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- (a) To verify that addition is commutative for whole numbers, by paper cutting and pasting.
- (b) To verify that multiplication is commutative for whole numbers, by paper cutting and pasting

Learning Objective : To understand that addition as well as multiplication are commutative for whole numbers.

Pre requisite : (i) Knowledge of addition and multiplication of whole numbers.

(ii) Knowledge of commutative property of whole numbers.

Materials required : Grid papers, a pair of scissors and glue

ACTIVITY 1

Procedure (a) : (a) To verify 3 + 4 = 4 + 3

- Step 1. Cut out two strips each of length 3 units from a grid paper and shade them with any colour (say Red) Fig. 1(a).
- Step 2. Cut two strips each of length 4 units from a grid paper and shade them with different colour (say Blue) Fig. 1(b).
- Step 3. For representing 3 + 4, paste one strip of length 3 units and then paste another strip of length 4 units in the same line on the grid paper without leaving any gap Fig. 1(c).
- Step 4. For representing 4 + 3, paste one strip of length 4 units and then paste another strip of length 3 units in the same on the same grid paper line without leaving any gap Fig. 1(d).
- Step 5. Now, compare (by counting number of boxes) the length of strips obtained in Step 3 and Step 4.

Are they equal?

Step 6. Repeat the activity for some more pairs of whole numbers and write your result.

Observations:

Number of shaded boxes in the presentation of 3 + 4 =

Number of shaded boxes in the presentation of 4 + 3 =







Thus, 3 + 4 = 4 + 3

Hence addition is commutative for whole numbers.

Procedure (b): To verify $3 \times 4 = 4 \times 3$

- Step 1 Cutout three strips each of 4 boxes from a grid paper and shade them with any colour (Say blue).
- Step 2 Place them on a grid paper to form a rectangle as shown in Fig. 1(d)
- Step 3 Now cutout 4 strips each of length 3 units from the grid paper. Colour them (say Red) and place them on the same grid paper to form a rectangle as shown in Fig. 1(e)



Step 4 Now compare the number of boxes in each of the two rectangles obtained. Are they equal?

Step 5 Repeat the activity for some more pairs of whole numbers and write your result.

Observations: Number of shaded unit squares in the representation of 3 x 4 =

Number of shaded boxes in the representation of 4 x 3 =

Thus, $3 \times 4 = 4 \times 3$

Hence, multiplication is commutative for whole numbers.