MATHS

BOOKS - RD SHARMA MATHS (ENGLISH)

SQUARES AND SQUARE ROOTS

Others

1. Is 225 a perfect square ? if so, find the number whose square is 225.

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2. Show that 63504 is perfect square. Also, find the number whose square is 63504.

3. Show that 17640 is not a perfect square.

4. Find the smallest number by which 180 must be multiplied so that the product is a perfect square.

5. Find the smallest number by which 25200 should be divided so that the result is a perfect square.

6. Which of the following numbers are perfect squares?

(i) 484   (ii)   625   (iii)   576   (iv) 941 (v) 961

        (vi)   2500

7. Show that each of the following numbers is a perfect square. Also, find the number whose square is the given

number in each case: (i)1156　　　(ii) 2025　　　(iii)

14641　　(iv) 4761

8. 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) 7688

9. Find the smallest number by which the given number

must be divided so that the resulting number is a

perfect square : (i)14283　　　(ii) 1800　　　(iii) 2904

10. Which of the following numbers are perfect squares ?

11, 12, 16, 32, 36, 50, 64, 79, 81, 111, 121

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11. Using prime factorization method, find which of the following numbers are perfect squares ? 189, 225, 2048, 343, 441, 2916, 11025, 3549

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12. By what number should each of the following numbers be multiplied to get a perfect square in each case ? Also, find the number whose square is the new number. (i)605(iv)2880

13. By what numbers should each of the following be divided to get a perfect square in each case? Also , find the number whose square is the new number. (i)16562

(ii) 3698   (iii) 5103 (iv) 3174   (v) 1575

14. Find the greatest number of two digits which is a perfect square.

15. Find the least number of three digits which is perfect square.

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

17. Find the smallest number by which 28812 must be divided so that the quotient becomes a perfect square.

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

19. Explain why none of the numbers out of following is a perfect square. 152, 7693, 14357, 88888, 798328

20. 635, 98, 122 are not perfect squares as they leave remainder 2 when divided by 3.

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21. 67, 146, 363, 10003 are not perfect squares as they leave remainder 3,2,3 and 3 respectively, when divided by 4,

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22. Find the square root of the following number by prime factorization. 484

23. $(3, 4, 5), (5, 12, 13), (8, 15, 17)$ etc. are Pythagorean triplets, because $3^2 + 4^2 = 25 = 5^2$ $5^2 + 12^2 = 169 = 13^2 \ 8^2 + 15^2 = 289 = 17^2$

24. Write a Pythagorean triplet whose one member is :

(I)6   (ii) 18

25. The following numbers are not perfect squares. Give reason. (I)1057 (ii) 23453 (iii) 7928 (iv) 222222

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26. What will be the units digit of the squares of the following numbers? (I)71 (ii) 599 (iii) 2783 (iv) 1234

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27. Which of the following end with digit 1 ?

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

28. Determine whether squares of the following numbers are even or odd. (I)213   (ii) 3824   (iii) 9777   (iv) 40028

29. The following numbers are not perfect squares. Given reason. (I)64000   (ii) 89722   (iii) 222000   (iv) 505050

30. write a Pythagorean triplet whose one member is

(I)14   (ii)   16

31. Without adding, find the sum: i) $1 + 3 + 5 + 7 + 9$ ii)

$1 + 3 + 5 + 7 + 9 + 11 + 13 + 15 + 17 + 19$ iii)

$1 + 3 + 5 + 7 + 9 + 11 + 13 + 15 + 17 + 19 + 21 + 23$

32. Express: 49 as the sum of 7 0dd natural numbers. 121 as the sum of 11 odd natural numbers.

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33. How many natural numbers lie between squares of the following natural numbers? (I)12 and 13   (ii) 25 and 26   (iii) 99 and 100

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34. Express each of the following as the sum of two consecutive natural numbers : (I)21^2 (ii) 13^2 (iii) 19^2

