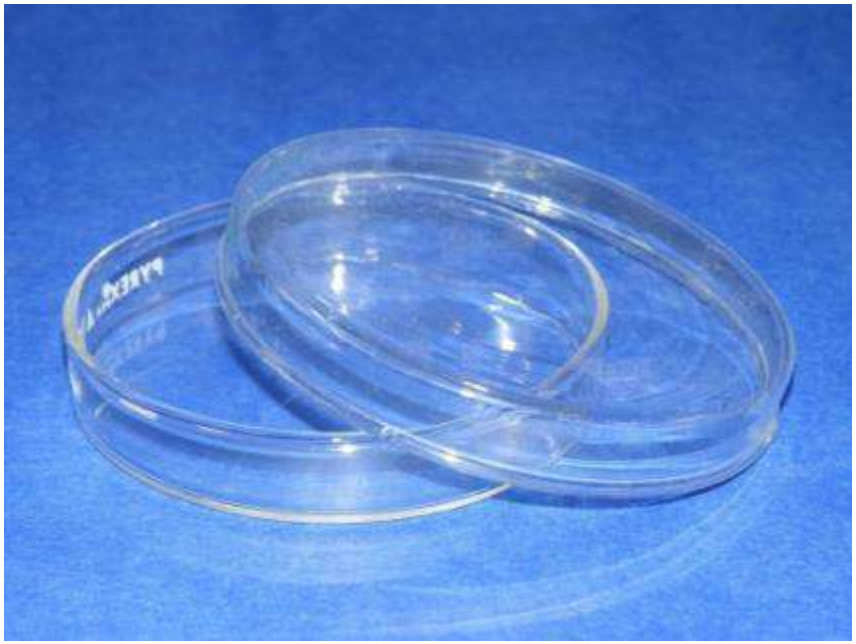
- The funnel is used to transfer liquids from a large-mouthed container to one with a much smaller opening. There are usually no units associated with the transfer of these liquids.

Dropper

- **The dropper is used to transfer small amounts of liquid from one container to another; usually one or two drops at a time. No units are used in the transfer of liquids by this method.**

Petri dish

- **The Petri dish is normally filled with a waxy substance called *agar*. It is used to grow cell cultures by putting it in an incubator to stimulate growth of organisms.**



Hot plate

- **An electrical device that is used to heat substances without the danger associated with heating substances with open flames.**

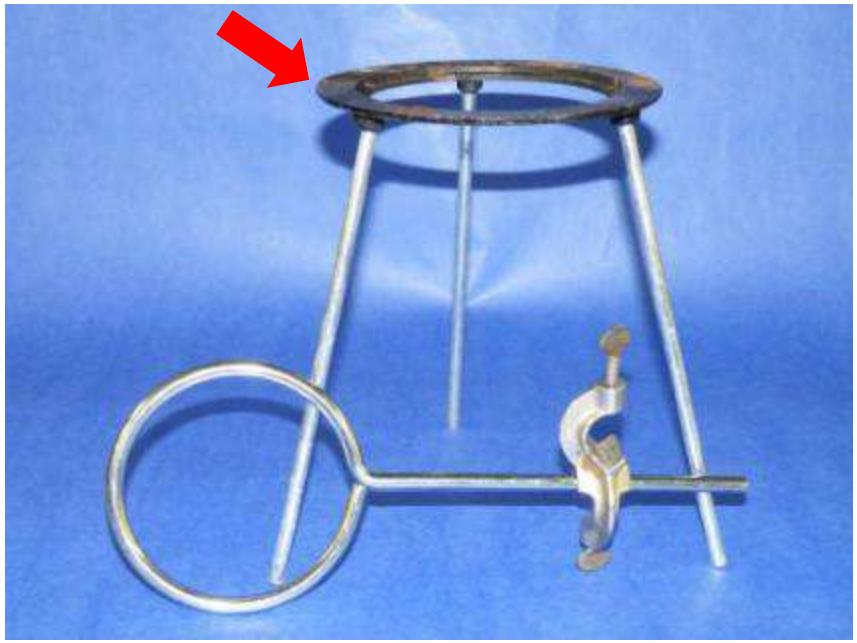
Bunsen burner

- **A piece of equipment used for heating substances with open flame operation. It is fueled with natural gas, supplied through "jets" located at each lab table.**

