Knowledge domain: **Mechanical**
Unit: Calibration
Skill: Scale

Tools and Parts Required:

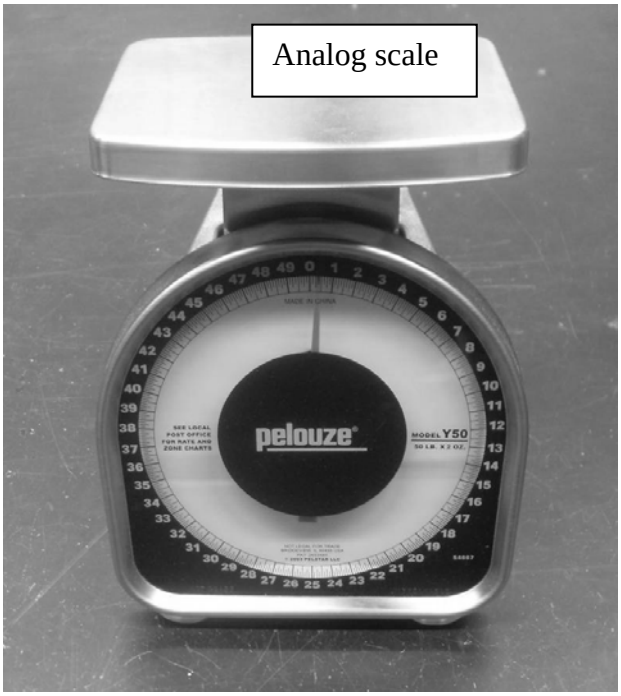
1) **Scale**
2) **Object of known weight**
   OR
3) **Water**
4) **Syringe or graduated cylinder**
5) **Container for water (cup or glass)**

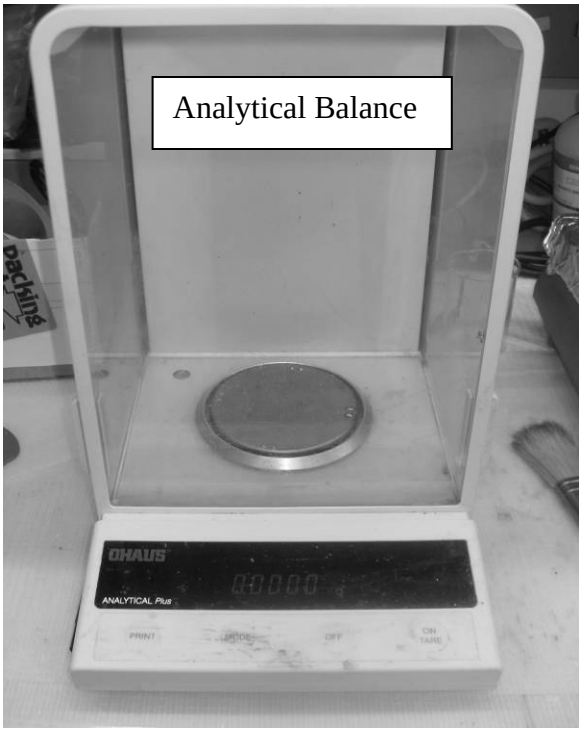
Introduction

A weighing scale is a device which determines the weight of an object. Medical scales can be used to measure the body weight of human beings. Scales are either analog or digital. Analog scales represent weight by a pointer's position on a dial. Digital scales electrically display the exact weight. Analytical balances are common digital scales found in hospitals. An analytical balance is used to accurately and precisely measure the mass of an object. Analytical balances are usually used in laboratories. A weighing scale must be occasionally calibrated to ensure accurate readings of the weight.

Example

Below are pictures of different types of scales.



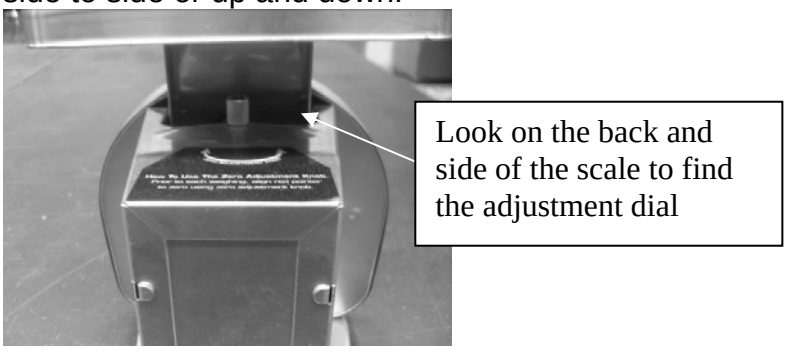


Identification and Diagnosis
Analog and digital scales should read zero when nothing is being weighed. If the scale displays a weight when there is nothing on the scale, you must tare the scale. Tare the scale by setting the empty scale to zero.

Calibration should be verified after taring. Some scales can be calibrated by the biomedical technician. Some scales are impossible to calibrate. Discard uncalibrated scales that cannot be repaired.

Anytime a scale is repaired it should be calibrated. Anytime a scale is dropped it should be calibrated. In most cases, when a scale is moved it should be calibrated

Procedure
Analog Scale: Place the scale on a stable, level surface. Place the weight boat, filter paper, or baby sling on the scale. Allow the reading to stabilize. Find the adjustment dial. It is usually located on the back or side of the scale. It can be moved either from side to side or up and down.



Turn the dial to set the scale to zero.

Verify calibration: Locate an object whose precise weight is known and within the range of the scale. If you do not have an object of known weight, you must create one. Use a syringe or graduated cylinder to measure a known volume of water. Water weighs one gram for each milliliter. So, if you need a weight of 20 grams, measure 20 milliliters of water.

Remove the object. The dial should now return to zero. The scale should now be properly calibrated.

If the scale does not read the correct weight, the scale is not correctly calibrated. Many mechanical scales cannot be calibrated. If you attempt to open the scale for calibrations, remember to tare and verify correct calibration before returning the scale to service.

Analytical Balance: Remove everything from the balance. Turn the balance on. Press the button that reads “ON / TARE.” Some balances may read “ZERO” instead.

The digital balance should now only display zeros. The analytical balance is tared and ready for use. Some analytical balances have a second knob or button for calibration. Read the owner's manual for calibration instructions.

Other Digital Scales: Some digital devices have a "calibration mode." Calibration mode will automatically calibrate the device. Use the owner's manual to automatically calibrate a digital scale.

Exercise

Your instructor will give you either an analog or digital scale. This may be a piece of medical equipment from your hospital. Tare the scale using the procedure above. Use water or an object of known weight to verify calibration. Laboratory grade analytical scales may only have a range of a few grams. Use a powder such as sodium bicarbonate to calibrate laboratory scales.

Your instructor must verify your work before you continue.

Preventative Maintenance and Calibration

Scales should be tared before every use. Verify the calibration of the scale every six months.