Date: 29/9/2021

Q1. In each of the following determine whether the given values are solution of the given equation or not:

$6x^2 - x - 2 = 0, \quad x = -1/2, \quad x = 2/3.$

Q2. In each of the following determine whether the given values are solution of the given equation or not:

$x^2 + \sqrt{2}x - 4 = 0, \quad x = \sqrt{2}, \quad x = -2\sqrt{2}.$

Q3. In each of the following, determine the value of k for which the given value is a solution of the equation:

$3x^2 + 2kx - 3 = 0, \quad x = -1/2.$

Q4. In each of the following, determine the value of k for which the given value is a solution of the equation:

$x^2 + 2ax - k = 0, \quad x = -a.$

Q5. If $x = 2$ and $x = 3$ are roots of the equation $3x^2 - 2kx + 2m = 0$, find the value of k and m.

Q6. In each of the following, determine whether the given values are solutions of the given equation or not:

$x^2 - \sqrt{2}x - 4 = 0, \quad x = -\sqrt{2}, \quad x = -2\sqrt{2}.$

Q7. In each of the following, determine whether the given values are solutions of the given equation or not:

$a^2x^2 - 3abx + 2b^2 = 0, \quad x = a/b, \quad x = b/a.$

Q8. If $x = 2/3$ and $x = -3$ are the roots of the equation $ax^2 + 7x + b = 0$, find the values of a and b.

Q9. Determine, if 3 is a root of the equation given below:

$$\sqrt{x^2 - 4x + 3} + \sqrt{x^2 - 9} = \sqrt{4x^2 - 14x + 16}$$

Q10. If $1 + \sqrt{2}$ is a root of a quadratic equation with rational coefficients, write its other root.

Q11. Write the number of real roots of the equation $x^3 + 3|x| + 2 = 0$.

Q12. Write the sum of real roots of the equation $x^2 + |x| - 6 = 0$.

Q13. Write the set of values of 'a' for which the equation $x^2 + ax - 1 = 0$ has real roots.

Q14. Solve the following quadratic equations by factorizastion method:

$8x^2 - 22x - 21 = 0$

Q15. Solve the following quadratic equations by factorizastion method:

$9x^2 - 3x - 2 = 0$

Q16. Solve the following quadratic equations by factorizastion method:

$x^2 + 2\sqrt{2}x - 6 = 0$

Q17. Determine the nature of the roots of the following quadratic equations:

$2x^2 + 5x + 5 = 0.$

Q18. Determine the nature of the roots of the following quadratic equations:

$4x^2 - 4x + 1 = 0.$

Q19. Determine the nature of the roots of the following quadratic equations:

$2x^2 + x - 1 = 0.$

Q20. Solve the following quadratic equations by factorizastion method:

$$\sqrt{3}x^2 + 10x - 7\sqrt{3} = 0$$

Q21. Find the values of k for which the given equation has real and equal roots:

$$2x^2 - 10x + k = 0.$$

Q22. Find the values of k for which the given equation has real and equal roots:

$$9x^2 + 3kx + 4 = 0.$$

Q23. Find the values of k for which the given equation has real and equal roots:

$$2x^2 - kx + 1 = 0.$$

Q24. Find the values of k for which the roots are real and equal in each of the following equations:

$$kx^2 + 4x + 1 = 0.$$

Q25. Determine the nature of the roots of the following quadratic equations:

$$2(a^2 + b^2)x^2 + 2(a + b)x + 1 = 0.$$

Q26. Determine the nature of the roots of the following quadratic equations:

$$9a^2b^2x^2 - 24abcdx + 15c^2d^2 = 0, \qquad a \neq 0, \quad b \neq 0.$$

Q27. Determine the nature of the roots of the following quadratic equations:

$$(x - 2a)(x - 2b) = 4ab.$$

Q28. Determine the nature of the roots of the following quadratic equations:

$$3x^2 - 2x + 2 = 0.$$

Q29. Find the values of k for which the given equation has real roots:

$$kx^2 - 6x - 2 = 0.$$

Q30. Find the values of k for which the roots are real and equal in each of the following equations:

$$4x^2 + px + 3 = 0$$

Q31. If one of the quadratic equation $2x^2 + kx - 6 = 0$, find the value of k. Also, find the other root.

Q32. Write the value of λ for which $x^2 + 4x + \lambda$ is a perfect square.

Q33. Find the values of k for which the roots are real and equal in each of the following equations:

$$3x^2 - 5x + 2k = 0.$$

Q34. If the equation $ax^2 + 2x + a = 0$ has two distinct roots, if

(a) $a = \pm 1$ (b) $a = 0$ (c) $a = 0, 1$ (d) $a = -1, 0$

Q35. If $ax^2 + bx + c = 0$ has equal roots, then $c =$

(a) $\frac{-b}{2a}$ (b) $\frac{b}{2a}$ (c) $\frac{-b^2}{4a}$ (d) $\frac{b^2}{4a}$

Q36. If the equation $x^2 + 4x + k = 0$ has real and distinct roots, then

(a) $k < 4$ (b) $k > 4$ (c) $k \geq 4$ (d) $k \leq 4$

Q37. If $x = \frac{-1}{2}$, is a solution of the quadratic equation $3x^2 + 2kx - 3 = 0$, find the value of k.

Q38. Find the discriminant of the quadratic equation $3x^2 + 10\sqrt{3}x + \sqrt{3} = 0$.

Q39. Show that $x = -2$ is a solution of $3x^2 + 13x + 14 = 0$.

Q40. Show that $x = -3$ is a solution of $x^2 + 6x + 9 = 0$.

Q41. The positive value of k for which the equation $x^2 + kx + 64 = 0$ and $x^2 - 8x + k = 0$ will both have real roots, is

(a) 4 (b) 8 (c) 12 (d) 16

Q42. The value of $\sqrt{6+\sqrt{6+\sqrt{6+}}}$ ... is

(a) 4 (b) 3 (c) -2 (d) 3.5

Q43. If 2 is a root of the equation $x^2 + bx + 12 = 0$ and the equation $x^2 + bx + q = 0$ has equal roots, then $q =$

(a) 8 (b) -8 (c) 16 (d) -16

Q44. The number of quadratic equations having real roots and which do not change by squaring their roots is

(a) 4 (b) 4 (c) 2 (d) –

Q45. If p and q are the roots of the equation $x^2 - px + q = 0$, then

(a) $p = 1,\ q = -2$ (b) $p = 0,\ q = 1$ (c) $p = -2,\ q = 0$ (d) $p = -2,\ q = 1$

Q46. If $x = 1$ is a common root of the equations $ax^2 + ax + 3 = 0$ and $x^2 + x + b = 0$, then $ab =$

