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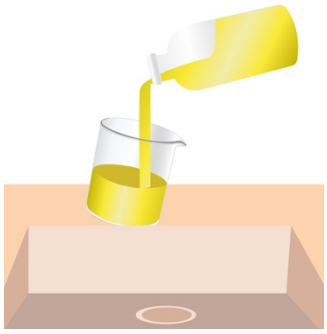
Laboratory techniques are _____ and _____ that are recommended for using the various equipment in the laboratory. Learning the proper techniques and how to use all the equipment can take time; thus, it is important to start with the basics to be gain mastery of these techniques. Some of the basic lab techniques include _____ or _____, _____, _____, and _____.

Pouring / Transferring Liquids

- Transferring to a wide mouthed container
  - Use the back of your fingers to remove the _____ from the reagent bottle.
  - Hold the stopper _____ your fingers until the transfer is complete.
  - Grasp the container from which you are pouring with the _____ of your hand covering the label.



- Transferring to a narrow-mouthed container
  - Use a _____ when transferring liquids to a narrow-mouthed container.
  - Put it on the top of the container with the _____ inserted inside.
  - Take the container with the liquid and hold it _____ the funnel.
  - Slowly_____the contents into the funnel.
  - When transferring to a test tube or graduated cylinder, the container should be held at an _____.
  - Pour slowly until the correct _____ has been transferred.

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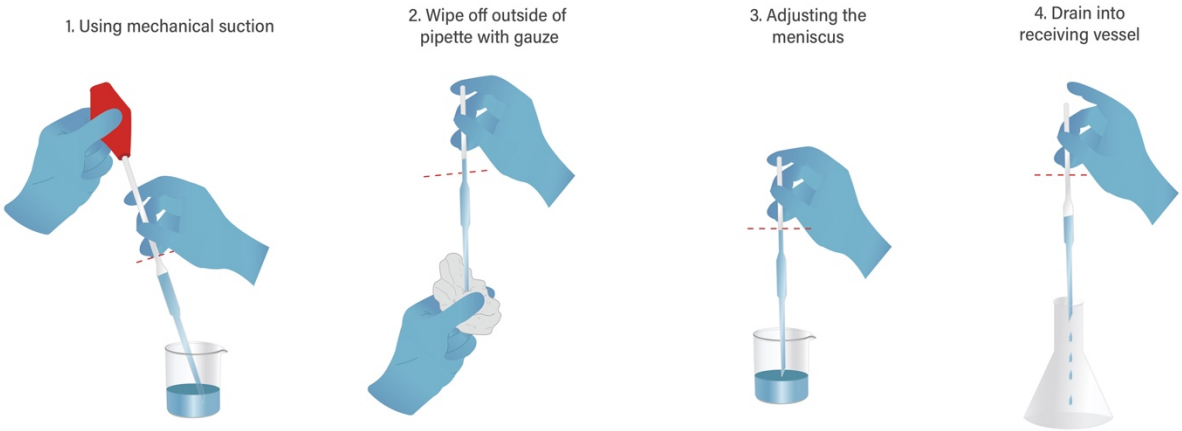
- Transferring using a stirring rod
  - When pouring liquid from a reagent bottle into a beaker, the reagent should be poured slowly down a glass _____.
  - The rod should touch the _____ of the vessel from which you are pouring and the _____ of the vessel into which the liquid is being transferred.

- Pipetting
  - It is a technique used to transfer liquids using a _____.
  - Do not pipet directly from the _____ unless you are instructed to do so. Instead, pour some of the liquid first into a container before pipetting the liquid.
  - Be careful not to touch the _____ of the container or its contents with the tip of the pipette.
  - Make sure you keep the tip of the pipette _____ from the bottom of the container to avoid creating air bubbles.
  - A _____ may be used to aspirate the liquid. Replace the suction with a _____ then wipe off the side of the pipette. Slowly lift the finger to adjust the _____. Once the correct measurement is achieved, _____ the liquid into the receiving vessel.



