



## MATHEMATICS CLASS VIII

### CHAPTER – 3 SQUARE AND SQUARE ROOTS

- Q.1. Is 225 a perfect square? If so. Find the number whose square is 225.
- Q.2. Show that 63504 is a perfect square. Also, find the number whose square is 63504.
- Q.3. Show that 17640 is not a perfect square.
- Q.4. Find the smallest number by which 180 must be multiplied so that the product is a perfect square.
- Q.5. Find the smallest number by which 25200 should be divided so that the result is a perfect square.
- Q.6. Which of the following numbers are perfect squares ?  
(i) 484 (ii) 625 (iii) 576 (iv) 941 (v) 961 (vi) 2500
- Q.7. Find the smallest number by which the given number must be multiplied so that the product is a perfect square.  
(i) 23805 (ii) 12150 (iii) 2904
- Q.8. Which of the following numbers are perfect squares?  
11, 12, 16, 32, 36, 50, 64, 79, 81, 111, 121
- Q.9. Using prime factorization method, find which of the following numbers are perfect squares?  
189, 225, 2048, 343, 441, 2916, 11025, 3549
- Q.10. Find the greatest number of two digits which is a perfect square.



Q.11. Find the smallest number by which 4851 must be multiplied so that the product becomes a perfect square.

Q.12. Find the smallest number by which 28812 must be divide so that the quotient becomes a perfect square.

Q.13. Find the smallest by which 1152 must be divided so that it becomes a perfect square. Also, find the number whose square is the resulting number.

Q.14. The following numbers are not perfect squares. Give reason.

(i) 1057    (ii) 23453    (iii) 7928    (iv) 222222

Q.15. What will be the unit's digit of the squares of the following numbers?

(i) 71    (ii) 599    (iii) 2783    (iv) 1234

Q.16. Which of the following end with digit 1?

$123^2$ ,  $77^2$ ,  $82^2$ ,  $161^2$ ,  $109^2$

Q.17. The following numbers are not perfect squares. Give reason.

(i) 64000    (ii) 89722    (iii) 222000    (iv) 505050

Q.18. Write a Pythagorean triplet whose one member is

(i) 14    (ii) 16

Q.19. Without adding, find the sum:

(i)  $1 + 3 + 5 + 7 + 9$     (ii)  $1 + 3 + 5 + 7 + 9 + 11 + 13 + 15 + 17 + 19$

(iii)  $1 + 3 + 5 + 7 + 11 + 13 + 15 + 17 + 19 + 21 + 23$

Q.20. Express :

(i) 49 as the sum of 7 odd natural numbers.

(ii) 121 as the sum of 11 odd natural numbers.



Q.21. How many natural numbers lie between squares of the following natural numbers?

- (i) 12 and 13      (ii) 25 and 26      (iii) 89 and 100

Q.22. Express each of the following as the sum of two consecutive natural numbers:

- (i)  $21^2$       (ii)  $13^2$       (iii)  $19^2$

Q.23. Find whether 55 is a perfect square or not?

Q.24. Observe the following pattern and supply the missing numbers:

$$11^2 = 121$$

$$101^2 = 10201$$

$$10101^2 = 102030201$$

$$1010101^2 = \dots\dots\dots$$

$$\dots\dots\dots = 10203040504030201$$

Q.25. Observe the following pattern

$$2^2 - 1^2 = 2 + 1$$

$$3^2 - 2^2 = 3 + 2$$

$$4^2 - 3^2 = 4 + 3$$

$$5^2 - 4^2 = 5 + 4$$

and find the value of

- (i)  $100^2 - 99^2$       (ii)  $111^2 - 109^2$       (iii)  $99^2 - 96^2$

Q.26. Which of the following triplets are Pythagorean?



