THE VILLAGE
INTERNATIONAL SCHOOL
"We Nurture Dreams"

GRADE -8 **Work sheet - MATHEMATICS** 2024-'25

CHAPTER -13 **identities and factorisation**

Name :..... **Date:……..**

MCQ:

Choose the correct option.

1) The factors of $4a^2b + 8ab^2$ are:
   a) $2ab, (a+b)$ **b)** $4a, (a+b)$ **c)** $4ab, (a+2b)$ **d)** $2ab, (2a+4b)$
2) The equivalent of $x^2 + 4x + 4$ is:
   a) $(x+2)(x-2)$ **b)** $(x+2)^2$ **c)** $(x-2)^2$ **d)** $(x+2)(x-4)$
3) Which among these is the expansion of $(x-4)(x-5)$?
   a) $x^2 - 9x - 20$ **b)** $x^2 - 9x + 20$ **c)** $x^2 + x - 20$ **d)** $x^2 + 9x + 20$
4) The value of 93×107 is:
   a) 9941 **b)** 9951 **c)** 9961 **d)** 9971
5) The value of $\frac{4x^2 - 25}{2x - 5}$ is
   a) $2x - 5$ **b)** $x - 5$ **c)** $x + 5$ **d)** $2x + 5$

FILL IN THE BLANKS:

	Expression	Middle term (Sum of the numbers)	Product	Numbers	Factors
1)	$t^2 - 25t + 150$				
2)	$x^2 - 9xy - 36y^2$				
3)	$m^2 - m - 90$				
4)	$a^2 - 5a - 66$				
5)	$x^2 - 17x + 70$				

ANSWER THE FOLLOWING:

C. Find the values using identities:

1) 103^2 **2)** 97^2 **3)** 302×298 **4)** $(2.1)^2$

D. If $x + \frac{1}{x} = 5$, find the value of $x^4 + \frac{1}{x^4}$.

E. If $x^2 + \frac{1}{x^2} = 14$, find the value of $x + \frac{1}{x}$.

F. If $x - \frac{1}{x} = 3$, find the value of $x^2 + \frac{1}{x^2}$.

G. If $x^2 + 4y^2 = 7$ and $xy = 2$, find $(5x + 10y)^2$.

H. Factorise, taking out the highest common factor:

1) $3x - 18$ **2)** $15x^2 - 5x$ **3)** $9y^3 - 6y^2 + 3y$ **4)** $6xy - 2y$

I. Factorise with the help of identities:

1) $9x^2 + 12x + 4$ **2)** $49x^2 - 14x + 1$ **3)** $16 - 9y^4$

ANSWER THE FOLLOWING:

1) $16x^2 + 25y^2$, if $4x + 5y = 23$ and $xy = 6$.

2) $9x^2 + 4y^2$, if $3x - 2y = 23$ and $xy = 18$.

3. If $a - \frac{1}{a} = 6$, find the value of $a^2 + \frac{1}{a^2}$.

4. If $a - \frac{1}{a} = 8$, find the value of $a + \frac{1}{a}$.

5. There are two numbers such that difference between them is 13 and the difference between their squares is 273. Find the two numbers using a suitable identity.

6. Answer these questions.

1) What must be added to $9x^2 + 24x + 11$ to make it a perfect square?

2) What must be added to $4x^2 - 20x + 16$ to make it a perfect square?

3) What must be subtracted from $4x^2 - 20x + 53$ to make it a perfect square?

7. Factorise with the help of identities, after taking out HCF:

1) $12a^2 + 12ab + 3b^2$ **2)** $y^4 - 2y^3 + y^2$ **3)** $8x^2 - 8x + 2$