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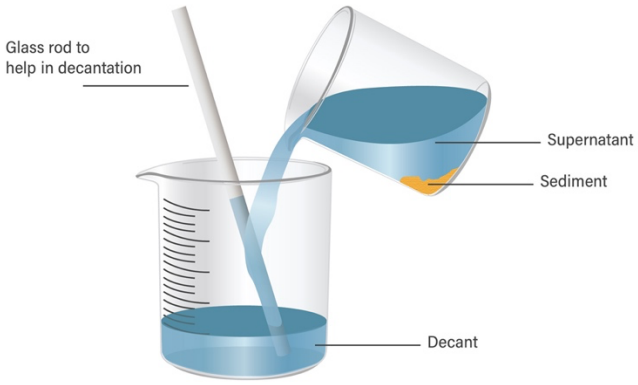
- Decanting
  - It is gradually pouring liquid from one container to another, without disturbing the _____.
  - In this technique, the _____ component is poured off the top of the mixture.
  - The _____ is the clear liquid that lies above the solid residue or _____. This is the liquid being poured off to another vessel.
  - The liquid component that is collected or transferred into a new vessel is known as the _____.



Transferring Solids

- A solid can be dispensed from its reagent jar _____ into a vessel especially if it is wide mouthed container.
- Tip the bottle and slowly _____ the bottle back and forth.
- Do not tip the bottle up _____ and let the contents pour out.
- If a solid is to be transferred into a narrow-mouther vessel, a powder _____ may be used.
- Alternatively, the solid can be nudged off a _____ in portions using a spatula.

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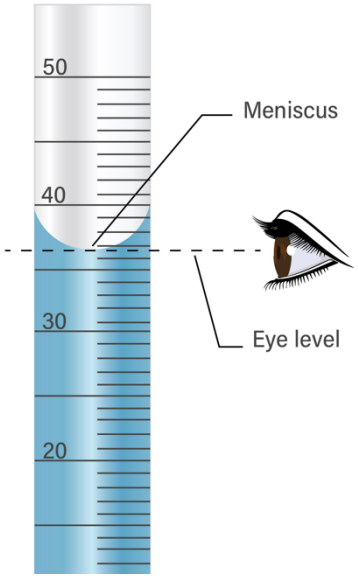
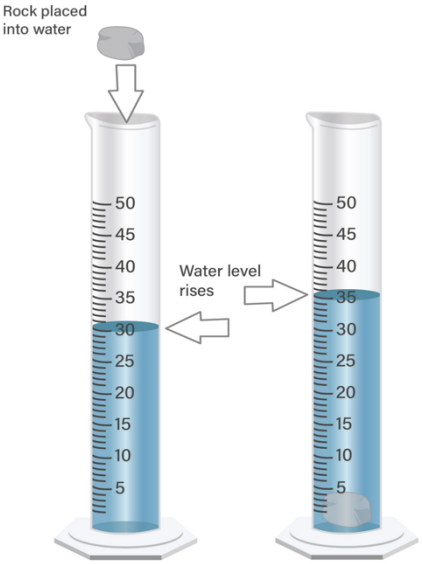
Measuring volumes of liquids

- Select a cylinder that is _____ enough to hold the volume of liquid being measured.
- Put the graduated cylinder on a _____surface.
- Vide the height of the liquid in the cylinder with your eyes _____ with the liquid.
- The liquid will tend to curve downward. This curve is called the _____.
- Always read the measurement at the _____ of the meniscus.
- Look at the _____ lines on the side of the cylinder. Ascertain to which line the meniscus is _____.



Measuring volumes of irregularly shaped solids

- _____ is used to determine the volume of an irregularly shaped solid.
- To do this, find a _____ that is large enough to hold the object being measured.
- Fill the graduated cylinder with adequate _____. This means that when the object is place in the cylinder. it must be fully _____.
- Be careful not to put so much water that the water level will _____ past the cylinder's markings when the object is submerged.



