Class 9:Physical MASS MEASURING INSTRUMENTS

We are going to start our online lecture today. I hope you all will enjoy and learn

- Rules of the class
- Be on time for your classes.
- Respect all participants of the class.
- Do not create any disturbance.
- Raise hand if you have a question teacher will answer when it is suitable time.
- Pay attention to your teacher.
- Enter into the class with your name and CPR number
- Follow the time table.

Objective

- Student will be able to differentiate between different balance
- Physical Balance
- Lever Balance
- Electronic Balance

MASS MEASURING INSTRUMENTS

- Pots were used to measure grain in various part of the world in the ancient times.
- However, balances were also in use by Greeks and Romans.
- Beam balances such as shown in figure 1.13 are still in use at many places.
- In a beam balance, the unknown mass is placed in one pan.
- It is balanced by putting known masses in the other pan.
- Today people use many types of mechanical and electronic balances.
- You might have seen electronic balances in sweet and grocery shops.
- These are more precise than beam balances and are easy to handle

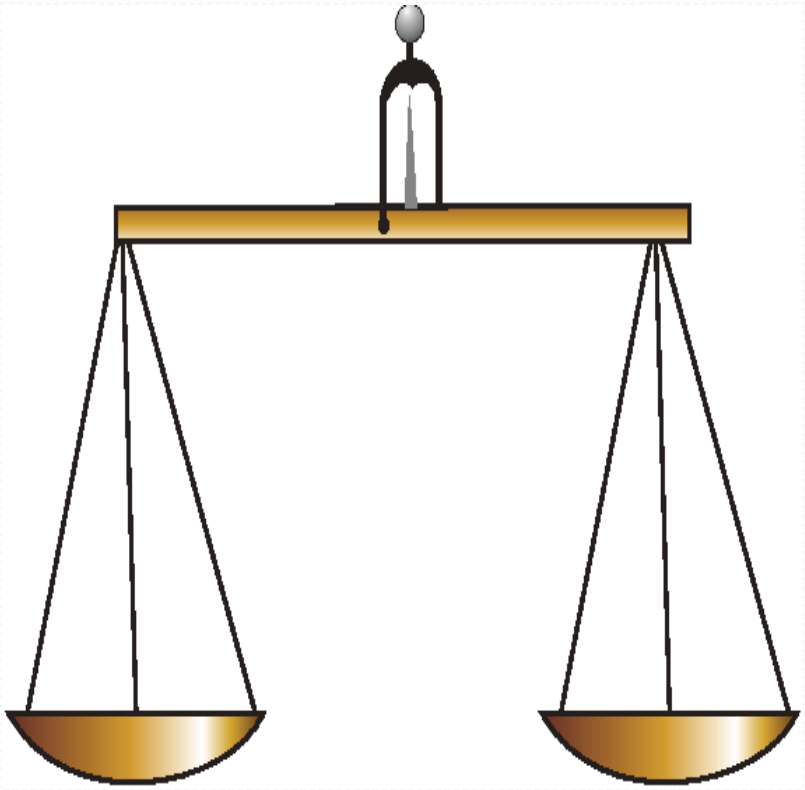

Figure 1.13: A beam balance

PHYSICAL BALANCE

- as shown in the figure 1.14.
- The beam carries scale pans over the hooks on either side.
- Unknown mass is placed on the left pan. Find some suitable standard masses that cause the pointer to remain at zero on raising the beam.
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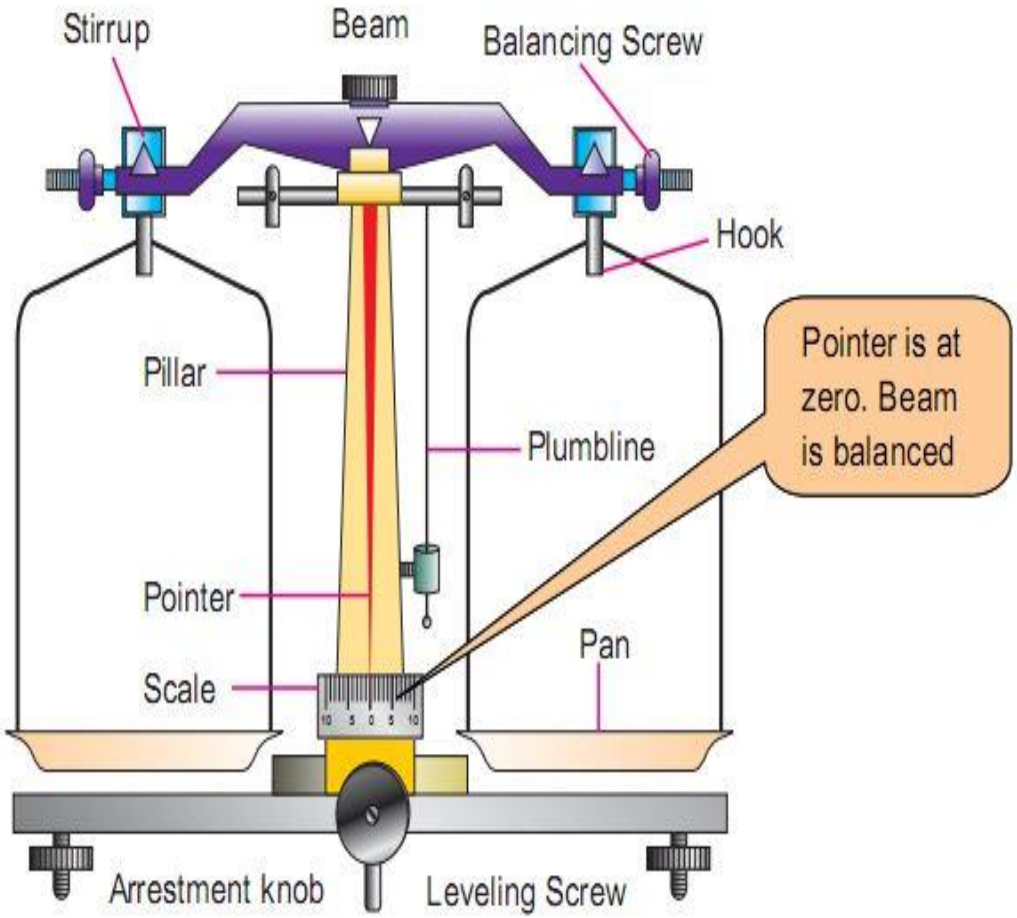


Figure 1.14: A physical balance

LEVER BALANCE

- A lever balance such as shown in figure 1.15 consists of a system of levers.
- When lever is lifted placing the object in one pan and standard masses on the other pan, the pointer of the lever system moves.
- The pointer is brought to zero by varying standard masses.

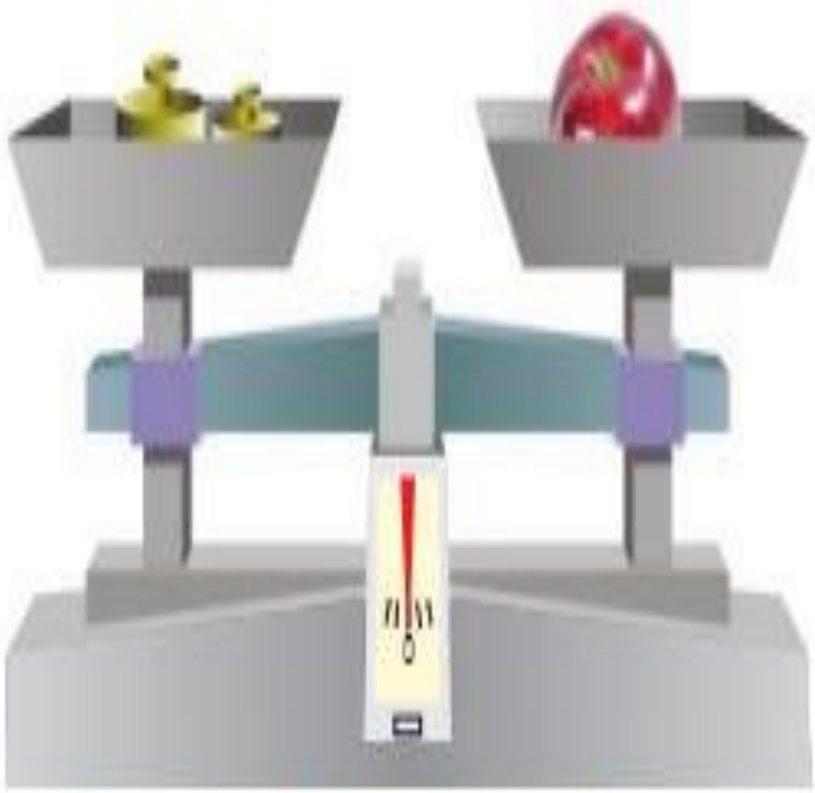


Figure 1.15: A lever balance

ELECTRONIC BALANCE

- Electronic balances such as shown in figure 1.16 come in various ranges; milligram ranges, gram ranges and kilogramme ranges.
- Before measuring the mass of a body, it is **switched ON** and its reading is **set to zero.**
- Next place the object to be weighed.
- The reading on the balance gives you the mass of the body placed over it.