Ring stand

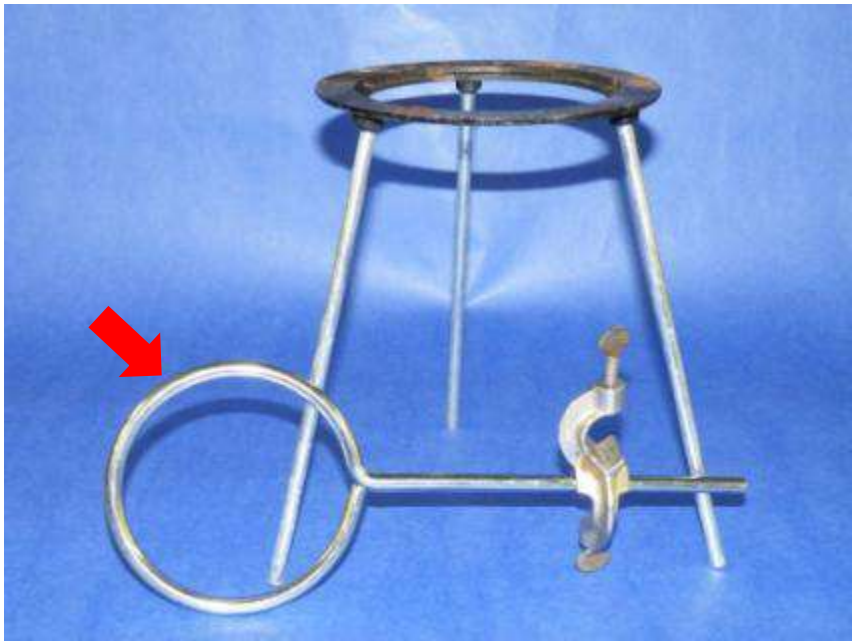
- **This is used to hold or attach other pieces of equipment to. It is usually used to heat substances in a beaker over a Bunsen burner flame.**

Tripod Ring Stand



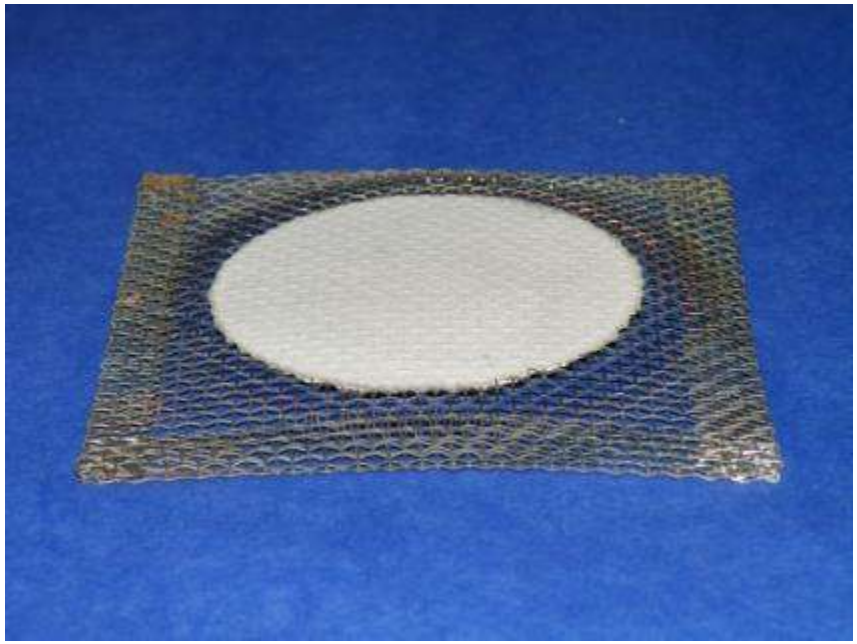
Ring

- **An attachment for the ring stand. Used in conjunction with a vertical pole and wire gauze (screen).**



