

**INDIAN SCHOOL AL WADI AL KABIR****WORKSHEET 2026-27****CLASS IX****EXPLORING ALGEBRAIC IDENTITIES_DTQ_WORKSHEET**

	Questions of 2 mark each
Q.1.	Expand $(3x + 2y)^2$ using identity
Q.2.	Factorize completely: $\frac{4}{3}x^2 + 4xy + 3y^2$
Q.3.	Using an algebraic identity, find 103^2 .
Q.4.	Simplify: $(p + q)^2 - (p - q)^2$.
Q.5.	Factorize: $x^2 - 9x + 14$.
	Questions of 3 marks each
Q.6.	Expand: $(2x - 3y + z)^2$.
Q.7.	Factorize completely: $\frac{x^2}{4} + \frac{xy}{2} + \frac{y^2}{9} + \frac{2xz}{3} + \frac{4yz}{3} + 4z^2$
Q.8.	Using an algebraic identity, find 997×1003 .
Q.9.	The volume of a cube is given by $8x^3 + 36x^2y + 54xy^2 + 27y^3$ cubic units. What is the length of each side of the cube?
Q.10.	Simplify: $(x + 5)^2 - (x - 5)^2$.
Q.11.	Factorize completely: $10x^2 - 11x - 6$
	Questions of 5 marks each
Q.12.	The sum of three numbers is 8 , their product is 20 , and the sum of their squares is 34 . Find the sum of the cubes of these three numbers.
Q.13.	Simplify the following rational expression assuming that the expressions in the denominators are not equal to zero: $\frac{(x^2 - 5x + 6)(x^2 + 5x + 4)}{(x^2 - 3x - 4)(x^2 - 4)}$
Q.14.	Fatima has arranged 1 square of side x units, 10 rectangular strips of sides x units and width 1 units and 21 small squares of side 1 unit, to form a bigger rectangle. Find the length and breadth of the rectangle in terms of x .

CASE STUDY QUESTION (4 MARK)

CASE STUDY:

A school has two square-shaped bulletin boards in the hallway. The larger board has side length $(x+4)$ meters is used for displaying student artwork. The smaller board has side length $(x-4)$ meters. It is used for daily announcements. The principal wants to compare their sizes.

Q.15.

(a) Write the area of the larger board in expanded form.

(b) If $x = 6$ meters, what is the actual area of the larger board?

(c) The smaller board has side $(x-4)$ meters. Find the difference between the areas of the two boards when $x = 6$ metres.



ANSWER KEY

Q.1.	$9x^2 + 12xy + 4y^2$	Q.6.	$4x^2 + 9y^2 + z^2 - 12xy + 4xz - 6yz$	Q.11.	$(2x - 3)(5x + 2)$
Q.2.	$\frac{(2x + 3y)^2}{3}$	Q.7.	$\left(\frac{x}{2} + \frac{y}{3} + 2z\right)^2$	Q.12.	212
Q.3.	10609	Q.8.	999991	Q.13.	$\frac{(x - 3)(x + 4)}{(x - 4)(x + 2)}$
Q.4.	$4pq$	Q.9.	$2x + 3y$	Q.14.	$(x + 7)$ and $(x + 3)$
Q.5.	$(x - 7)(x - 2)$	Q.10.	$20x$	Q.15.	(a) $x^2 + 8x + 16$ (b) 100 (c) 96