(a) 3 (b) 3.5 (c) 6 (d) -3

Q47. If the sum of the roots of the equation $x^2 - x = \lambda(2x - 1)$ is zero, then $\lambda =$

(a) -2 (b) 2 (c) $-\frac{1}{2}$ (d) $\frac{1}{2}$

Q48. If $x = 1$ is a common root of $ax^2 - ax + 2 = 0$ and $x^2 + x + b =$ then, $ab =$

(a) 1 (b) 2 (c) 4 (d) 3

Q49. If the sum and product of the roots of the equation $kx^2 + 6x + 4k = 0$ are equal, then $k =$

(a) $-\frac{3}{2}$ (b) $\frac{3}{2}$ (c) $\frac{2}{3}$ (d) $-\frac{2}{3}$

Q50. If one root of the equation $4x^2 - 2x + (\lambda - 4) = 0$ be the reciprocal of the other, then $\lambda =$

(a) 8 (b) -8 (c) 4 (d) -4

Q51. If one root of the equation $x^2 + ax + 3 = 0$ is 1, then its other root is

(a) 3 (b) -3 (c) 2 (d) -2

Q52. If one root of the equation $2x^2 + kx + 4 = 0$ is 2, then the other root is

(a) 6 (b) -6 (c) -1 (d) 1

Q53. If one root of the equation $ax^2 + bx + c = 0$ is three times the other, then $b^2 : ac =$

(a) 3 : 1 (b) 3 : 16 (c) 16 : 3 (d) 16 : 1

Q54. If a and b are roots of the equation $x^2 + ax + b = 0$, then $a + b =$

(a) 1 (b) 2 (c) -2 (d) -1

Q55. If the sum of the roots of the equation $x^2 - (k + 6)x + 2(2k - 1) = 0$ is equal to half of their product, then $k =$

(a) 6 (b) 7 (c) 1 (d) 5

Q56. The values of k for which the quadratic equation $15x^2 + 4kx + 9 = 0$ has real and equal roots are:

(a) $6, -\frac{1}{6}$ (b) 36, – 36 (c) 6, – 6 (d) $\frac{3}{4}, -\frac{3}{4}$

Q57. If $y = 1$ is a common root of the equations $ay^2 + ay + 3 = 0$ and $y^2 + y + b = 0$, then ab equals

(a) 3 (b) $-7/2$ (c) 6 (d) -3

Q58. Find the roots of the following quadratic equations (if they exist) by the method of completing the square.

$$4x^2 + 4\sqrt{3}x + 3 = 0.$$

Q59. Find the roots of the following quadratic equations (if they exist) by the method of completing the square.

$$\sqrt{2}x^2 - 3x - 2\sqrt{2} = 0.$$

Q60. Find the roots of the following quadratic equations (if they exist) by the method of completing the square.

$$3x^2 + 11x + 10 = 0.$$

Q61. Solve the following quadratic equations by factorization method:

$$x^2 - 2ax + a^2 - b^2 = 0.$$

Q62. Solve the following quadratic equations by factorization method:

$$\frac{x+3}{x-2} - \frac{1-x}{x} = \frac{17}{4}.$$

Q63. Solve the following quadratic equations by factorization method:

$$\frac{x}{x+1} + \frac{x+1}{x} = \frac{34}{15}, \qquad x \neq 0, \qquad x \neq -1.$$

Q64. Solve the following quadratic equations by factorization method:

$$x^2 - 4ax + 4a^2 - b^2 = 0.$$

Q65. Solve the following quadratic equations by factorization method:

$$\frac{x+3}{x+2} = \frac{3x-7}{2x-3}.$$

Q66. Solve the following quadratic equations by factorization method:

$$\frac{2x}{x-4} + \frac{2x-5}{x-3} = \frac{25}{3}.$$

Q67. In the following, determine whether the given quadratic equations have real roots and if so, find the roots

$$25x^2 + 20x + 7 = 0.$$

Q68. In the following, determine whether the given quadratic equations have real roots and if so, find the roots

$$3x^2 + 2\sqrt{5}x - 5 = 0.$$

Q69. In the following, determine whether the given quadratic equations have real roots and if so, find the roots

$$2x^2 + 5\sqrt{3}x + 6 = 0.$$

Q70. Show that the equation $x^2 + ax - 4 = 0$ has real and distinct roots for all real values of a.

Q71. Find the values of k for which the equation $x^2 - 4x + k = 0$ has distinct real roots.

Q72. In the following, determine whether the given quadratic equations have real roots and if so, find the roots

$$3a^2x^2 + 8abx + 4b^2 = 0, \qquad a \neq 0.$$

Q73. In the following, determine whether the given quadratic equations have real roots and if so, find the roots

$$2x^2 - 2\sqrt{6}x + 3 = 0.$$

Q74. Solve the following quadratic equations by factorization method:

$$3\sqrt{5}x^2 + 25x - 10\sqrt{5} = 0.$$

Q75. Solve the following quadratic equations by factorization method:

$$\frac{4}{x} - 3 = \frac{5}{2x+3}x, \qquad x \neq 0, \qquad x = \frac{4}{3}.$$

Q76. Solve the following quadratic equations by factorization method:

$$\frac{1}{x-2} + \frac{2}{x-1} = \frac{6}{x}.$$

Q77. The product of Ramu's age (in years) five years ago with his age (in years) 9 years later is 15. Find Ramu's present age.

Q78. One year ago, a man was 8 times as old as his son. Now his age is equal to the square of his son's age. Find their presentages.

Q79. Two squares have sides x cm and $(x + 4)$ cm. The sum of their areas is 656 cm^2. Find the sides of the squares.

Q80. The sum of the squares of two consecutive natural numbers is 313. Find the numbers.

Q81. Solve the following quadratic equations by factorization method:

$$\frac{4}{x} - 3 = \frac{5}{2x+3}, \qquad x \neq 0, -\frac{3}{2}.$$

Q82. Solve the following quadratic equations by factorization method:

$$2x^2 + ax - a^2 = 0.$$

Q83. Solve the following quadratic equations by factorization method:

$$4\sqrt{3}x^2 + 5x - 2\sqrt{3} = 0.$$

Q84. Solve the following quadratic equations by factorization method:

$$\sqrt{3}x^2 - 2\sqrt{2}x - 2\sqrt{3} = 0.$$

Q85. Solve the following quadratic equations by factorization method:

$$16x - \frac{10}{x} - 3 = 27.$$

Q86. Find the values of k for which the roots are real and equal in each of the following equations:

$$px(x - 3) + 9 = 0.$$

Q87. Find the values of k for which the roots are real and equal in each of the following equations:

$$x^2 - 4kx + k = 0.$$

Q88. Solve the following quadratic equations by factorization method:

$$\frac{16}{x} - 1 = \frac{15}{x+1}, \qquad x \neq 0, -1.$$

Q89. Find two consecutive numbers whose squares have the sum 85.

