**MATHEMATICS PROJECT**

**CLASS: 9**

**TOPIC: FACTORISATION OF QUADRATIC POLYNOMIALS**

**OBJECTIVE:** Learning geometrical representation of the factorization of the following quadratic polynomials.

1. $x^{2}+5x+6$
2. $x^{2}-x-6$
3. $x^{2}-5x+6$
4. $2x^{2}-5x+2$

**PRE-ACQUIRED KNOWLEDGE:**

1. Splitting the middle term of a quadratic polynomial
2. Formula for the area of a square and of a rectangle

**MATERIAL REQUIRED:**

1. Pink and blue coloured chart papers
2. White sheets of paper
3. Geometry box
4. Pair of scissors
5. Fevistick/gum
6. Mathematics Project File and File papers

**PLANNING:**

1. Every $x^{2}$ will be represented by the area of a pink square of side $x$ units as shown in the figure
2. Thus to represent $2x^{2}$we use two pink squares of side $x$ units each.
3. Every $x$ will be represented by a pink rectangular strip of dimensions $1×x$ as shown in the adjoining figure. Thus to represent $5x$ we use 5 rectangular strips of dimensions $1×x$ each.
4. Every $-x$ will be represented by a blue rectangular strip of dimensions $1×x$ as shown in the adjoining figure. Thus to represent $-3x$ we use 3 rectangular strips of dimensions $1×x$ each.
5. All positive integers will be represented by blue unit squares as shown in the adjoining figure. Thus to represent 6, we use 6 pink unit squares.
6. All negative integers will be represented by pink unit squares as shown in the adjoining figure. Thus to represent $-6$, we use 6 blue unit squares.
7. Blue strips and blue unit squares means to cut off the area equal to the area of these pieces.

**PROCEDURE:**

1. Factorisation of $x^{2}+5x+6$.
2. The polynomial $x^{2}+5x+6$ can be written as $x^{2}+3x+2x+6$
3. To represent $x^{2}$, take a pink square of side $x$ units, to represent 3$x$ take 3 pink rectangular strips of dimensions of $1×x$ units each; to represent $2x$ take 2 pink rectangular strips of dimensions $1×x$ units each and to represent 6 take 6 pink unit squares.
4. Thus to represent $x^{2}+3x+2x+6$ paste all the above pieces on a white sheet of paper as shown.



**RESULT:**

We observe that the area of the rectangle is $(x+3)(x+2)$ and hence $x^{2}+5x+6=(x+3)(x+2) $

CAN YOU DO THE REST YOURSELF?