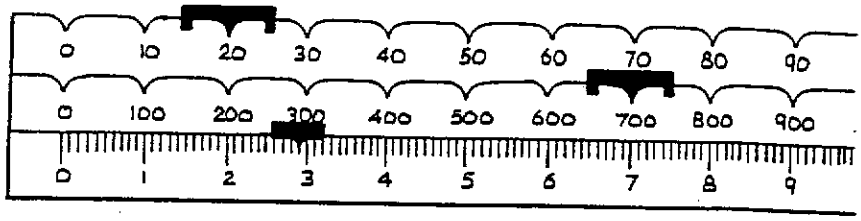
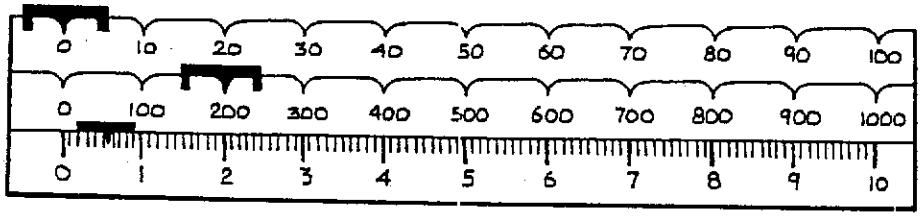
USING THE BALANCE

Name _____

The following balance measure mass is grams. What masses are shown on each of the following balances?

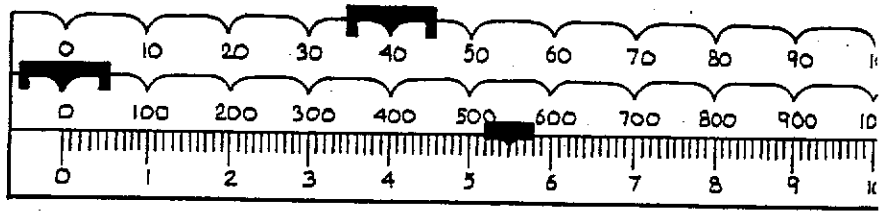
Answer: _____

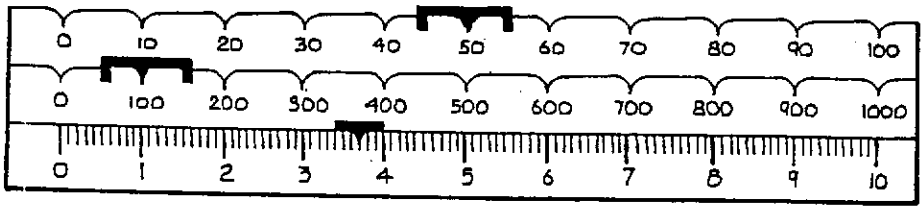




Answer: _____

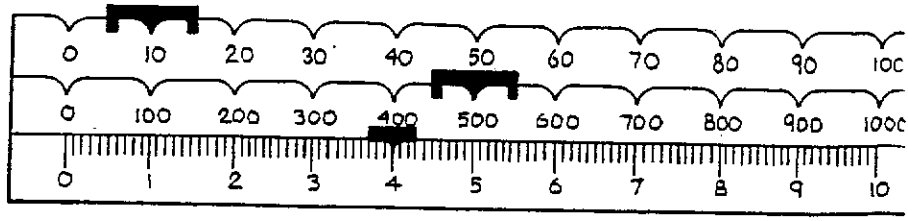
Answer: _____





Answer: _____

Answer: _____



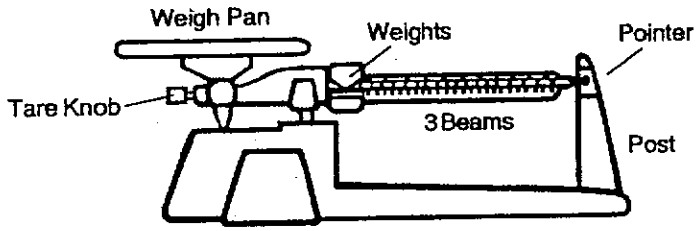
8

Date:_____ Names: _____

METRIC MEASUREMENT (MASS/WEIGHT)

INTRODUCTION: How can you figure out how much of your pencil gets "eaten" by a pencil sharpener each time you sharpen a pencil? How can you figure out how large a gulp of water is?

OBJECTIVE: In this activity, we will become familiar with the parts of a triple-beam balance that is used to measure mass, and we will practice measuring the mass of different objects. Following this, we will learn how to "weigh-by-difference" to find the mass of different objects.



PROCEDURE:

<u>To "ZERO A BALANCE"</u>

1. Check to make sure that the balance is clean. Wipe and clean it if necessary.

2. Move all weights to the left of the balance (next to the weigh pan).

3. Look to see if the pointer line is perfectly in line with the mark on the post. This indicates whether the balance is zeroed.

4. If the lines do not meet, adjust the tare knob, which is located underneath the weigh pan, by turning it a little and observing its effect. You should be able to zero the balance by repeating this procedure.

** If you cannot zero the balance, ASK FOR ASSISTANCE!

<u>To Weigh Objects</u>

1. Use the following steps to weigh each object listed in the chart (in grams), and record its weight in the chart.

2. Make sure the balance is zeroed and the weigh pan is clean.

3. Place an object on the weigh pan.

4. Move the weights on the beams until the pointer just balances at the white mark on the post. Do this by first moving the small weight to the right. If it is too light to balance the object, move it back to the left (to 0) and try the next larger weight. Continue this until one of the weights can be placed so that the pointer is both above and below the post line.

** Make sure that the two larger weights fall into notches as you move them on the beams.

Date: _____ Names: _____

5. Weights can be measured as accurately as the nearest tenth of a gram b positioning the smallest weight.

6. Once the weights have been positioned so that the beam pointer aligns with the mark on the post, add each of the marked weights together to get a total Remember, the smallest weight marks single grams, and the lines between the numbers on that beam mark tenths of grams. The medium-sized weigh marks tens of grams, and the largest weight marks hundreds of grams.

7. Record the total mass in the chart below under "Weight." Write in units.

8. Store the balance clean and with all the weights on zero.

OBJECT	WEIGHT (IN GRAMS)
Small paper clip	
2 small paper clips	
Large paper clip	
2 large paper clips	
One penny	
Empty beaker	
Something you choose: _____	

<u>To Weigh By Difference</u>

1. When doing this, we will be weighing an object, taking away some of or adding to the object, and then reweighing the object to see how much was taken away or added.

2. First, weigh each of the objects listed in the chart on page 11. Record their weights under the column "Weight Before."

3. For each object remove or add to it by:
   a. putting the sponge in water.
   b. drinking a swallow of water from the cup.
   c. sharpening the pencil.

4. Reweigh each item after step 3 and record its new weight under "Weight After."

Date: _____ Names: _____

5. To find the amount of change (weight gained or lost), subtract the smaller number from the larger number. If the starting number is larger, the weight was lost. If the ending weight was larger, then the weight was gained.

6. Include the units as well as whether weight was gained or lost.

7. Store the balance clean and dry and with all weights on zero.

OBJECT	WEIGHT BEFORE	WEIGHT AFTER	WEIGHT CHANGE (GRAMS)
Dry sponge (put in water)			
Cup of water (take a sip)			
Pencil (sharpened)			

QUESTIONS:

1. Why is it important to make sure that the weigh pan is clean before weighing objects?

_____

_____

_____

2. How does "weighing by difference" compare to something like saving pencil shavings and weighing them to find out how much is sharpened off? _____

_____

_____

_____

_____

_____

_____