

ACTIVITY

3



Title

Addition of Polynomials.



Objective

Use algebra tiles (square and rectangular strips) to represent polynomials and explore polynomial addition using these tiles.



Prerequisite knowledge

1. Concept of addition of polynomials.
2. Concept of area of the rectangle and area of the square.



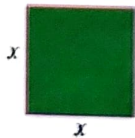
Materials required

A drawing sheet, chart papers of green, blue and yellow colour; a cardboard, a ruler, a pair of scissors, a glue stick and a red sketch pen.



Procedure

In this method we use three types of algebra tiles whose combination is used to represent polynomials. These three tiles are of the following types :



This x by x tile represents x^2 .



This x by 1 tile represents x .



This 1 by 1 tile represents 1 .

Let us find sum of polynomials $2x^2 + 3x + 2$ and $x^2 + 2x + 3$

1. Draw large number of squares of dimension x by x (say 3 unit $\times$ 3 unit) on a green chart paper cut these by pair of scissors.
2. Draw large number of rectangles of dimension x by 1 (3 unit by 1 unit) on a blue chart paper. Cut these.
3. Draw adequate number of small squares of dimension 1 unit by 1 unit on a yellow chart paper. Cut these.
4. Represent the polynomial $2x^2 + 3x + 2$ by using 2 green large square tiles, 3 blue rectangular tiles and 2 yellow small square tiles [Fig. (i)]

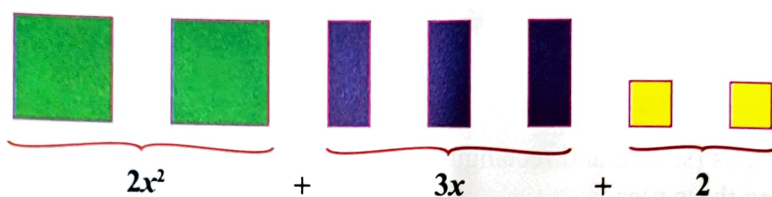


Fig. (i)

5. Similarly using these tiles represent the other polynomial $x^2 + 2x + 3$. Then continue the tiles of the two polynomials keeping the like tiles together to form one group, which represents the sum of the polynomials.

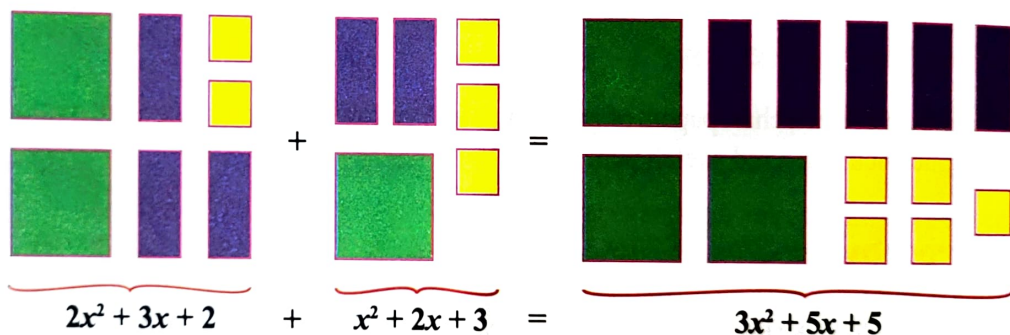


Fig. (ii)

Observation

The combined group of tiles in step 5 above represents the polynomial $(3x^2 + 5x + 5)$, as it contains three green tiles, five blue tiles and five yellow tiles. This polynomial is called the sum of the two original polynomials. It can be written in the form of polynomial equation as follows :

$$(2x^2 + 3x + 2) + (x^2 + 2x + 3) = 3x^2 + 5x + 5$$

Result

We have learnt addition of two polynomials by arranging the algebra tiles (activity method).



Learning outcome

After performing this activity the students will learn the concept of addition of polynomials by a simple practical method.



Activity time

With the help of algebra tiles find the sum of the following polynomials :

(a) $2x^2 + 7x + 2$ and $x^2 + x + 1$

(b) $3x^2 + 3x + 5$ and $2x^2 + 5x + 4$

(c) $3x + 7$ and $4x^2 + x + 3$

Also verify the result by actual addition of polynomials.

ANSWERS

(a) $3x^2 + 8x + 3$

(b) $5x^2 + 8x + 9$

(c) $4x^2 + 4x + 10$