Q90. Solve the equation $x^2 - (\sqrt{3} + 1)x + \sqrt{3} = 0$ by the method of completing the square.

Q91. Find the roots of the following equation $4x^2 + 4bx - (a^2 - b^2) = 0$ by the method of completing the square.

Q92. Find the roots of the equation $a^2x^2 - 3abx + 2b^2 = 0$ by the method of completing the square.

Q93. Find the roots of the following quadratic equations (if they exist) by the method of completing the square.

$$x^2 - 4ax + 4a^2 - b^2 = 0.$$

Q94. Find the roots of the following quadratic equations (if they exist) by the method of completing the square.

$$x^2 - (\sqrt{2} + 1)x + \sqrt{2} = 0.$$

Q95. Find the roots of the following quadratic equations (if they exist) by the method of completing the square.

$$\sqrt{3}x^2 + 10x + 7\sqrt{3} = 0.$$

Q96. Solve the following quadratic equations by factorization method:

$$x^2 + x - (a + 1)(a + 2) = 0.$$

Q97. Solve the following quadratic equations by factorization method:

$$x^2 + \left(\frac{a}{a+b} + \frac{a+b}{a}\right)x + 1 = 0\,.$$

Q98. Solve:

$$x = \frac{1}{2 - \dfrac{1}{2 - \dfrac{1}{2 - x}}}, \qquad x \neq 2.$$

Q99. Solve the following quadratic equations by factorization method:

$$\frac{2x}{x-3} + \frac{1}{2x+3} + \frac{3x+9}{(x-3)(2x+3)} = 0\,.$$

Q100 Solve the following quadratic equations by factorization method:

$$\frac{x-1}{2x+1} + \frac{2x+1}{x-1} = \frac{5}{2}, \quad x \neq -\frac{1}{2}, 1\,.$$

Q101 Solve the following quadratic equations by factorization method:

$$x^2 - (\sqrt{2} + 1)x + \sqrt{2} = 0.$$

Q102 Solve:

$$x + \frac{1}{x} = 25\frac{1}{25}\,.$$

Q103 Solve the following quadratic equations by factorization method:

$$x^2 + 3x - (a^2 + a - 2) = 0.$$

Q104 Find the values of k for which the given equation has real roots:

$$9x^2 + 3kx + 4 = 0.$$

Q105 Solve for x :

$$\frac{1}{x+1} + \frac{2}{x+2} = \frac{4}{x+4}, \quad x \neq 1, -2, -4.$$

Q106 Solve for x :

$$\frac{x-1}{x+2} + \frac{x-3}{x-4} = \frac{10}{3}, \quad x \neq -2, 4.$$

Q107 Solve the following quadratic equations by factorization method:

$$\frac{1}{(x-1)(x-2)}+\frac{1}{(x-2)(x-3)}+\frac{1}{(x-3)(x-4)}=\frac{1}{6}.$$

Q108 Find the values of k for which the given equation has real and equal roots:

$$x^2 + k(4x + k - 1) + 2 = 0.$$

Q109 Write the condition to be satisfied for which equation has $ax^2 + 2bx + c = 0$ and $bx^2 - 2\sqrt{ac}\,x + b = 0$ have equal roots.

Q110 Find the least positive value of k for which the equation $x^2 + kx + 4 = 0$ has real roots.

Q111 Find the values of k for whichthe roots are real and equal in each of the following equations:

$$(3k + 1)x^2 + 2(k + 1)x + k = 0.$$

Q112 Find the values of k for which the given equation has equal roots. Also, find the roots.

$$2kx^2 - 40x + 25 = 0.$$

Q113 Find the values of k for which the given equation has equal roots. Also, find the roots.

$$9x^2 - 24x + k = 0.$$

Q114 Find the values of k for which the given equation has real roots:

$$5x^2 - kx + 1 = 0.$$

Q115 If the sum of first n even natural numbers is 420, find the value of n.

Q116 If the sum of n successive odd natural numbers starting from 3 is 48, find the value of n.

Q117 The sum of the squares of two positive integers is 208. If the square of the larger number is 18 times the smaller number, find the numbers.

Q118 Divide 16 into two parts such that twice the square of the larger part exceeds the square of the smaller part by 164.

Q119 A two digit number is such that the product of the digits is 14. When 45 is added to the number, then the digits are reversed. Find the number.

Q120 The sum of a number and its reciprocal is $2\frac{1}{30}$. Find the number.

Q121 If 1 is a root of the quadratic equation $3x^2 + ax - 2 = 0$ and the quadratic equation $a(x^2 + 6x) - b = 0$ has equal roots, find the value of b.

Q122 For what value of k, $(4 - k)x^2 + (2k + 4)x + (8k + 1) = 0$, is a perfect square.

Q123 Find the values of k for which the roots are real and equal in each of the following equations:

$$5x^2 - 4x + 2 + k(4x^2 - 2x - 1) = 0.$$

Q124 Find the values of k for which the roots are real and equal in each of the following equations:

$$kx^2 + kx + 1 = -4x^2 - x.$$

Q125 Find the values of k for which the equation $x^2 + 5kx + 16 = 0$ has no real roots.

Q126 Determine the positive values of 'k' for which the equation $x^2 + kx + 64 = 0$ and $x^2 - 8x + k = 0$ will both have real roots.

Q127 If p, q, r are real and $p \neq q$, then show that the roots of the equation $(p - q)x^2 + 5(p + q)x - 2(p - q) = 0$ are real and unequal.

Q128 If -4 is a root of the quadratic equation $x^2 + px - 4 = 0$ and the quadratic equation $x^2 + x + k = 0$ has equal roots, find the value of k.

Q129 Find the consecutive even integers whose swuares have the sum 340.

Q130 There are three consecutive integers such that the square of the first increased by the product of the other two gives 154. What are the integers?

Q131 The sum of a number and its positive square root is 6/25. Find the number.

Q132 Find the whole number which when decreased by 20 is equal to 69 times the reciprocal of the number.

Q133 If an integer is added to its square, the sum is 90. Find the integer with the help of quadratic equation.

Q134 A two-digit number is four times the sum and three times the product of its digits.

Q135 The denominator of a fraction is one more than twice the numerator. If the sum of the fraction and its reciprocal is $2\frac{16}{21}$, find the fraction.

Q136 Two trains leave a railway station at the same time. The first train travels due west and the second train due north. The first train travels 5 km/hr faster than the second train. If after two hours, they are 50 km apart, find the average speed of each train.

Q137 A two-digit number is such that the product of the digits is 12. When 36 is added to the number the digits interchange their places. Determine the number.

Q138 A two-digit number is such that the product of its digits is 8. When is subtracted from the number, the digits interchange their places. Find the number.