- Record the volume of the water prior to submerging the object. Label it as _____.
- Place the object in the graduated cylinder and record the resulting water volume as _____.
- _____ the volume of the water alone from the volume of the water plus the object. This will be the volume of the irregularly shaped solid.

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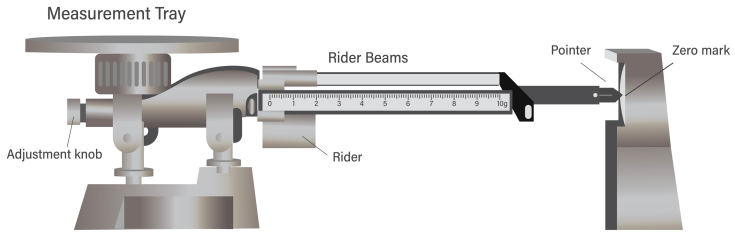
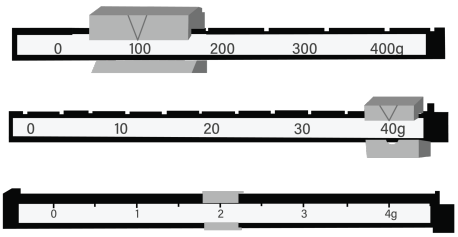
Measuring mass

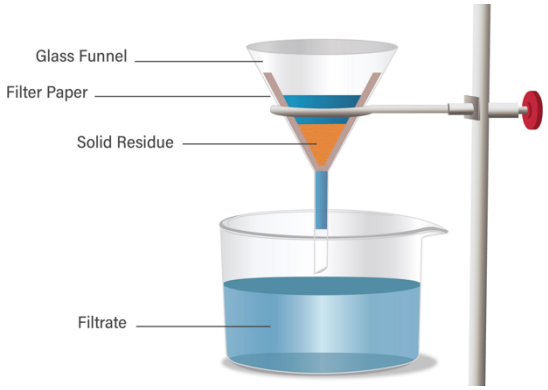
- The _____ is used measure masses very precisely.
- With the pan _____, move the three sliders on the three beams to their _____ positions. This will make the balance pointer equal to _____.
- If the pointer is not aligned with the zero mark, then calibrate the balance by turning the _____ on left side, under the pan.
- Once the balance has been calibrated, put the object to be measured on the _____.
- Move the 100-gram slider along the beam to the _____ until the pointer drops below the zero mark. The notched position immediately to the left of this point indicates the number of hundreds of grams.
- Now move the 10-gram slider along the beam to the right until the pointer drops below the zero mark. The notched position immediately to the _____ of this point indicates the number of tens of grams.
- The beam in front is not notched and the slider can move anywhere along the beam. The boldface numbers on this beam indicate the _____ and the tick marks between boldface numbers indicate _____ of grams.





Filtering

- **Filtration** involves separation of a solid from a liquid by passing the mixture through a _____ material.
- In filtration, the porous filtering material is usually a _____ inserted in the funnel. The liquid collected is called _____ while the solid collected in the filter paper is called _____.