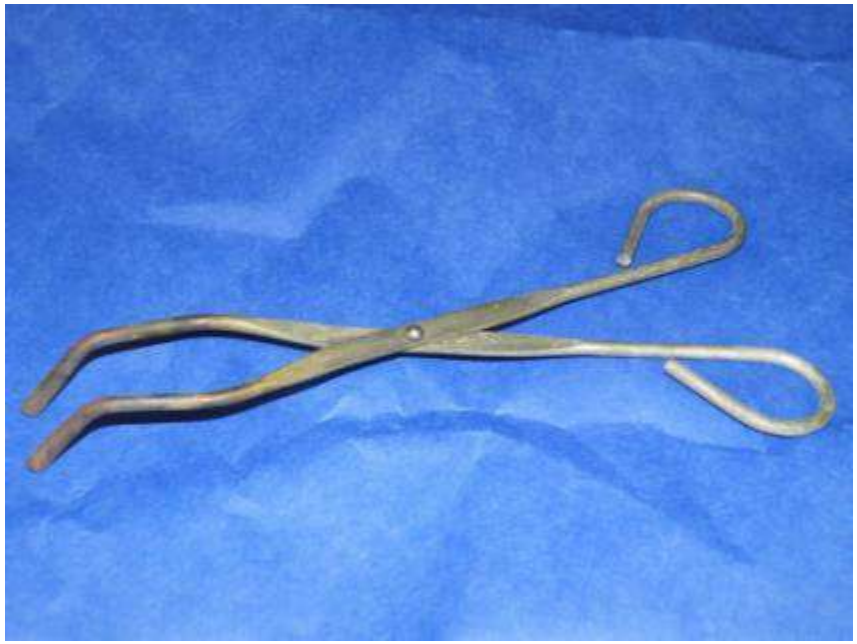
Wire gauze (wire mesh)

- **Used in conjunction with the ring stand. It is put on top of the ring, and a beaker or flask is placed on top of it to protect the glassware from the flames.**



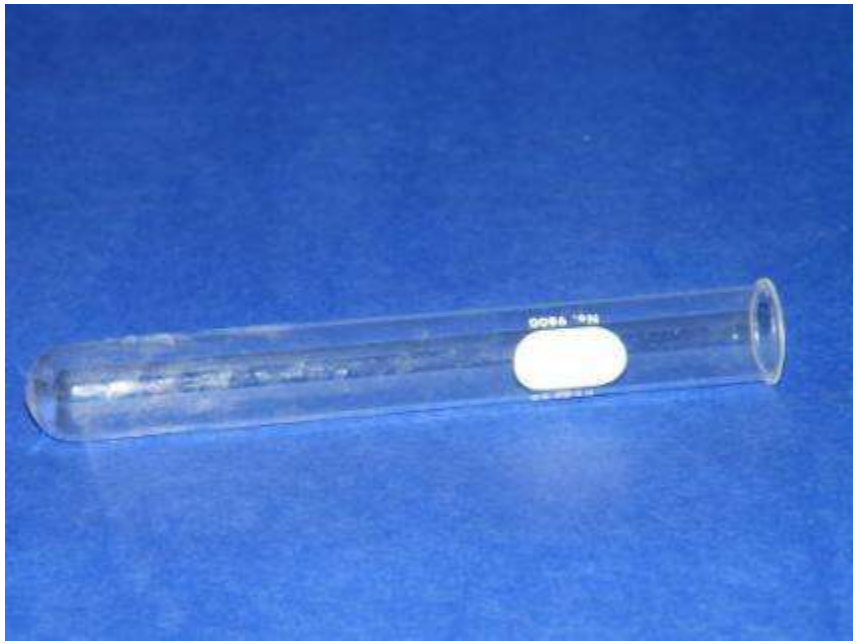
Crucible tongs

- **Tongs used to pick up hot objects or objects that may be contaminated with hazardous substances.**



Test tube

- Glassware that is used to observe, pour, or heat substances in. There are no measurement markings on test tubes.

