Activity 1

Objective

To find the HCF of two numbers experimentally based on Euclid Division Lemma.

Material Required

Cardboard sheets, glazed papers of different colours, scissors, ruler, sketch pen, glue etc.

Method of Construction

1. Cut out one strip of length a units, one strip of length b units ($b < a$), two strips each of length c units ($c < b$), one strip of length d units ($d < c$) and two strips each of length e units ($e < d$) from the cardboard.
2. Cover these strips in different colours using glazed papers as shown in Fig. 1 to Fig. 5:

Fig. 1

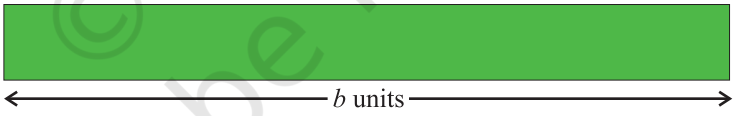

Fig. 2

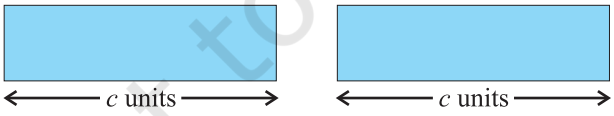

Fig. 3

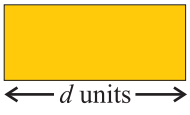

Fig. 4

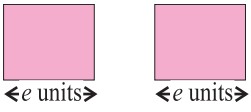

Fig. 5

3. Stick these strips on the other cardboard sheet as shown in Fig. 6 to Fig. 9.

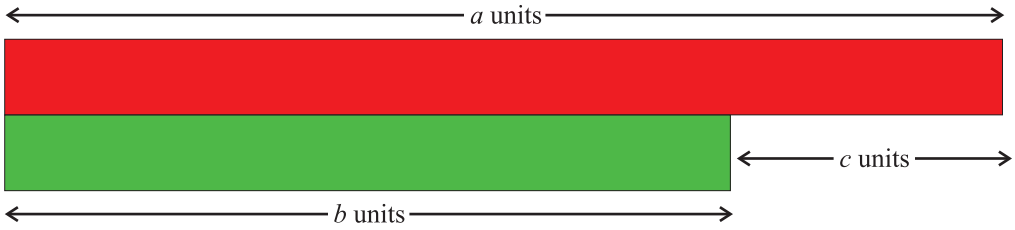

Fig. 6

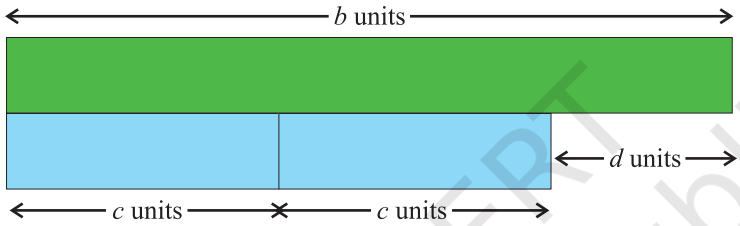

Fig. 7

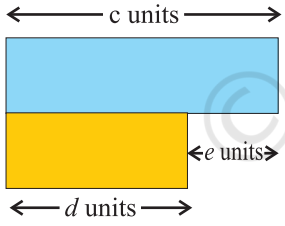

Fig. 8

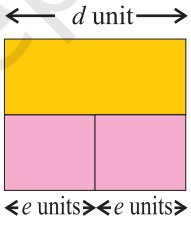

Fig. 9

DEMONSTRATION

As per Euclid Division Lemma,

Fig. 6 depicts $a = b \times 1 + c$ ($q = 1$, $r = c$) (1)

Fig. 7 depicts $b = c \times 2 + d$ ($q = 2$, $r = d$) (2)

Fig.8 depicts $c = d \times 1 + e$ ($q = 1$, $r = e$) (3)

and Fig. 9 depicts $d = e \times 2 + 0$ ($q = 2$, $r = 0$) (4)

As per assumptions in Euclid Division Algorithm,

HCF of a and b = HCF of b and c

= HCF of c and d = HCF of d and e

The HCF of d and e is equal to e, from (4) above.

So, HCF of a and b = e.

Observation

On actual measurement (in mm)

a = ... , b = ... , c = ... , d = ... , e = ...

So, HCF of _____ and _____ = ...

Application

The process depicted can be used for finding the HCF of two or more numbers, which is known as finding HCF of numbers by Division Method.