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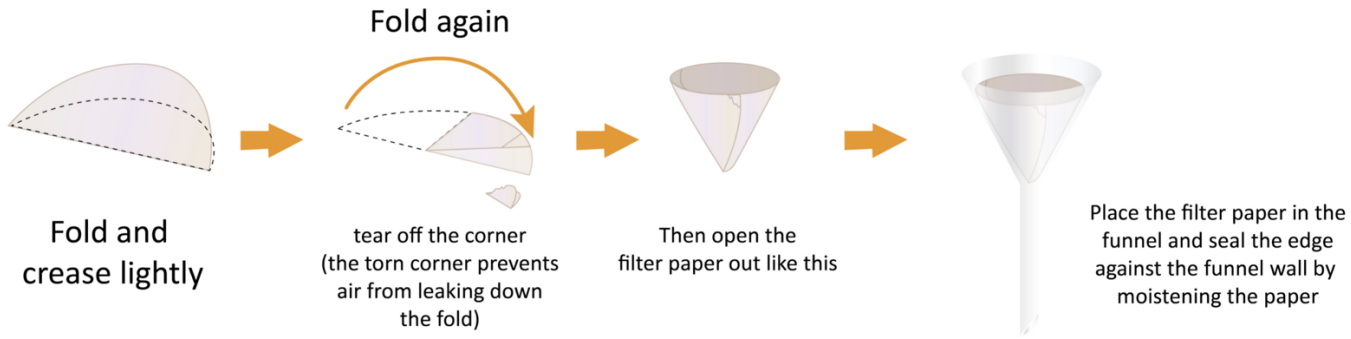
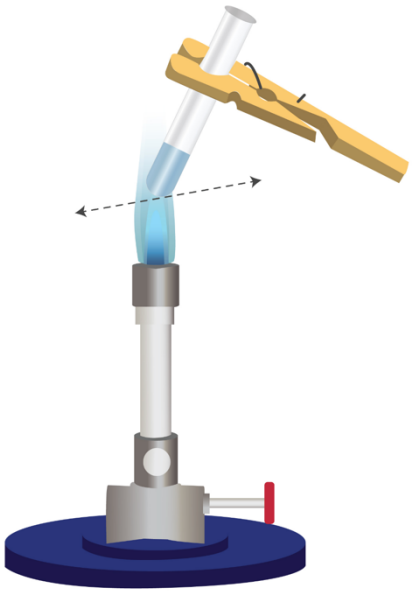
- Fold the filter paper to fit in the funnel as shown in the image below.



- Wet the paper with the solvent, which is usually _____.
- Adjust it so that the entire cone tightly fits on the _____ surface of the glass funnel.
- _____ the contents of the solution to be separated onto the funnel with filter paper. Use a stirring rod when pouring to avoid _____.

Heating

- Heating in a test tube
  - Hold the test tube with the help of a _____ at an angle.
  - Heat just _____ the surface of the liquid but not at the bottom.
  - While heating, the move the test tube _____.
  - If the test tube is heated at the bottom, a bubble may form causing the entire content to _____ of the test tube violently. This is called _____. This can cause a serious accident, if the mouth of the test tube is pointing _____ you or someone working near you.



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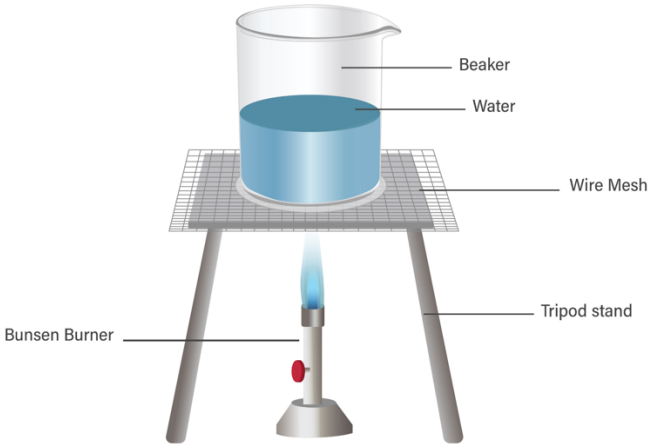
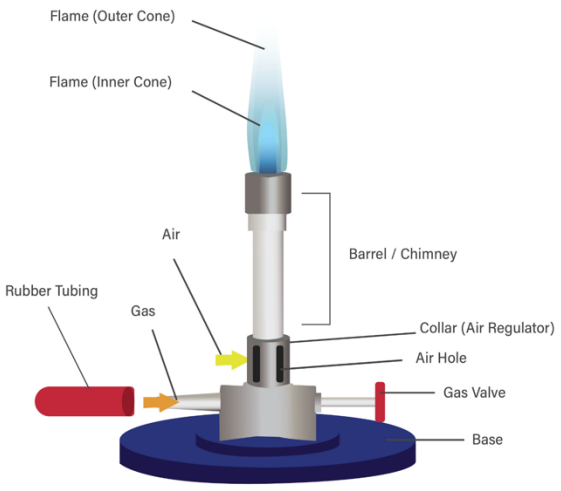
- Heating in a beaker
  - If the liquid is to be heated in a beaker or a flask, the beaker or the flask is placed on a _____ which in turn is placed on a _____.
  - For safe boiling, it is advisable to add a chip of broken china dish or a piece of any other non-reacting tiny material like _____ to avoid bumping.