- (i) (8, 15, 17)      (ii) (18, 80, 82)      (iii) (14,48,51)      (iv) (10, 24, 26)  
(v) (16, 63, 65)      (vi) (12, 35, 38)

**Q.27. Which of the following numbers are squares of even numbers?**

121, 225, 256, 324, 1296, 6561, 5476, 4489, 373758

**Q.28. Write five numbers for which you cannot decide whether they are squares.**

**Q.29. Write five numbers which you cannot decide whether they are square just by looking at the unit's digit.**

**Q.30. Write any five numbers not having 2, 3, 7 or 8 at unit's place.**

**Q.31. Write any five numbers not having 2, 3, 7 or 8 at unit's place.**

**Q.32. Find the square of the following numbers using column method :**

(i) 25      (ii) 96

**Q.33. Find the squares of the following numbers using column method :**

(i) 99      (ii) 89

**Q.34. Find the squares of the numbers by Visual method :**

(i) 54      (ii) 97

**Q.35. Find the square of the following numbers by Visual method :**

(i) 205      (ii) 315

**Q.36. Find the squares of the following using diagonal method :**

(i) 89      (ii) 68

**Q.37. Find the square of the following numbers by diagonal method :**

(i) 349      (ii) 293



Q.38. Find the squares of the following numbers :

(i) 65      (ii) 85      (iii) 95

Q.39. Find the squares of the following numbers :

(i) 56      (ii) 58      (iii) 59

Q.40. Find the squares of the following numbers :

(i) 527      (ii) 514      (iii) 525

Q.41. Find the squares of the following numbers :

(i) 125      (ii) 215      (iii) 1235

Q.42. Find the squares of 87 by using column method and diagonal method.

Q.43. Find the squares of the following numbers by diagonal method:

(i) 854      (ii) 2576

Q.44. Find the squares of the following numbers :

(i) 35      (ii) 105      (iii) 2005

Q.45. Find the squares of the following numbers:

(i) 515      (ii) 580      (iii) 509

Q.46. Find the square of the following numbers using the identity  $(a - b)^2 = a^2 - 2ab + b^2$  :

(i) 491      (ii) 189      (iii) 575

Q.47. Find the square of the following numbers using the identity

$(a + b)^2 = a^2 + 2ab + b^2$

(i) 509      (ii) 211      (iii) 625



Q.48. Find the squares of the following numbers using the identity  $(a - b)^2 = a^2 - 2ab + b^2$  :

(i) 395    (ii) 995    (iii) 495    (iv) 498    (v) 99    (vi) 999    (vii) 599

Q.49. Find the square root of 11025 by prime factorization.

Q.50. Find the square root of 7744 by prime factorization.

Q.51. Find the square root of 298116 by prime factorization.

Q.52. The students of class VIII of a school donated ₹ 2401 for PM's National Relief Fund Each student donated as many rupees as the number of students in the class. Find the number of students in the class.

Q.53. A PT teacher wants to arrange maximum possible number of 6000 students in a field such that the number of rows is equal to the number of columns. Find the number of rows if 71 were left out after arrangement.

Q.54. A Welfare association collected ₹ 202500 as donation from the residents. If each paid as many rupees as there were residents, find the number of residents.

Q.55. Write the possible unit's digit of the square root of the following numbers. Which of these numbers are odd square roots?

(i) 9801    (ii) 99856    (iii) 998001    (iv) 657666025

Q.56. A school collected ₹ 2304 as fees from its students. If each student paid as many paise as there were students in the school, how many students were there in the school ?



Q.57. Find the square root of each of the following numbers by long division method:

(i) 54756      (ii) 390625      (iii) 4937284

Q.58. Find the least number which must be added to 306452 to make it a perfect square.

Q.59. Find the greatest number of six digits which is perfect square.

Q.60. Find the least number of four digits which is a perfect square.

Q.61. Find the least number which must be subtracted from the following numbers to make them a perfect square :

(i) 2361    (ii) 194491    (iii) 26535    (iv) 16160    (v) 4401624

Q.62. Find the greatest number of 5 digits which is a perfect square.

Q.63. Find the least number of six digits which is a perfect square.

Q.64. The cost of levelling and turfing a square lawn at ₹ 2.50 per m<sup>2</sup> is ₹ 13322.50 . Find the cost of fencing it at ₹ 5 per metre.

Q.65. Find the greatest number of three digits which is a perfect square.

Q.66. Find all smallest number which must be added to 2300 so that it becomes a perfect square.

Q.67. Find the square root of  $52\frac{857}{2116}$ .

Q.68. The area of a square field is  $101\frac{1}{400}$  square metres. Find the length of one side of the field.

Q.69. Find the value of



(i)  $\frac{\sqrt{243}}{\sqrt{867}}$       (ii)  $\frac{\sqrt{1183}}{\sqrt{2023}}$       (iii)  $\sqrt{0.0196}$       (iv)  $\sqrt{37.0881}$

Q.70. Find the value of

(i)  $\sqrt{99} \times \sqrt{396}$       (ii)  $\sqrt{147} \times \sqrt{243}$

Q.71. The area of a square field is  $80\frac{244}{729}$  square metres. Find the length of each side of the field.

