

Exercise Find the value of 1 oz. in grams, 1 kilogram in pounds, 1 quart in c.c. and in litres.

APPARATUS: *Balance, with both British and metric weights, quart measure, glass vessel graduated in c.c.*

(a) Place an ounce weight on the left-hand pan of the balance (Fig. 8) and place metric weights on the right-hand pan to balance it.

(b) Next place the kilogram weight on the left pan, and keeping the rider at the zero point, add British weights on the right until they balance the kilogram. Express your result in pounds and decimals.

(c) Carefully pour water from the graduated vessel into the quart measure until it is just filled. Then add up the amount poured in. Or, fill the quart measure and empty the water into the glass graduate. Express the quart in c.c. and also in litres. (1 l. = 1,000 c.c.)

15. Density. Let us take equal volumes of lead, aluminium, wood, brass, cork. These may conveniently be cylinders about $\frac{1}{2}$ inch in diameter and $1\frac{1}{2}$ or 2 inches in length.

By simply holding them in the hand we recognize at once that these bodies have different weights and therefore different masses. With the balance and our set of weights we can accurately determine the masses.

We describe the difference between these bodies by saying that they are of different densities, and we define density thus:—

The DENSITY of a substance is the mass of unit volume of that substance.

If we use the foot and the pound as units of length and mass, respectively, the density will be expressed by the number of pounds in 1 cubic foot. For example, water at 4° C. has a density 62.4; iron, about 440; white pine, about 26, pounds per cubic foot.

Next let us take 1 cm. and 1 gram as our units of length and mass, respectively, and see what numbers will represent the densities of some substances.