

INDIAN SCHOOL AL WADI AL KABIR

Class X, Mathematics

Worksheet-Quadratic Equations

29 – 10 - 2022

Q. No.	SECTION A							
	Section A consists of 12 Questions of 1 Mark each.							
1.	If $\frac{1}{2}$ is a root of the equation $x^2 + kx - \frac{5}{4} = 0$, the value of k is:							
	A	2	B	-2	C	$\frac{1}{4}$	D	$\frac{1}{2}$
2.	Value(s) of k for which the quadratic equation $2x^2 - kx - k = 0$ has equal roots is/are:							
	A	0	B	4	C	8	D	0, 8
3.	The real roots of the equation $x^{\frac{2}{3}} + x^{\frac{1}{3}} - 2 = 0$ are:							
	A	1, 8	B	-1, -8	C	1, -8	D	-1, 8
4.	The quadratic equation $x^2 - 4x + 3\sqrt{2} = 0$							
	A	two distinct real roots	B	two equal real roots	C	no real roots	D	more than two real roots
5.	The roots of quadratic equation $x^2 - 0.04 = 0$							
	A	+2, -2	B	-2	C	+2	D	+0.2, -0.2
6.	A lad was asked his age by his friend. The lad said, "The number you get when you subtract 25 times my age from twice the square of my age will be thrice your age." If the friend's age is 14, then the age of the lad (in years) is:							
	A	21	B	28	C	14	D	25
7.	If the roots of the equation $m^2x^2 + 2x(mc - 2a) + c^2 = 0$ are equal, then c is:							
	A	2am	B	$\frac{a}{m}$	C	am^2	D	$\frac{m}{a}$
8.	For what value of k, $x = \sqrt{5}$ is a solution of the equation $kx^2 + \sqrt{5}x - 15 = 0$?							
	A	2	B	0	C	$\sqrt{2}$	D	-2

9.	The positive root of $\sqrt{3x^2 + 6} = 9$ is:							
	A	3	B	1	C	81	D	5
10.	The product of Gopi's age, 5 years ago with his age 9 years later is 15, then Gopi's present age is:							
	A	6	B	8	C	10	D	12
	DIRECTION: In the question number 11 and 12, a statement of assertion (A) is followed by statement of Reason (R) . Choose the correct option							
11.	<p>Assertion: The equation $9x^2 + 3kx + 4 = 0$ has equal roots for $k = \pm 4$.</p> <p>Reason: If discriminant of a quadratic equation is equal to zero then the roots of equation are real and equal</p> <p>(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A)</p> <p>(b) Both assertion (A) and reason (R) are true and reason (R) is not the correct explanation of assertion (A)</p> <p>(c) Assertion (A) is true but reason (R) is false.</p> <p>(d) Assertion (A) is false but reason (R) is true.</p>							
12.	<p>Assertion:</p> <p>Assertion: $4x^2 - 12x + 9 = 0$ has repeated roots.</p> <p>Reason: The quadratic equation $ax^2 + bx + c = 0$ have repeated roots if discriminant > 0.</p> <p>(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A)</p> <p>(b) Both assertion (A) and reason (R) are true and reason (R) is not the correct explanation of assertion (A)</p> <p>(c) Assertion (A) is true but reason (R) is false.</p> <p>(d) Assertion (A) is false but reason (R) is true.</p>							
	SECTION B							
	Questions of 2 marks each							
13.	Find the roots of quadratic equation by factorisation: $\sqrt{2}x^2 + 7x + 5\sqrt{2} = 0$.							
14.	Find the values of k for quadratic equation, $2x^2 + kx + 3 = 0$ so that they have two equal roots.							

15.	Check whether the following is quadratic equation: $(x+1)^2 = 2(x-3)$
16.	Find the roots of the following quadratic equations, if they exist, using the quadratic formula: $3x^2 - 5x + 2 = 0.$

Section C


Questions of 3 marks each

17.	The product of two positive consecutive odd numbers is 483. Find the numbers.
18.	Solve for x : $\frac{1}{x-2} + \frac{2}{x-1} = \frac{6}{x}$; $x \neq 0, 1, 2$
19.	Two pipes running together can fill a small tank in $3\frac{1}{13}$ minutes. If one pipe takes 3 minutes more than the other to fill it, then find the time in which each pipe would fill the tank.

Question of 5 marks

20.	A train travels at a certain average speed for a distance of 63 km and then travels at a distance of 72 km at an average speed of 6 km/hr more than its original speed. If it takes 3 hours to complete the total journey, what is the original average speed?
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Question of 4 marks

21.	<p>Case Study Based:</p> <p>Riya has a lawn with a flowerbed and grass land. The grass land is in the shape of rectangle while flowerbed is in the shape of square. The length of the grassland is found to be 3 m more than twice the length of the flowerbed. Total area of the whole lawn is 1260 m^2.</p>  <p>(i) If the length of the flowerbed is x m then what is the total length of the lawn in terms of x?</p> <p>(ii) What is the value of x if the area of total lawn is 1260 m^2?</p> <p>(iii) What will be the perimeter of the whole field?</p>
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	Answers							
Answers	1	A	2	D	3	C	4	C
	5	D	6	C	7	B	8	A
	9	D	10	A	11	a	12	c
	13	$-\sqrt{2}, \frac{-5}{\sqrt{2}}$	14	$\pm 2\sqrt{6}$	15	Quadratic Equation	16	$\frac{2}{3}, 1$
	17	21, 23	18	$\frac{4}{3}, 3$	19	5, 8	20	42 km/hr
	21	(i) $(3x + 3)m$, (ii) 20 m, (iii) $(8x + 6) m$						