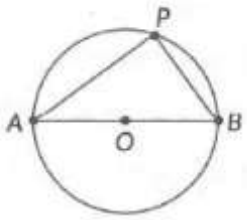
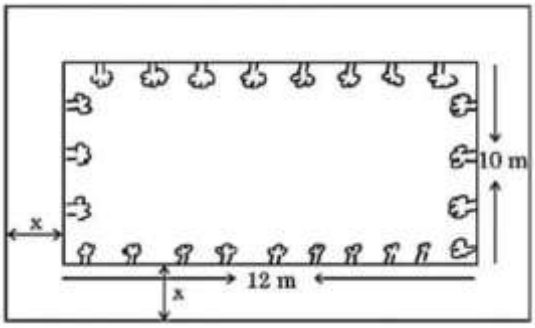
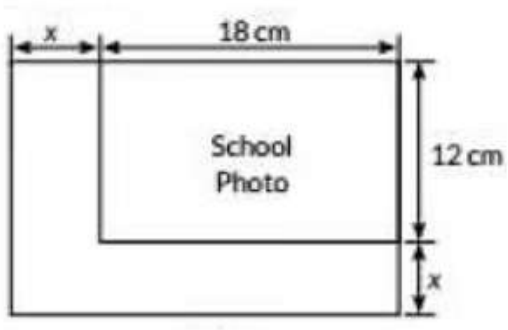
INDIAN SCHOOL AL WADI AL KABIR
WORKSHEET 2026-27

CLASS X

QUADRATIC EQUATIONS_DTQ_WORKSHEET

	Questions of 2 mark each
Q.1.	Find the value(s) of ' k ' so that the quadratic equation $4x^2 + kx + 1 = 0$ has real and equal roots
Q.2.	Find the sum and product of the roots of the quadratic equation $2x^2 - 9x + 4 = 0$.
Q.3.	Find the value of p, for which one root of the quadratic equation $px^2 - 14x + 8 = 0$ is 6 times the other.
Q.4.	Find the discriminant of the quadratic equation $4x^2 - 5 = 0$ and hence comment on the nature of the roots of the equation
Q.5.	Find the value of ' p ' for which the quadratic equation $px(x - 2) + 6 = 0$ has two equal real roots
	Questions of 3 marks each
Q.6.	Find the smallest value of p for which the quadratic equation $x^2 - 2(p + 1)x + p^2 = 0$ has real roots. Hence, find the roots of the equation so obtained.
Q.7.	There is a circular park of diameter 65 m shown in the following figure, where AB is a diameter.  An entry gate is to be constructed at a point P on the boundary of the park such that distance of P from A is 35 m more than the distance of P from B. Find distance of point P from A and B respectively.
Q.8.	In a flight of **2800** km, an aircraft was slowed down due to bad weather. Its average speed is reduced by 100 km/h, and by doing so, the time of flight is increased by 30 minutes. Find the original duration of the flight.
Q.9.	The denominator of a fraction is one more than twice the numerator. If the sum of the fraction and its reciprocal is $2\frac{16}{21}$, found, the fraction.
Q.10.	If the sum of the roots of the quadratic equation $ky^2 - 11y + (k - 23) = 0$ is $\frac{13}{21}$ more than the product of the roots, then find the value of **k**.

Q.11.	Solve for x: $\frac{1}{x-2}+\frac{2}{x-1}=\frac{6}{x}; x \neq 0,1,2$
Q.12.	If α and β are roots of the quadratic equation $x^2-7x+10=0$, find the quadratic equation whose roots are α^2 and β^2.
	Questions of 5 marks each
Q.13.	A rectangular floor area can be completely tiled with 200 square tiles. If the side length of each tile is increased by 1 unit, it would take only 128 tiles to cover the floor. Assuming the original length of each side of a tile is x units, make a quadratic equation from the above information. Write the corresponding quadratic equation in standard form. Find the value of x, the length of the side of a tile by factorization.
Q.14.	A motorboat whose speed is $\mathbf{18\ km/h}$ in still water takes $\mathbf{1}$ hour more to go $\mathbf{24\ km}$ upstream than to return downstream to the same spot. Find the speed of the stream.
Q.15.	Find the value of ' k ' for which the quadratic equation $(k+1)x^2-6(k+1)x+3(k+9)=0, k \neq -1$ has real and equal roots.
	CASE STUDY QUESTION (4 MARK)
Q.16.	Case Study: A garden designer is planning a rectangular lawn that is to be surrounded by a uniform walkway Number of students who like either of the drink. The total area of the lawn and the walkway is 360 square meters. The width of the walkway is same on all sides. The dimensions of the lawn itself are 12 meters by 10 meters.  Based on the information given above, answer the following questions: i. Formulate the quadratic equation representing the total area of the lawn and the walkway, taking width of walkway = x m. ii. (a) Solve the quadratic equation to find the width of the walkway ' x '. OR (b) If the cost of paving the walkway at the rate of $\mathbf{50}$ per square metre is $\mathbf{₹\ 12,000}$, calculate the area of the walkway. iii. Find the perimeter of the lawn.

Q.17.	Case Study: While designing the school yearbook, a teacher asked the student that the length and width of a particular photo be increased by x units each to double the area of the photo. The original photo is **18 cm** long and **12 cm** wide  Based on the above information. Answer the following Questions: (i) Write an algebraic equation depicting the above information. (ii) Write the corresponding quadratic equation in standard form. (iii) a. What should be the new dimensions of the enlarged photo? OR b. Can any rational value of x make the new area equal to $220\ cm^2$?

ANSWER KEY

Q.1.	± 4	Q.6.	$\frac{-1}{2},\ x = \frac{1}{2}, \frac{1}{2}$	Q.11.	$x = 3$ or $x = \frac{4}{3}$.
Q.2.	$\frac{9}{2}$ and 2	Q.7.	$PA = 25 + 35$ $= 60m$ and $PB = 25m$.	Q.12.	$x^2 - 29x + 100 = 0$
Q.3.	3	Q.8.	3.5 Hours	Q.13.	$9x^2 - 32x - 16 = 0$ Value of x : 4
Q.4.	80 Nature: Real and distinct	Q.9.	$\frac{3}{7}$	Q.14.	6Km/hr
Q.5.	6	Q.10.	21	Q.15.	K=3

Q.16.	i. $x^2 + 11x - 60 = 0$ ii. (a) Width of the walkway= 4m. (b)$240m^2$ iii. 44	Q.17.	i. $(18 + x)(12 + x) = 432$ ii. $x^2 + 30x - 216 = 0$ iii. new dimension $= 24cm \times 18cm$ OR no rational value of x is possible.

****