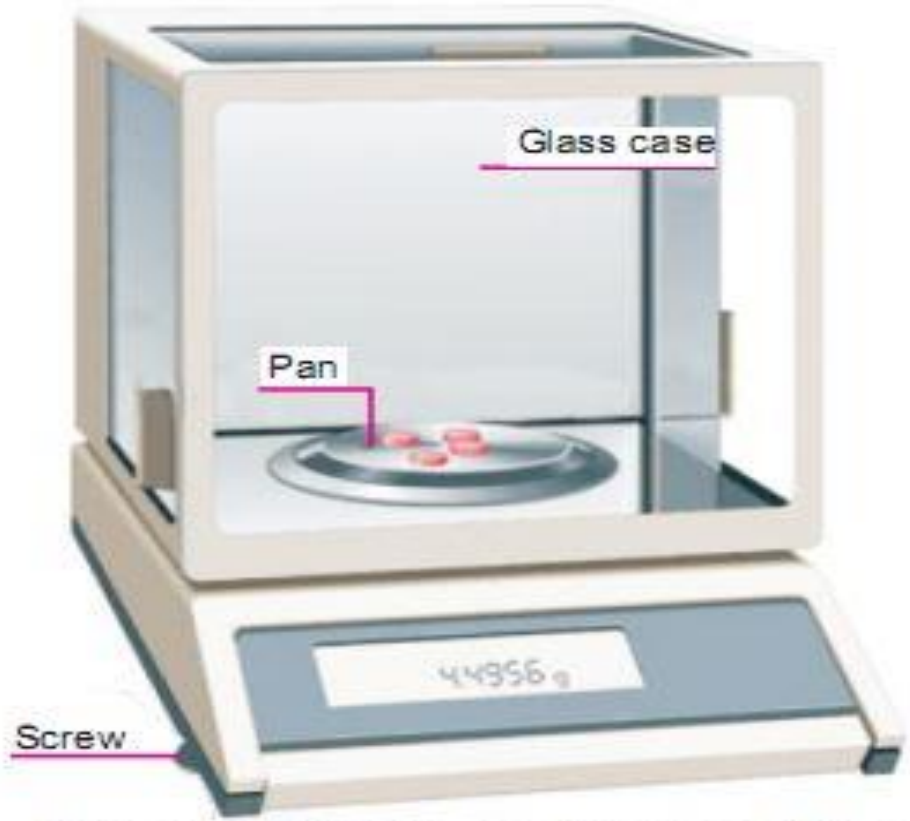
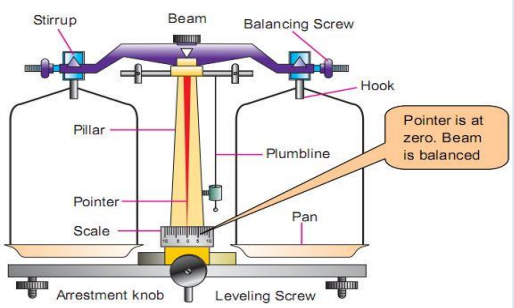
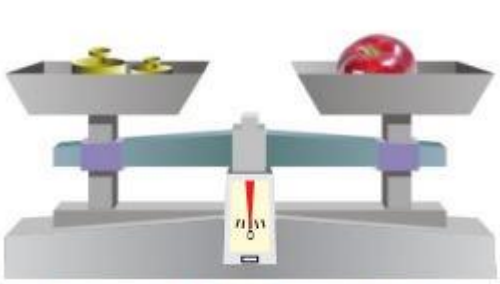


Figure 1.16: An electronic balance

Comparison of Balance

- The most Accurate Balance
- The mass of one rupee coin is done using different balances as given below:

Physical Balance	Beam Balance	Electronic Balance
Let the balance measures coin's mass = 3.24 g Least count of the physical balance may be as small as 0.01 g or 10 mg. Therefore, its measurement would be more precise than a sensitive beam balance.	Let the balance measures coin's mass = 3.2 g A sensitive beam balance may be able to detect a change as small as ofo.1 g Or 100 mg.	Let the balance measures coin's mass = 3.247 g Least count of an electronic balance is 0.001 g or 1 mg. Therefore, its measurement would be more precise than a sensitive physical balance. Thus electronic balance is the most sensitive balance inthe above balances.
 Figure 1.14: A physical balance	 **Figure 1.15:** A lever balance	 **Figure 1.16:** An electronic balance

Home Work

- Attempt ant Two short questions from the book
- Or
- Draw a chart about the Balance