

Activity 27

OBJECTIVE

To form a cuboid and find the formula for its surface area experimentally.

MATERIAL REQUIRED

Cardboard, cello tape, cutter, ruler, sketch pen/pencil.

METHOD OF CONSTRUCTION

1. Make two identical rectangles of dimensions a units \times b units, two identical rectangles of dimensions b units \times c units and two identical rectangles of dimensions c units \times a units, using a cardboard and cut them out.
2. Arrange these six rectangles as shown in Fig. 1 to obtain a net for the cuboid to be made.
3. Fold the rectangles along the dotted markings using cello-tape to form a cuboid [see Fig. 2].

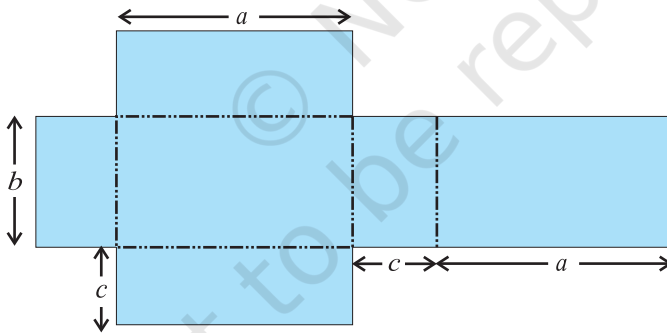


Fig. 1

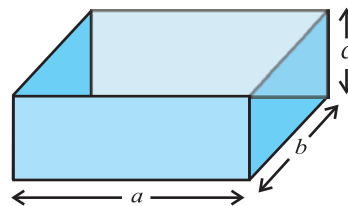


Fig. 2

DEMONSTRATION

Area of a rectangle of dimensions (a units \times b units) = ab square units.

Area of a rectangle of dimensions (b units \times c units) = bc square units.

Area of a rectangle of dimensions (c units \times a units) = ca square units.

Surface area of the cuboid so formed

= $(2 \times ab + 2 \times bc + 2 \times ca)$ square units = $2(ab + bc + ca)$ square units.

OBSERVATION

On actual measurement:

$a =$, $b =$, $c =$

So, $ab =$, $bc =$, $ca =$

$2ab =$, $2bc =$, $2ca =$

Sum of areas of all the six rectangles =

Therefore, surface area of the cuboid = $2(ab+bc+ca)$

APPLICATION

This result is useful in estimating materials required for making cuboidal boxes/almirahs, etc.

NOTE

Instead of making six rectangles separately, as done in the activity, a net of a cuboid be directly prepared on the cardboard itself.