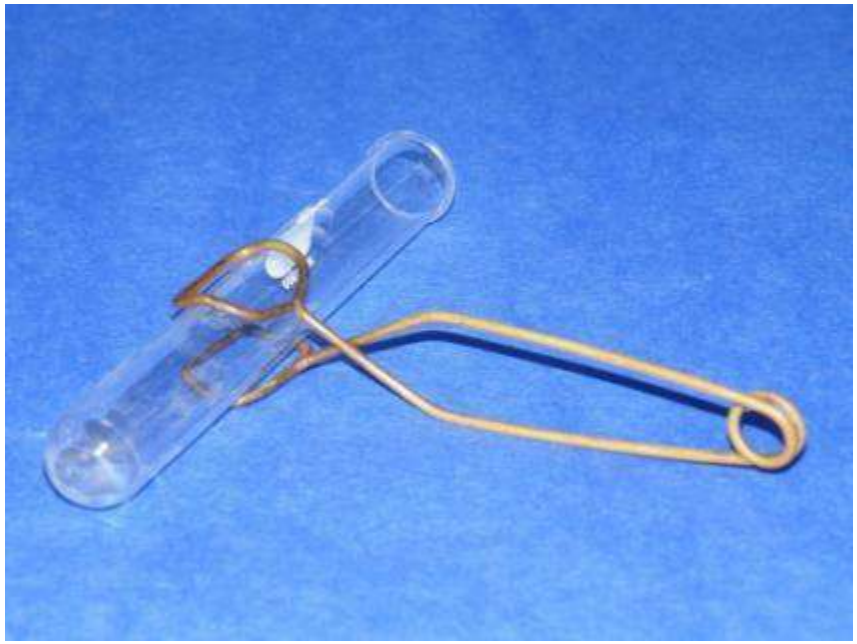


Test tube rack

- **A container used to store, set up, or air dry test tubes.**

Test tube clamp

- **Used to hold test tubes when heating substances over an open flame.**



Ring stand clamp

- **Device used to hold equipment or other structures in place on a ring stand.**

Test tube brush

- **Used to clean the inside of test tubes or other glassware.**

Safety goggles

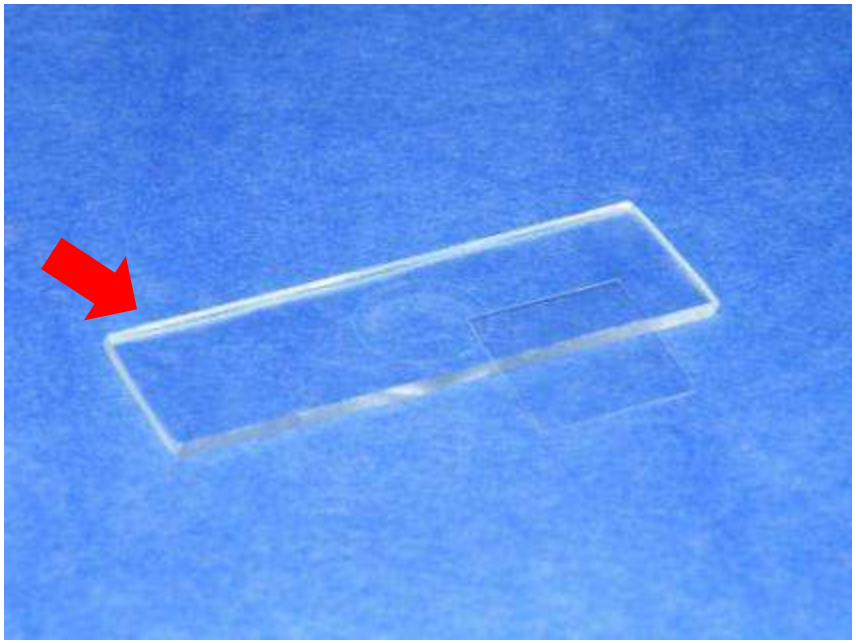
- **Used for protecting your eyes in lab. Should be worn especially during labs with chemicals, fire, or glassware involved.**

Compound microscope

- **An instrument used to view objects that cannot be seen with the unaided eye.**

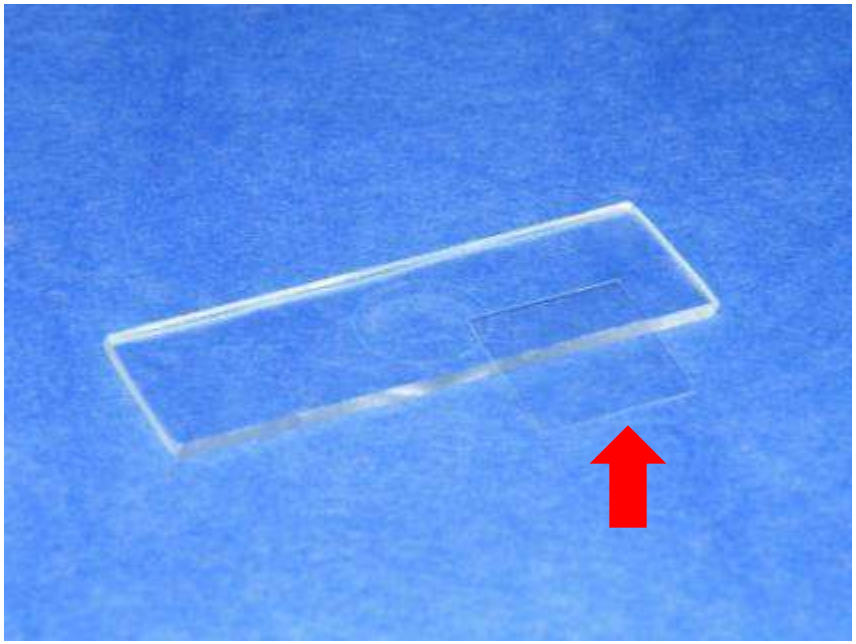
Microscope slide

- **A thin rectangular piece of glass or plastic that is used to make "mounts" of specimens to view using a compound mircoscope.**