Q139 The sum of ages of a father and his son is 45 years. Fine years ago, the product of their ages (in years) was 124. Determine their present ages.

Q140 The hypotenuse of right-angled triangle is 6 metres more than twice the shortes side. If the third side is 2 metres less than the hypotenuse, find the sides of the triangle.

Q141 Vikram wishes to fit three rods together in the shape of a right triangle. The hypotenuse is to be 2 cm longer than the base and 4 cm longer than the altitude. What should be the lengths of the rods.

Q142 The length of the sides forming right angle of a right angled triangle are $5x$ and $(3x - 1)$ cm. If the area of the triangle is 60 cm^2, find its hypotenuse.

Q143 The perimeter of a rectangular field is 82 cm and its area is 400 m^2. Find the breadth of the rectangle.

Q144 The diagonal of a rectangular field is 60 metres more than the shorter side. If the longer side is 30 metres more than the shorter side, find the sides of the field.

Q145 The hypotenuse of a grassy land in the shape of a right triangle is 1 metre more than twice the shortest side. If the third side is 7 metres more than the shortest side, find the sides of the grassy land.

Q146 The area of a right angled triangle is 600 cm^2. If the base of the triangle exceeds the altitude by 10 cm, find the dimensions of the triangle.

Q147 The area of a right angled triangle is 165 m^2. Determine its base and altitude if the latter exceeds the former by 7 m.

Q148 The length of a hall is 5 m more than its breadth. If th area of the floor of the hall is 84 m^2, what are the length and breadth of the hall?

Q149 A chess board contains 64 equal squares and the area of ach square is 6.25 cm^2. A border round the board is 2 cm wide. Find the length of the side of the chess board.

Q150. The side of a square exceeds the side of the another square by 4 cm and the sum of the areas of the two squares is 400 sq. cm. Find the dimensions of the squares.

Q151. The length of a rectangle exceeds its width by 8 cm and the area ofthe rectangle is 240 sq. cm. Find the dimensions of the rectangle.

Q152. Solve the following quadratic equations by factorization method:

$$4x^2 - 4ax + (a^2 - b^2) = 0.$$

Q153. A pole has to be erected at a point on the boundary of a circular park of diameter 13 metres in such a way that the difference of its distances from two diametrically opposite fixed gates A and B on the boundary is 7 metres. Is it the possible to do so? If yes, at what distances from the two gates should the pole be erected?

Q154. Solve the following quadratic equations by factorization method:

$$a^2b^2x^2 + b^2x - a^2x - 1 = 0.$$

Q155. Solve the following quadratic equations by factorization method:

$$9x^2 - 9(a + b)x + (2a^2 + 5ab + 2b^2) = 0.$$

Q156. Solve the following quadratic equations by factorization method:

$$4x^2 - 2(a^2 + b^2)x + a^2b^2 = 0.$$

Q157. Solve the following quadratic equations by factorization method:

$$4x^2 - 4a^2x + (a^4 - b^4) = 0.$$

Q158. Solve the following quadratic equations by factorization method:

$$\frac{x-3}{x+3} + \frac{2x-5}{x-3} = \frac{48}{7}, \qquad x \neq 3, \qquad x \neq -3.$$

Q159. Solve the following quadratic equations by factorization method:

$$9x^2 - 6b^2x - (a^4 - b^4) = 0.$$

Q160. Solve the following quadratic equations by factorization method:

$$\frac{1}{a+b+x} = \frac{1}{a} + \frac{1}{b} + \frac{1}{x}, \qquad a + b \neq 0.$$

Q161. Solve the following quadratic equations by factorization method:

$$\frac{1}{x-1} - \frac{1}{x+5} = \frac{6}{7}, \qquad x \neq 1, -5.$$

Q162. Solve the following quadratic equations by factorization method:

$$\frac{x-1}{x-2} + \frac{x-3}{x-4} = 3\frac{1}{3}, \qquad x \neq 2, 4.$$

Q163. Solve the following quadratic equations by factorization method:

$$a^2b^2x^2 + b^2x - a^2x - 1 = 0.$$

Q164. Solve the following quadratic equations by factorization method:

$$abx^2 + (b^2 - ac)x - bc = 0.$$

Q165. Solve the following quadratic equations by factorization method:

$$\frac{1}{x-2} + \frac{2}{x-1} = \frac{6}{x}, \qquad x \neq 0.$$

Q166 Find the values of k for which the given equation has real and equal roots:

$$x^2 - 2x(1 + 3k) + 7(3 + 2k) = 0.$$

Q167 Using quadratic formula, solve the following equations for x:

$$abx^2 + (b^2 - ac)x - bc = 0.$$

Q168 Using quadratic formula solve the following quadratic equations:

$$p^2x^2 + (p^2 - q^2)x - q^2 = 0, \qquad p \neq 0.$$

Q169 Solve the following quadratic equations by factorization method:

$$\frac{x-4}{x-5} + \frac{x-6}{x-7} = \frac{10}{3}; \qquad x \neq 5, 7.$$

Q170 Solve the following quadratic equations by factorization method:

$$\frac{1}{x-3} + \frac{2}{x-2} = \frac{8}{x}; \qquad x \neq 0, 2, 3.$$

Q171 Solve the following quadratic equations by factorization method:

$$\frac{1}{2a+b+2x} = \frac{1}{2a} + \frac{1}{b} + \frac{1}{2x}.$$

Q172 Find the values of k for which the roots are real and equal in each of the following equations:

$$k^2x^2 - 2(2k - 1)x + 4 = 0.$$

Q173 Find the values of k for which the roots are real and equal in each of the following equations:

$$x^2 - 2(k + 1)x + k^2 = 0.$$

Q174 Find the values of k for which the given equation has equal roots:

$$(k - 12)x^2 - 2(k - 12)x + 2 = 0.$$

Q175 Find the values of k for which the given equation has real and equal roots:

$$(k + 1)x^2 - 2(k - 1)x + 1 = 0.$$

Q176 Using quadratic formula solve the following quadratic equations:

$$9x^2 - 9(a + b)x + (2a^2 + 5ab + 2b^2) = 0, \qquad p \neq 0.$$

Q177 Find the value of p for which the quadratic equation $(p + 1)x^2 - 6(p + 1)x + 3(p + q) = 0$, $p \neq -1$ has equal roots. Hence, find the roots of the equation.

Q178 If 2 is a root of the quadratic equation $3x^2 + px - 8 = 0$ and the quadratic equation $4x^2 - 2px + k = 0$ has equal roots, find the value of k.

Q179 If -5 is a root of the quadratic equation $2x^2 + px - 15 = 0$ and the quadratic equation $p(x^2 + x) + k = 0$ has equal roots, find the value of k.