Q.72. The area of a square field is  $30\frac{1}{4}\text{m}^2$ . Calculate the length of the side of the square.

Q.73. Find the length of a side of a square playground whose area is equal to the area of a rectangular field of dimensions 72 m and 338 m.

Q.74. Find the value of  $\sqrt{15625}$  and the use it to find the value of  $\sqrt{156.25} + \sqrt{1.5625}$ .

Q.75. Find the square root of 0.00008281.

Q.76. Find the square root of 0.053361.

Q.77. Find the square roots of 2304 and 1764 and hence find the values of

$$\frac{\sqrt{0.2304} + \sqrt{0.1764}}{\sqrt{0.2304} - \sqrt{0.1764}}$$

Q.78. What is the fraction which when multiplied by itself gives 0.00053361?

Q.79. Simplify: (i)  $\frac{\sqrt{59.29} - \sqrt{5.29}}{\sqrt{59.29} + \sqrt{5.29}}$       (ii)  $\frac{\sqrt{0.2304} + \sqrt{0.1764}}{\sqrt{0.2304} - \sqrt{0.1764}}$

Q.80. Find the value of  $\sqrt{103.0225}$  and hence find the value of

(i)  $\sqrt{10302.25}$       (ii)  $\sqrt{1.030225}$

Q.81. Find the square root of 2 correct to three places of decimal.



Q.82. Find the square root of 3 correct to three places of decimal.

Q.83. Find the square root of 237.615 correct to three places of decimal.

Q.84. Find the square root  $10\frac{2}{3}$  correct to three places of decimal.

Q.85. Find the square root of  $\frac{3}{7}$  correct to four places of decimal.

Q.86. Given that  $\sqrt{2} = 1.414$  and  $\sqrt{5} = 2.236$ , evaluate each of the following :

(i)  $\sqrt{\frac{36}{5}}$       (ii)  $\sqrt{\frac{625}{98}}$

Q.87. Find the square root of 12.0068 correct to four decimal places.

Q.88. Find the square root of 11 correct to five decimal places.

Q.89. Given that :  $\sqrt{2} = 1.414$ ,  $\sqrt{3} = 1.732$ ,  $\sqrt{5} = 2.236$  and  $\sqrt{7} = 2.646$ , evaluate each of the following :

(i)  $\sqrt{\frac{144}{7}}$       (ii)  $\sqrt{\frac{2500}{3}}$

Q.90. By using the table for square roots, find the value of :

(i)  $\sqrt{7}$       (ii)  $\sqrt{26}$       (iii)  $\sqrt{432}$       (iv)  $\sqrt{1280}$

Q.91. Find the value of each of the following by using the square root table :

(i)  $\sqrt{13.32}$       (ii)  $\sqrt{3.1428}$       (iii)  $\frac{\sqrt{37}}{64}$

Q.92. Using the square root table, find the value of each of the following :

(i) 71.79      (ii) 6.328      (iii) 55.62

Q.93. The area of a square field is  $325 \text{ m}^2$ . Find the approximate length of one side of the field.



Q.94. Find the length of a side of a square, whose area is equal to the area of a rectangle with sides 240 m and 70 m.

Q.95. Given that :  $\sqrt{2} = 1.414$ ,  $\sqrt{3} = 1.732$ ,  $\sqrt{5} = 2.236$  and  $\sqrt{7} = 2.646$ , find the square roots of the following :

(i)  $\frac{196}{75}$     (ii)  $\frac{400}{63}$     (iii)  $\frac{150}{7}$     (iv)  $\frac{256}{5}$     (v)  $\frac{27}{50}$

Q.96. The area of a square playground is 256.6404 square metres. Find the length of one side of the playground.

Q.97. What is that fraction which when multiplied by itself gives 227.798649?

Q.98. Write the prime factorization of the following numbers and hence find their square roots.

(i) 7744    (ii) 9604    (iii) 5929    (iv) 7056

Q.99. Find the least square number, exactly divisible by each one of the numbers:

(i) 6, 9, 15 and 20    (ii) 8, 12, 15 and 20

Q.100. The product of two numbers is 1575 and their quotient is  $\frac{9}{7}$ . Find the numbers.