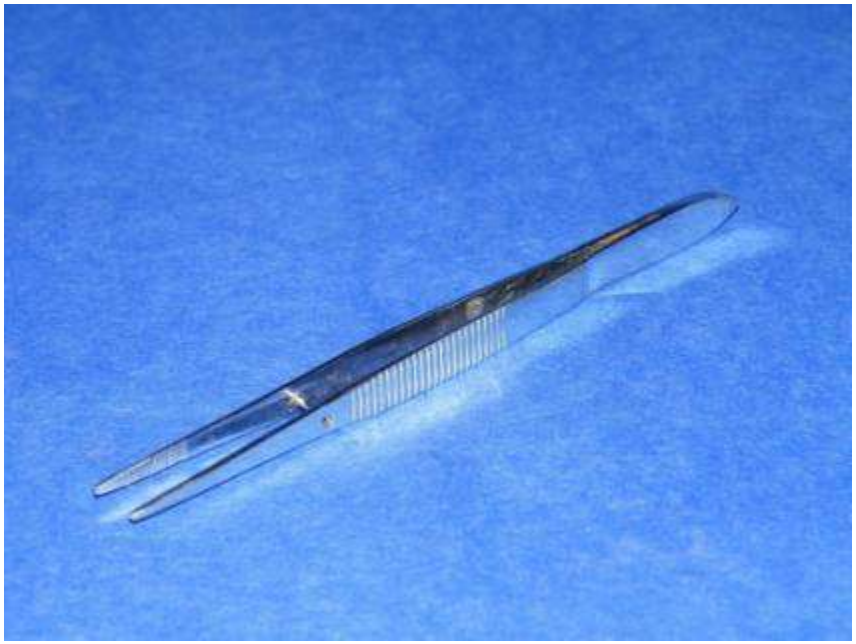
Cover slip

- A small square piece of glass or plastic that is "slipped over" a drop or specimen on a slide, and keeps them from moving on the microscope slide.



Forceps

- **An instrument used to pick up very small objects, or substances that could be harmful to human skin.**



Dissecting needle

- **An instrument used to move or manipulate tissue or organs when dissecting organisms.**

Scalpel

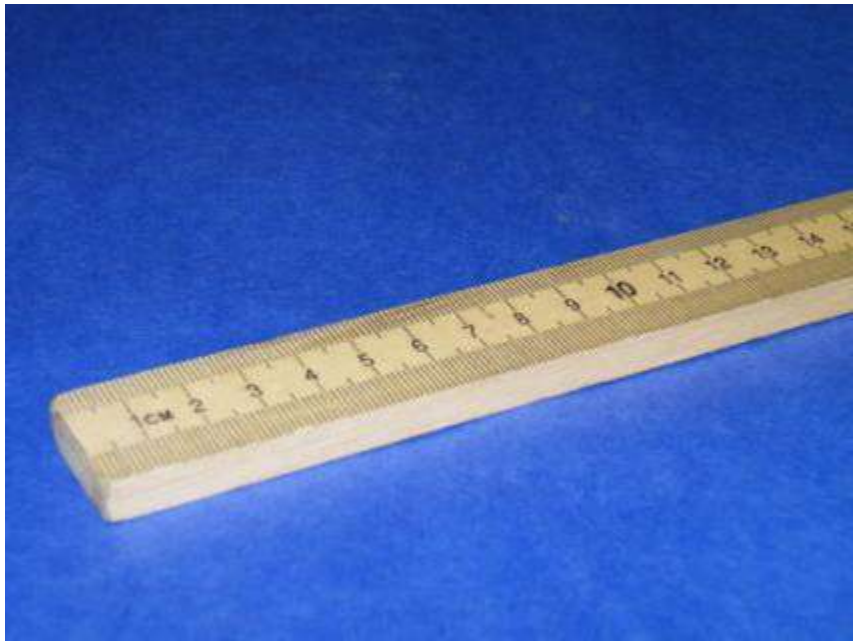
- **An instrument used in dissection of organisms. It is used very much like you would use a knife.**

