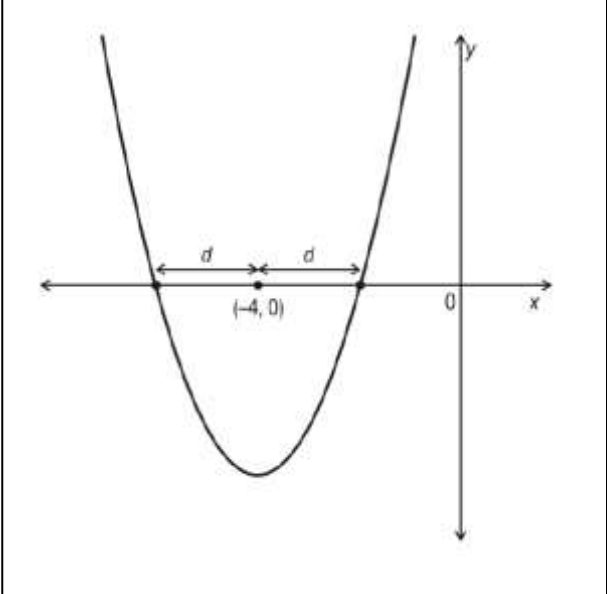# INDIAN SCHEMATICS — INDIAN SCHOOL AL WADI AL KABIR

Class X, Mathematics

Worksheet-Quadratic Equations (DTQ)

17-10-2023

Q. No.	Questions of 2 Mark each.
1.	Find the value of k for which the roots of the quadratic equation $2x^2 + kx + 8 = 0$ will have equal value.
2.	Shown below is the graph of a quadratic equation $y = (x^2 + kx + 12)$. Without finding the value of k, find the two roots of the given quadratic equation. Show your steps. **(CFQ)**
3.	Find the roots of $x^2 - \dfrac{x}{5} + \dfrac{1}{100} = 0$
4.	Solve for x: $abx^2 + (b^2 - ac)x - bc = 0$
5.	The caretaker of the park is attempting to plant saplings in the form of a square. That is, number of rows of saplings is the same as the number of columns of saplings. On arranging the saplings, he found that 24 saplings were still left with him. When he increased the number of rows and columns by 1, he found that he was short of 25 saplings. Find the number of saplings available with him. Show your work.**(CFQ)**

	Questions of 3 marks each
6.	$3(3)^{2m} + 11(3)^m = 4$ Use the substitution $(3)^m = x$ to solve for m. Show your steps. **(CFQ)**
7.	Solve for x: $2x^2 + \sqrt{3}\,x - 3 = 0$
8.	Solve for x: $\dfrac{1}{x-2} + \dfrac{2}{x-1} = \dfrac{6}{x}$, $x \neq$ 0, 1, 2
9.	If -4 is a root of the quadratic equation $x^2 + kx - 4 = 0$, and the quadratic equation $x^2 + px + k = 0$ has equal roots, find the value of p and k.
10.	A natural number when increased by 12 equals 160 times its reciprocal. Find the number.

	Questions of 5 marks each
11.	A train travels 360km at a uniform speed. If the speed had been 5km/h more, it would have taken 1 hour less for the same journey. Find the speed of the train.
12.	A motor boat whose speed is 18km/h in still water takes 1 hour more to go 24km upstream than to return downstream to the same spot. Find the speed of the stream.
13.	A and B working together can do a work in 6 days. If A takes 5 days less than B to finish the work, in how many days B alone can do the work?
14.	A farmer wishes to grow a 100m^2 rectangular vegetable garden. Since he has with him only 30m, barbed wire, he fences three sides of the rectangular garden letting compound wall of his house act as the fourth side fence. Find the dimensions of his garden. **(CFQ)**
15.	Solve for x: $\dfrac{1}{2a + b + 2x} = \dfrac{1}{2a} + \dfrac{1}{b} + \dfrac{1}{2x}$; x≠0, x≠ $\dfrac{-2a-b}{2}$, a, b ≠ 0

Answers

1	± 8	**2**	(-2, -6)	**3**	$\dfrac{1}{10}, \dfrac{1}{10}$	**4**	$\dfrac{c}{b}, \dfrac{-b}{a}$		
5	600	**6**	-1	**7**	$-\sqrt{3}, \dfrac{\sqrt{3}}{2}$	**8**	$3, \dfrac{4}{3}$		
9	$3, \dfrac{9}{4}$	**10**	8	**11**	40 km/hr	**12**	6 km/hr		
13	15 days	**14**	5m × 20m or 10m× 10m	**15**	$\dfrac{-b}{2}, -a$				