

4. Quadratic Equations 2020

1. In a flight of 600 km, an aircraft was slowed due to bad weather. Its average speed for the trip was reduced to 200 km/hr and time of flight increased by 30 minutes. Find the original duration of flight.
2. A train covers a distance of 480 km at a uniform speed. If the speed had been 8 km/h less, then it would have taken 3 hours more to cover the same distance. Find the original speed of the train.
3. A man can row a boat downstream 20 km in 2 hours and upstream 4 km in 2 hours. Find his speed of rowing in still water. Also find the speed of the stream.
4. The roots of the quadratic equation $x^2 - 0.04 = 0$ are
(a) ± 0.2 (b) ± 0.02 (c) 0.4 (d) 2
5. Solve for x : $\frac{1}{x+4} - \frac{1}{x+7} = \frac{11}{30}$, $x \neq -4, 7$
6. A fast train takes 3 hours less than a slow train for a journey of 600 km. If the speed of the slow train is 10 km/h less than that of the fast train, find the speed of each train.
7. The value of λ for which $(x^2 + 4x + \lambda)$ is a perfect square, is
(a) 16 (b) 9 (c) 1 (d) 4.
8. A train covered a certain distance at a uniform speed. If the train would have been 6 km/hr. faster, it would have taken 4 hours less than the scheduled time and if the train were slower by 6 km/hr., it would have taken 6 hrs. more than the scheduled time. Find the length of the journey.
9. Find the value of k for which the quadratic equation $kx^2 + 1 - 2(k-1)x + x^2 = 0$ has equal roots. Hence find the roots of the equation.
10. The quadratic equation $x^2 - 4x + k = 0$ has distinct real roots if
(A) $k = 4$ (B) $k > 4$ (C) $k = 16$ (D) $k < 4$
11. Solve for x: $6x^2 + 11x + 3 = 0$

4. Quadratic Equations 2020

12. 9,000 were divided equally among a certain number of persons. Had there been 20 more persons, each would have got ` 160 less. Find the original number of persons.
13. Solve for x: $8x^2 - 2x - 3 = 0$
14. **Without actually calculating the zeroes, form a quadratic polynomial whose zeroes are reciprocals of the zeroes of the polynomial $5x^2 + 2x - 3$.**
15. The value(s) of k for which the quadratic equation $2x^2 + kx + 2 = 0$ has equal roots, is
(a) 4 **(b) ± 4** **(c) -4** **(d) 0**
16. Form a quadratic polynomial, the sum and product of whose zeros are (-3) and 2 respectively.
17. Sum of the areas of 2 squares is 544 m^2 . If the difference of their perimeter is 32 m, find the sides of two squares.
18. A motorboat whose speed is 18 km/hr in still water takes 1 hour more to go 24 km upstream than to return downstream to the same spot. Find the speed of the stream.
19. A number is selected at random from the numbers 1 to 20. The probability that the selected number is a multiple of 3 is
20. Find the value(s) of k for which the roots of the quadratic equation $9x^2 + 3kx + 4 = 0$ are real and equal.
21. The sum of the areas of two squares is 640 m^2 . If the difference of their perimeters be 64 m, find the sides of the two squares.
22. If one root of the equation $(k - 1)x^2 - 10x + 3 = 0$ is the reciprocal of the other, then the value of k is _____
23. A train covers a distance of 360 km at a uniform speed. Had the speed been 5km/hour more, it would have taken 48 minutes less for the journey. Find the original speed of the train.
24. Solve the following equation:

$$\frac{1}{x} - \frac{1}{x-2} = 3, x \neq 0, 2$$