Q180 Find the values of p for which the quadratic equation $(2p + 1)x^2 - (7p + 2)x + (7p - 3) = 0$ has equal roots. Also, find these roots.

Q181 Find the values of k for which the quadratic equation $(3k + 1)x^2 + 2(k + 1)x + 1 = 0$ has equal roots. Also, find these roots.

Q182 Find the values of k for which the roots are real and equal in each of the following equations:

$$kx(x - 2\sqrt{5}) + 10 = 0.$$

Q183 Find the values of k for which the roots are real and equal in each of the following equations:

$$(k + 1)x^2 - 2(k - 1)x + 1 = 0.$$

Q184. The difference of the squares of two positive integers is 180. The square of the smaller number is 8 times the larger, find the numbers.

Q185. Two numbers differ by 4 and their product is 192. Find the numbers.

Q186. Two numbers differ by 3 and their product is 504. Find the numbers.

Q187. The sum of two numbers is 16. The sum of their reciprocals is 1/3. Find the numbers.

Q188. The difference of two numbers is 4. If the difference of their reciprocals is $\frac{4}{21}$, find the numbers.

Q189. The sum of the squares of two consecutive odd positive integers is 394. Find them.

Q190. Find two consecutive odd positive integers, sum of whose squares is 290.

Q191. A two digit number is such that the product of its digits is 18. When 63 is subtracted from the number, the digits interchange their places. Find the number.

Q192. The sum of two numbers is 15. If the sum of their reciprocals is $\frac{3}{10}$, find the numbers.

Q193. The sum of the squares of two consecutive odd numbers is 394. Find the numbers.

Q194. The difference of two natural numbers is 3 and the difference of their reciprocals is $\frac{3}{28}$. Find the numbers.

Q195. The difference of squares of two numbers is 88. If the larger number is 5 less than twice the smaller number, then find the two numbers.

Q196. Three consecutive positive integers are such that the sum of the square of the first and the product of other two is 46, find the integers.

Q197. The sum of two numbers is 9. The sum of their reciprocals is 1/2. Find the numbers.

Q198. The sum of two numbers a and b is 15, and the sum of their reciprocals $\frac{1}{a}$ and $\frac{1}{b}$ is 3/10. Find the numbers a and b.

Q199. The sum of two numbers is 18. The sum of their reciprocals is 1/4. Find the numbers.

Q200. The sum of the squares of two consecutive even number is 340. Find the multiples.

Q201. The sum of the squares of two consecutive multiples of 7 is 637. Find the multiples.

Q202. Sum of the areas of two squares is 400 cm^2. If the difference of their perimeters is 16 cm, find the sides of two squares.

Q203. The area of an isosceles triangle is 60 cm^2 and the length of each one of its equal sides. is 13 cm. Find its base.

Q204. Seven years ago Varun's age was five times the square of Swati's age. There years hence Swati's age will be two fifth of Varun's age. Find their present ages.

Q205. The area of a rectangular plot is 528 m^2. The length of the plot (in metres) is one metre more then twice its breadth. Find the length and the breadth of the plot.

Q206. If the roots of the equation $(a^2 + b^2)\,x^2 - 2\,(ac + bd)\,x + (c^2 + d^2) = 0$ are equal, prove that $\frac{a}{b} = \frac{c}{d}$.

Q207. If p, q, r and s are real numbers such that $pr = 2\,(q + s)$, then show that at least one of the equations $x^2 + px + q = 0$ and $x^2 + rx + s = 0$ has real roots.

Q208 If the roots of the equation $x^2 + 2cx + ab = 0$ are real unequal, prove that the equation

$$x^2 - 2(a + b)x + a^2 + b^2 + 2c^2 = 0$$

has no real roots.

Q209 The speed of a boat in still water is 15 km/hr. It can go 30 km upstream and return downstream to the original point in 4 hours 30 minutes. Find the speed of the stream.

Q210 A train travels a distance of 300 km at constant speed. If the speed of the train is increased by 5 km an hour, the journey would have taken 2 hours less. Find the original speed of the train.

Q211 The difference of the squares of two numbers is 45. The square of the smaller number is 4 times the larger number. Determine the numbers.

Q212 One-fourth of a herd of comels was seen in the forest. Twice the square root of the herd had gone to mountains and the remaining 15 camels were seen on the bank of a river. Find the total number of camels.

Q213 If the equation $(1 + m^2)x^2 + 2mcx + (c^2 - a^2) = 0$ has equal roots, prove that $c^2 = a^2(1 + m^2)$.

Q214 If the roots of the equaton $(c^2 - ab)x^2 - 2(a^2 - bc)x + b^2 - ac = 0$ are equal, prove that either $a = 0$ or $a^3 + b^3 + c^3 = 3abc$.

Q215 If the roots of the equations $ax^2 + 2bx + c = 0$ and $bx^2 - 2\sqrt{ac}\,x + b = 0$ are simultaneously real, then prove that $b^2 = ac$.

Q216 O Girl! out of a group of swans, $\frac{7}{2}$ times the square root of the number are playing on the shore of a tank. The two remaining ones are playing, with amorous fight, in the water. What is the total number of swans?

Q217 A plane left 30 minutes later than the schedule time and in order to reach its destination 1500 km away in time it has to increase its speed by 250 km/hr from its usual speed. Find its usual speed.

Q218 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/hr less than that of the fast train, find the speeds of the two trains.

Q219 A fast train takes one hour than a slow train for a journey of 200 km. If the speed of the slow train is 10 km/hr less than that of the fast train, find the speed of the two trains.

Q220 The speed of a boat in stil water is 8 km/hr. It can go 15 km upstream and 22 km downstream in 5 hours. Find the speed of the stream.

Q221 Swati can row her boat at a speed of 5 km/hr in still water. If it takes her 1 hour more to row the boat 5.25 km uptream than to return downstream, find the speed of the stream.

Q222 In a flight of 600 km, a aircraft was slowed down due to bad weather. Its average speed for the trip was reduced by 200 km/hr and the time of flight increased by 30 minutes. Find the duration of flight.

Q223 The hypotenuse of a right triangle is $3\sqrt{10}$ cm. If the smaller side is tripled and the longer leg doubled, new hypotenuse will be $3\sqrt{5}$ cm. How long are the legs of the triangle?

Q224 The hypotenuse of a right triangle is $3\sqrt{5}$ cm. If the smaller side is tripled and the larger side is doubled, the new hypotenuse will be 15 cm. Find the length of each side.

Q225 The product of Shikha's age five years ago and her age 8 yers later is 30, her age at both time being given in yeas. Find her present age.

Q226 The sum of the ages of a man and his son is 45 years. Five years ago, the product of their ages was four times the man's age at the time. FInd their present ages.

