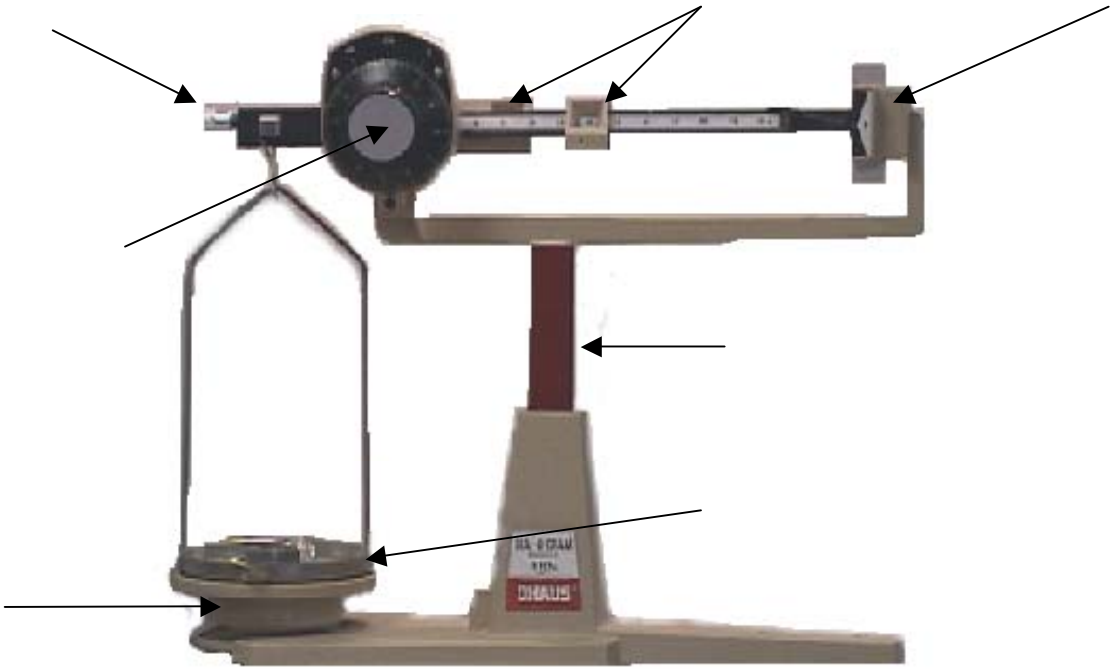
Understanding the Balance

Name: _____
Date: _____
Per: ____



<u>Section I</u>: Adjusting the Balance

1. Check to see that the serial number on the back of the balance matches the serial number on the bottom of the silver colored massing pan.

2. Set the sliding masses back to their zero positions on the far left end of the balance arm.

3. Adjust the dial so that the zero on the dial aligns with the zero mark on the scale above the dial.

4. Check to see if the pointer on the far right end of the balance arm aligns with the zero mark on the balance frame. If it does, go on to Section 2. If not, follow instructions below.
    a. Pointer below the mark: turn the adjustment knob, located on the far left end of the balance arm, counter-clockwise until the pointer aligns with the mark.
    b. Pointer above the mark: reverse the above procedure.

<u>Section 2</u>: Massing an Object

1. Place the object on the massing pan. Make sure it will not fall off or out of the pan and that it's not touching any part of the balance frame. The arm should rise above the zero mark on the frame.

2. Begin by moving the largest mass (100 gram) out on its rider one notch at a time until the balance arm drops below the zero mark on the frame, then move the mass back on notch, this mass is now properly adjusted. NOTE: all the masses on the riders fit into notches in the rider. For the mass to be in the correct position it must be IN a notch and the mass must appear in the WINDOW. Do not attempt to balance by placing a mass between two notches. Continue doing this with the next mass (10 gram) following the same procedure.

3. After you have finished moving the masses, fine adjust the pointer on the zero mark by using the dial. Don't worry about what the dial reads, just watch the pointer and turn the dial slowly until the pointer and the mark are in perfect alignment.

Section 3: Reading the Mass Value

1. After the pointer and mark are in perfect alignment, begin determining the mass by adding up all the components. Begin with the masses on the ridres. Simply add up the values that appear in the windows. These two will give you the value for the hundreds and tens place.

2. The ones, tenths, and hundredths place is read off the dial and the scale above the dial. You will notice that on the scale there is a zero mark on the right side of the scale, this will be the starting point for determining the values. Begin with the ones. On the dial are numbers 1-10, these represent the ones place. To determine the number that goes in the ones place determine which number on the dial has completely passed the zero mark on the scale. This is your value for the ones place. Almost the same procedure is used to determine the tenths place except instead of using the numbers on the dial, you use the small marks between the numbers on the dial. Simply count the number of small marks between the numbers on the dial that have completely passed the zero mark on the scale. This your value for the tenths place.

3. To determine the value for the hundredths place, look at the scale above the dial. This is divided into 10 equal parts each representing $1/100^{th}$ of a gram. Look carefully at the scale and the dial and find a pair of marks from each that is as closely aligned as possible. After you have found the right pair, count on the scale the number of marks that the match is from the zero mark. This is your value for the hundredths place.

Practice Massing

Determine the mass of three objects. Please raise your hand so that I can come and verify the mass. Please use the correct units.

Object	Mass (g)