Beaker tongs

- **Used to pick up or handle beakers when they have been heated.**

Meterstick

- **Used to measure distances. The units used are: *meters* (m), *centimeters* (cm), and *millimeters* (mm).**

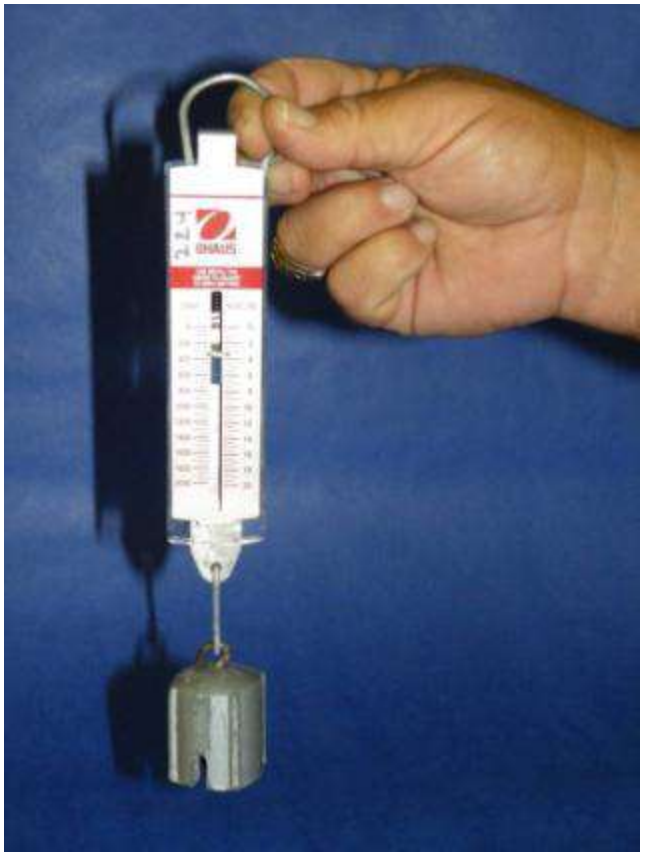


Graduated cylinder

- **An instrument used to measure and pour exact amounts of liquid. The general unit used is *milliliter* (mL).**

Spring scale

- **An instrument used to measure the weight of objects by hanging them on a hook at one end of the scale. The unit used is *Newtons* (N)**

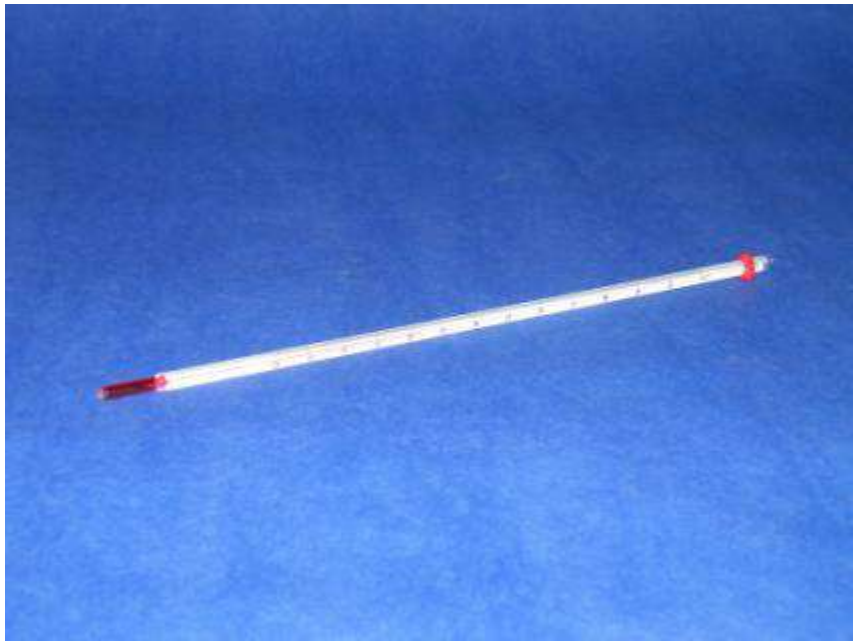


Triple beam balance

- **An instrument used to measure the mass of object by moving three different weights on three beams. The unit most associated with mass is the *gram* (g).**

Thermometer

- **An instrument used to measure the temperature of objects, materials, or substances. The units are *degrees Celcius* , or *degrees Fahrenheit.***



Stopwatch

- **Instrument used to measure time intervals. Most common unit is *seconds.***