Q227. An aeroplane takes 1 hour less for a journey of 1200 km if its speed is increased by 100 km/hr from its usual speed. Find its usual speed.

Q228. A passenger train takes one hour less for a journey of 150 km if its speed is increased by 5 km/hr from its usual speed. Find the usual speed of the train.

Q229. *A* takes 6 days less than the time taken by *B* to finish a piece of work. If both *A* and *B* together can finish it in 4 days, find the time taken by *B* to finish the work.

Q230. There is a square field whose side is 44 m. A square flower bed is prepared in its centre leaving a gravel path all round the flower bed. The total cost of laying the flower bed and gravelling the path at Rs. 2.75 and Rs. 1.50 per square metre, respectivelt, is Rs. 4904. Find the width of the gravel path.

Q231. The perimeter of a right triangle is 60 cm. Its hypotenues is 25cm. Find the area of the triangle.

Q232. A farmer wishes to grow a 100 m^2 rectangular vegetable garden. Since he has with the only 30 m 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.

Q233. If twice the area of a smaller square is subtracted from the area of a larger square, the result is 14 cm^2. However, if twice the area of the larger square is added to three times the area of the smaller square, the result is 203 cm^2. Determine the sides of the square.

Q234. A person on tour has Rs. 360 for his expences. If he extends his tour for 4 days, he has to cut down his daily expenses by Rs. 3. Find the original duration of the tour.

Q235. If two pipes function sumultaneously, a reservoir will be filled in 12 hours. One pipe fills the reservoir 10 hours faster than the other. How many hours wil the second pipe take to fill the reservoir?

Q236. *A* takes 10 days less than the time taken by *B* to finish a piece of work. If both *A* and *B* together can finish the work in 12 days, find the time taken by *B* to finish the work.

Q237. Two pipes running together can fill a cistern in $3\frac{1}{13}$ minutes. If one pipe takes 3 minutes more than the other to fill it, find the time in which each pipe would fill the cistern.

Q238. A swimming pool is filled with three pipes with uniform flow. The first two pipes operating simultanceously, fill the pool in the same time during which the pool is filled by the third pipe alone. The second pipe fills the pool five hours faster than the first pipe and four hours slower than the third pripe. Find the time required by each pipe to fill the pool separaterly.

Q239. The angry Arjun carried some arrows for fighting with Bheeshm. With half the arrows, he cut down the arrows thrown by Bheeshm on him and with six other arrows he kiled the rath driver of Bheeshm. With one arrow each he knocked down respectively the rath, flag and the bow of Bheeshm. Finally, with one more than four times the square root o arrows he laid Bheeshm unconscious on an arrow bed. Find the total number of arrows arjun had.

Q240. A dealer sells a toy for Rs. 24 and gains as much per cent as the cost price of th toy. Find the cost price of the toy.

Q241. A factory kept increasing its output by the same percentage every year. Find peercentage if it is known that the output is doubled in the last two years.

Q242. If the price of a book is reduced by ras. 5, a person can buy 5 more books for Rs. 300. Find the original list price of the book.

Q243. Rs. 6500 were divided equaly among a certain number of persons. Had there been 15 more persons, each would have ot Rs. 30 less. Find the original number of persons.

Q244. A piece of cloth costs Rs. 200. If the piece was 5 m longer and each metre of cloth costs Rs. 2 less the cost of the piece would have remained unchanged. How long is the piece and what is the original rate per metre?

Q245. Solve the following quadratic equations by factorization method:

$$3\left(\frac{3x-1}{2x+3}\right)-2\left(\frac{2x+3}{3x-1}\right)=5; \qquad x\neq\frac{1}{3},-\frac{3}{2}.$$

Q246. Out of agroup of swans, 7/2 times the square root of the total number are playing on the share of a pond. The two remaining ones are swinging in water. Find the total number of swans.

Q247. One-fourth of a herd of camels was seen in the forest. Twice square root of the herd had gone to mountains and the remaining 15 camels were seen on the bank of a river. Find the total number of camels.

Q248. If the roots of the equation $(b-c)x^2+(c-a)x+(a-b)=0$ are equal, then prove that $2b=a+c$.

Q249. Solve the following quadratic equations by factorization method:

$$\frac{2}{x+1}+\frac{3}{2(x-2)}=\frac{23}{5x}; \qquad x\neq 0,-1,2.$$

Q250. Solve the following quadratic equations by factorization method:

$$\frac{3}{x+1}+\frac{4}{x-1}=\frac{29}{4x-1}; \qquad x\neq 1,-1,\frac{1}{4}.$$

Q251. Solve the following quadratic equations by factorization method:

$$3\left(\frac{7x+1}{5x-3}\right)-4\left(\frac{5x-3}{7x+1}\right)=11; \qquad x\neq\frac{3}{5},-\frac{1}{7}.$$

Q252. The numberator of a fraction is 3 less than the denominator. If 2 is added to both the numerator and the denominator, then the sum of the new fraction and the original fraction is $\frac{29}{20}$. Find the original fraction.

Q253. While boarding an aeroplane, a passenger got hurt. The pilot showing promptness and concern, made arrangements to hospitalise the injured and so the plane started late by 30 minutes to reach the destination, 1500 km away in time, the pilot increased the speed by 100 km/hr. Find the original speed/hour of the plane.

Q254. An aeroplane left 50 minutes later than its scheduled time, and in order to reach the destination, 1250 km away, in time, it had to increase its speed by 250 km/hr from its usual speed. Find its usual speed.

Q255. A train covers a distance of 90 km at a uniform speed. Had the speed been 15 km/hour more, it would have taken 30 minutes less for the journey. Find the original speed of the train.

Q256. Two pipes running together can fill a tank in $11\frac{1}{9}$ minutes. If one pipe takes 5 minutes more than the other to fill the tank separately, find the time in which each pipe would fill the tank separately.

Q257. A girl is twice as old as her sister. Four years hence, the product of their ages (in years) will be 160. Find their present ages.

Q258. A motor boat whose speed in still water is 18 km/hr takes 1 hor more to go 24 km up stream that to return down stream to the same spot. Find the speed of the stream.

Q259. To fill a swimming pool two pipes are used. If the pipe of larger diameter used for 4 hours and the pipe of smaller diameter for 9 hours, only half of the pool can be filled. Find, how long it would take for each pipe to fill the pool separately, if the pipe of smaller diameter takes 0 hours more than the pipe of larger diameter to fill the pool?

Q260. If the list price of a toy is reduced by Rs. 2, a person can buy 2 toys more for Rs. 360. Find the original price of the toy.

Q261. A shopkeeper buys a number of books for Rs. 80. If he had bought 4 more books for the same amount, each book would have cost Rs. 1 less. How many books did he buy?