Lighting a Bunsen Burner

- A Bunsen burner is a common laboratory instrument that produces a _____, _____, and _____. It allows for precise _____ of the mixing of gas and oxygen before combustion which ignites the flame.
- The following are the parts of the Bunsen burner:
  - _____ – it is where the gas and air mix for combustion
  - _____ – it is where one end of the rubber tube is connected to the main gas
  - _____ – connects the burner to the main gas
  - _____ – regulates the amount of gas that enters the burner
  - _____ – regulates the amount of air entering the barrel
  - _____ – supports the burner



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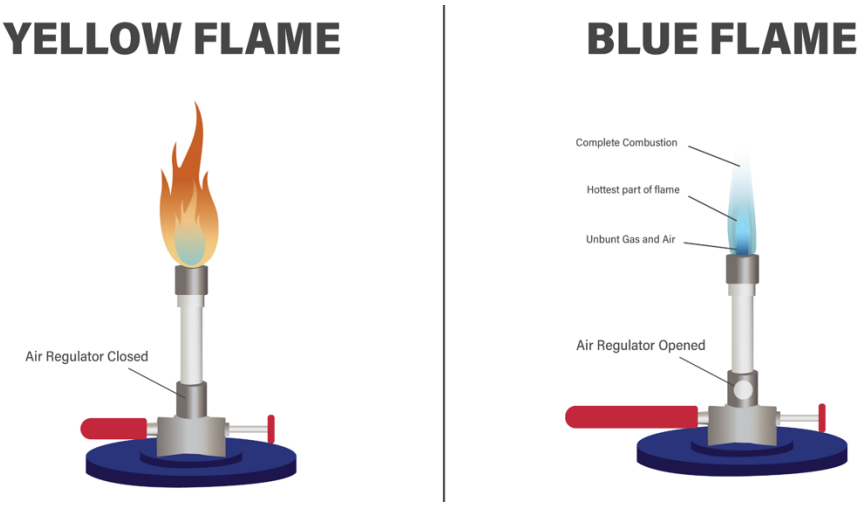
- Luminous vs Non-luminous Flame
  - A luminous flame burns _____ while a non-luminous flame burns _____.



  - This is due to the difference in the available supply of _____.
  - Luminous flames have _____ access to oxygen. It is a _____ hot flame, _____ visible, and is used whenever you are not heating something.
  - Non-luminous flames have _____ access to oxygen. It is _____ flame, _____ to see, and is used whenever heating is necessary.
- To light a Bunsen burner:
  - Connect the _____ securely to gas supply and Bunsen burner.
  - Turn on _____. If you hear gas, check the valve on the Bunsen burner as it may be open. If it is open, close it by turning it _____.
  - Turn the valve on the Bunsen burner _____ about 3 half turns.
  - Hold the striker on _____ of the barrel and ignite it.
  - Use the **gas valve** to control the flame's _____. Take note that more gas will create a _____ flame and less gas gives a _____ flame.
  - Twist the **collar** to adjust the flame's _____. Close the collar so that no air enters the barrel for the _____ flame. Adjust the collar to allow air to enter the barrel and achieve a _____ flame.
  - To extinguish the flame, close the needle valve completely by turning it clockwise to _____ the gas supply.

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