Q262. A peacock is sitting on the top of a pillar, which is 9 m high. From a point 27 m away from the bottom of the pillar, a anake is coming to its hole at the base of the pillar. Seeing the snake the peacock pounces on it. If their speeds are equal, at what distance from the whole is the snake caught?

Q263. In a class test, the sum of the marks obtained by P in Mathematics and science is 28. Had he got 3 marks more in Mathematics and 4 marks less in Science. The product of his marks, would have been 180. Find his marks in the two subjects.

Date: 29/9/2021

S1. $x = 2/3$ is also a solution of the given equation.

S2. $x = -2\sqrt{2}$ is also a solution of the given equation.

S3. $k = -\frac{9}{4}$.

S4. $k = -a^2$.

S5. $k = \frac{15}{2}$ and $m = 9$.

S6. $x = -\sqrt{2}$ is a solution but $x = -2\sqrt{2}$ is not a solution.

S7. $x = \frac{b}{a}$ is a solution but $x = \frac{a}{b}$ is not a solution.

S8. $a = 3,\ b = -6$.

S9. $x = 3$ is not a root of the given equation.

S10. $1 - \sqrt{2}$

S11. No real root.

S12. 0.

S13. All real values.

S14. $x = \frac{7}{2}$ or $x = -\frac{3}{4}$.

S15. $x = \frac{2}{3}$ and $x = -\frac{1}{3}$.

S16. $x = -3\sqrt{2}$ and $x = \sqrt{2}$ are two roots of the given equation.

S17. $D < 0$.

S18. $D = 0$.

S19. $D > 0$.

S20. $x = -\sqrt{3}$ and $x = -\frac{7}{\sqrt{3}}$ are two roots of the given equation.

S21. $k = \frac{25}{2}$.

S22. $k = \pm 4$.

S23. $k = \pm 2\sqrt{2}$.

S24. $k = 4$.

S25. $k = 2, \frac{1}{2}$.

S26. Real and equal.

S27. Real and distinct.

S28. Real and equal.

S29. $k = \geq -\frac{9}{2}$.

S30. $p = \pm 4\sqrt{3}$.

S31. $k = -1$ and the other roots is $-3/2$.

S32. $\lambda = 4$.

S33. $k = 5/4$.

S34. **(a)** $a = \pm 1$.

S35. **(d)** $\frac{b^2}{4a}$.

S36. **(a)** $k < 4$.

S37. $k = \frac{9}{4}$.

S38. $300 - 12\sqrt{3}$.

S39. Proved.

S40. Proved.

S41. **(d)** 16.

S42. **(b)** 3.

S43. **(c)** 16.

S44. **(c)** 2.

S45. **(a)** $p = 1,\ q = -2$.

S46. **(a)** 3.

S47. **(c)** $-\frac{1}{2}$.

S48. **(b)** 2.

S49. **(a)** $-\frac{3}{2}$.

S50. **(a)** 8.

S51. **(a)** 3.

S52. **(d)** 1.

S53. **(c)** 16 : 3.

S54. **(d)** – 1.

S55. **(b)** 7.

S56. **(c)** 6, – 6.

S57. **(a)** 3.

S58. $-\frac{\sqrt{3}}{2}, -\frac{\sqrt{3}}{2}$.

S59. $-\frac{1}{\sqrt{2}}, 2\sqrt{2}$.

S60. $-\frac{5}{3}, -2$.

S61. $x = a - b$ or $x = a + b$.

S62. $x = 4$ or $x = -\frac{2}{9}$.

S63. $x = \frac{3}{2}$ or $x = -\frac{5}{2}$.

S64. $x = 2a - b$ or $x = 2a + b$.

S65. – 1, 5.

S66. $6, \frac{40}{13}$.

S67. The given equation has no real roots.

S68. $\frac{\sqrt{5}}{3}, -\sqrt{5}$.

S69. $-\frac{\sqrt{3}}{2}, -2\sqrt{3}$.

S70. Proved.

S71. $k < 4$.

S72. $\frac{-2b}{a}, \frac{-2b}{3a}$.

S73. Real and equal, $\sqrt{\frac{3}{2}}$.

S74. $-2\sqrt{5}, \frac{\sqrt{5}}{3}$.

S75. $x = -2$ or $x = 1$.

S76. $x = 3$ or $x = \frac{4}{3}$.

S77. Ramu's present age is 6 years.

S78. Present age of son is 7 years and present age of man is 49 years.

S79. 16 cm, 20 cm.

S80. The two consecutive natural number are 12 and 13.

S81. $-2, 1$.

S82. $\frac{a}{2}, -a$.

S83. $\frac{3b}{a}, -4a$.

S84. $\sqrt{6}, -\sqrt{\frac{2}{3}}$.

S85. $2, -\frac{5}{16}$.

S86. $p = 4$.

S87. $k = 0, \frac{1}{4}$.

S88. ± 4.

S89. $6, 7$ or $-6, -7$.

S90. $x = \sqrt{3}, 1$.

S91. $-\left(\frac{a+b}{2}\right)$ and $\left(\frac{a-b}{2}\right)$.

S92. $x = \frac{2b}{a}$ or $x = \frac{b}{a}$.

S93. $2a - b,\ 2a + b$.

S94. $\sqrt{2}, 1$.

S95. $-\sqrt{3}, -\frac{7}{\sqrt{3}}$

S96. $x = -(a + 2)$ or $x = (a + 1)$.

S97. $x = -\frac{a}{a+b}$ or $x = -\frac{a+b}{a}$.

S98. $x = 1, 1$.

S99. $x = -1$ is the only solution of the given equation.

S100. -1.

S101. $\sqrt{2}$, 1.

S102. $x = 25$ or $x = \frac{1}{25}$.

S103. $x = -(a + 2)$ or $x = a - 1$.

S104. $k \le -4$ or $k \ge 4$.

S105. $x = 2 \pm 2\sqrt{3}$.

S106. $x = \frac{1 \pm \sqrt{297}}{4}$.

S107. $-2, 7$.

S108. $k = \frac{2}{3}$ or $k = -1$.

S109. $b^2 = ac$.

S110. $k = 4$.

S111. $k = \frac{-1}{2}, 1$.

S112. Given equation are each equal to 5/4.

S113. Given equation are equal to 4/3.

S114. $k \le -\sqrt{20}$ or $k \ge \sqrt{20}$.

S115. $n = 20$.

S116. $n = 6$.

S117. The numbers are 8 and 12.

S118. The required parts are 10 and 6.

S119. The required nuber is 27.

S120. The required nuber is 5/6 or 6/5.

S121. Value of $b = -9$.

S122. $k = -\frac{6}{5}, 1$.

S123. $k = 0, 3$.

S124. $k = 5, -3$.

S125. $-\frac{8}{5} < k < \frac{8}{5}$.

S126. $k = 16$.

S127. Proved.

S128. $k = 9/4$.

S129. 12, 14.

S130. 8, 9, 10.

S131. $\frac{1}{25}$.

S132. 23.

S133. – 10, 9.

S134. Required number is 24.

S135. The fraction = $\frac{3}{7}$.

S136. The speed of first train is 20 km/hr and speed of second train is 15 km/hr.

S137. 26.

S138. 42.

S139. Father's present age = 36 and Son's present age = 9 years.

S140. The sides of the triangle are 10 m, 26 m and 24 m.

S141. The length of the rods are 8 m, 6 cm and 10 cm.

S142. Hypotenuse = 17 cm.

S143. Breadth = 25 m or 16 m.

S144. 120 m, 90 m.

S145. The lengths of the sides of the grassy land are 8 m, 17 m and 15 m.

S146. Base = 40 cm and Altitude = 30 cm.

S147. Base = 15 m, and Altitude = 22 m.

S148. The length of the hall is 12 m and and breadth of the hall is 7 m.

S149. The length of the side of the chess board = 24 cm.

S150. Side of square S_1 = 16 cm and side of square S_2 = 12 cm.

S151. Length = 20 cm and breadth = 12 cm.

S152. $x = \frac{a+b}{2}$ or $x = \frac{a-b}{2}$.

S153. At a distance of 5 metres from the gate B.

S154. $x = -\frac{1}{a^2}$ or $x = \frac{1}{b^2}$.

S155. $x = \frac{2a+b}{3}$ or $x = \frac{a+2b}{3}$.

S156. $x = \frac{a^2}{2}$ or $x = \frac{b^2}{2}$.

S157. $x = \frac{a^2+b^2}{2}$ or $x = \frac{a^2-b^2}{2}$.

S158. $-4, \frac{9}{4}$.

S159. $\frac{a^2+b^2}{3}, \frac{b^2-a^2}{3}$.

S160. $x = -a$ or $x = -b$.

S161. $2, -6$.

S162. $5, \frac{5}{2}$.

S163. $-\frac{1}{a^2}, \frac{1}{b^2}$.

S164. $\frac{-b}{a}, \frac{c}{b}$.

S165. $3, \frac{4}{3}$.

S166. $k = 2$ or $k = -\frac{10}{9}$.

S167. $x = \frac{c}{b}$, $x = \frac{-b}{a}$.

S168. $x = -1$ or $x = \frac{q^2}{p^2}$.

S169. $8, \frac{11}{2}$.

S170. $4, \frac{12}{5}$.

S171. $-a, \frac{-b}{2}$.

S172. $k = \frac{1}{4}$.

S173. $k = \frac{-1}{2}$.

S174. $k = 12$ or $k = 14$.

S175. $k = 0, 3$.

S176. $\frac{2a+b}{3}, \frac{a+2b}{3}$.

S177. $p = 3; \quad x = 3.$

S178. 1.

S179. $k = 2.$

S180. $p = 4, -\frac{4}{7}; \quad x = \frac{5}{3}, 7.$

S181. $k = 0, 1; \quad x = -1, -\frac{1}{2}.$

S182. $k = 2.$

S183. $k = 0, 3.$

S184. 8, 12.

S185. 12, 16 or $-16, -12.$

S186. 21, 24 or $-24, -21.$

S187. 4, 12.

S188. 7, 3 or $-7, -3.$

S189. 13, 15.

S190. Required integers are 11 and 13.

S191. Required number is 92.

S192. The two numbers are 10 and 5.

S193. 13, 15.

S194. 7, 4.

S195. 13, 9.

S196. 4, 5, 6.

S197. 3, 6.

S198. $a = 5, \ b = 10$ or $a = 10, \ b = 5.$

S199. 12, 6.

S200. 12, 14.

S201. 14, 21.

S202. 16 cm, 12 cm.

S203. Base = 24 cm or 10 cm.

S204. Swati's present age = 9 years and Varun's present age = 27 years.

S205. 33 m, 16 m.

S206. Proved.

S207. Proved.

S208. Proved.

S209. The speed of the stream = 5 km/hr.

S210. Original speed of the train = 25 km/hr.

S211. The numbers are 9, 6 or 9, – 6.

S212. The number of camels = 36.

S213. Proved.

S214. Proved.

S215. Proved.

S216. The total number of swans = 16.

S217. The usual speed of the plane is 750 km/hr.

S218. The speed of two trains are 40 km/hr and 50 km/hr.

S219. 50 km/hr, 40 km/hr.

S220. The speed of the stream is 3 km/hr.

S221. The speed of the stream is 2 km/hr.

S222. Duration of flight = 1 hr.

S223. 3 cm, 9 cm.

S224. The length of the smaller side is 3 cm and the lengh of htelarger side is 6 cm.

S225. Shikha's present age is 7 years.

S226. Present age of son's is 9 years and present age of man's is 36 years.

S227. Usual speed of the aeroplane is 300 km/hr.

S228. Usual speed of the train is 25 km/hr.

S229. B alone can finish the work in 12 days.

S230. The width of the gravel path is 2 metres.

S231. Area of the triangle = 240 cm^2.

S232. The dimensions of the vegetable garden are: $5\text{ m} \times 20\text{ m}$ or $10\text{ m} \times 10\text{ m}$.

S233. The lengths of the sides of the square are 5 cm and 8 cm, respectively.

S234. The original duration of the tour was of 20 days.

S235. 30 hours.

S236. 30 days.

S237. The faster pipe fills the cistern in 5 minutes and the slower pipe takes 8 minutes to fill the cristern.

S238. 15 hours, 10 hours and 8 hours.

S239. The number of arrows which Arjun had = 100.

S240. The cost price of the toy is Rs. 20.

S241. $x = 100\,(-1 + \sqrt{2}\,)$.

S242. The original list price of the book is Rs. 20.

S243. The original number of persons is 50.

S244. The length of the piece of cloth is 20 metres and rate = Rs. 10 per metre.

S245. $0, -7$.

S246. Total number of swans = 16.

S247. Total number of camels = 36.

S248. Proved.

S249. $4, -\frac{23}{11}$.

S250. $4, -7$.

S251. $0, 1$.

S252. $\frac{7}{10}$.

S253. 500 km/hr.

S254. 500 km/hr.

S255. 45 km/hour.

S256. 15 hours, 25 hours

S257. 6 years, 12 years.

S258. 6 km/hr.

S259. Larger diameter pipe fills in 20 hours, and smaller diamter pipe fils in 30 hours.

S260. The original price of the toy = Rs. 20.

S261. The number of books is 16.

S262. The snake is caught at a distance of 12 m from the hole.

S263. Marks in Mathematics = 12, Marks in Science = 16.