35. Find whether 55 is a perfect square or not?

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36. Observe the following pattern and find the missing digits: $11^2 = 121$ $101^2 = 10201$ $1001^2 = 1002001$ $10001^2 = 100020001$ $100001^2 = $ $10000001^2 = $

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37. Observe the following pattern and supply the missing numbers. (i) 11^2 = 121 (ii) 101^2 = 10201 (iii) 1001^2 =

1002001 (iv) 100001^2 = 1__2__1 (v) 10000001^2 =

_____

38. Using the given pattern, find the missing numbers:

$$1^2 + 2^2 + 2^2 = 3^2 \qquad\qquad 2^2 + 3^2 + 6^2 = 7^2$$

$$3^2 + 4^2 + 12^2 = 13^2 \qquad\qquad 4^2 + 5^2 + ()^2 = 21^2$$

$$5^2 + ()^2 + 30^2 = 31^2 \quad 6^2 + 7^2 + ()^2 = ()^2$$

39. Using suitable patterns, compute the following : (I)

$$\frac{333^2}{12321} = \text{(ii)} \ \frac{666666^2}{12345654321} =$$

40. The following numbers are not perfect squares. Give reason. (I)1547 (ii) 45743 (iii) 8948 (iv) 333333

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41. Show that the following numbers are not perfect squares: (I)9327 (ii) 4058 (iii)22453 (iv) 7443522

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42. The square of which of the following numbers would be an odd numbers : (I)731   (ii) 3456   (iii) 5559   (iv) 42008

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43. What will be the units digit of the squares of the following numbers: (I)52   (ii) 977   (iii) 4583 (iv)78367   (v) 52698 (vi) 99880 (vii)12796   (viii) 55555 (ix) 53924

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44. Observe the following pattern $1 + 3 = 2^2$ $1 + 3 + 5 = 3^2$ $1 + 3 + 5 + 7 = 4^2$ and write the value of $1 + 3 + 5 + 7 + 9 +$ upto n terms.

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45. 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) $99^2 - 96^2$

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46. Which of the following triplets are Pythagorean? (I) $(8, \ 15, \ 17)$ (ii) $(18, \ 80, 82)$ (iii)$(14, 48, 51)$ (iv) $(10, 24, 26)$ $(16, 63, 65)$ (vi) $(12, 35, 38)$

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47. Observe the following pattern

$$(1 \times 2) + (2 \times 3) = \frac{2 \times 3 \times 4}{3},$$

$$(1 \times 2) + (2 \times 3) + (3 \times 4) = \frac{3 \times 4 \times 5}{3},$$

$$(1 \times 2) + (2 \times 3) + (3 \times 4) + (4 \times 5) = \frac{4 \times 5 \times 6}{3}$$

and find the value of

$$(1 \times 2) + (2 \times 3) + (3 \times 4) + (4 \times 5) + (5 \times 6)$$

48. Observe the following pattern $1 = \dfrac{1}{2}\{1 \times (1+1)\}$,

$1 + 2 = \dfrac{1}{2}\{2 \times (2+1)\}$,

$1 + 2 + 3 = \dfrac{1}{2}\{3 \times (3+1)\}$,

$1 + 2 + 3 + 4 = \dfrac{1}{2}\{4 \times (4+1)\}$ and find the values of each of the following : $1 + 2 + 3 + 4 + 5 + \ + 50$,

$31 + 32 + \ + 50$

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49. Observe the following pattern

$1^2 = \dfrac{1}{6}[1 \times (1+1) \times (2 \times 1 + 1)]$,

$1^2 + 2^2 = \dfrac{1}{6}[2 \times (2+1) \times (2 \times 2 + 1)]$,

$1^2 + 2^2 + 3^2 = \dfrac{1}{6}[3 \times (3+1) \times (2 \times 3 + 1)]$,

$1^2 + 2^2 + 3^2 + 4^2 = \dfrac{1}{6}[4 \times (4+1) \times (2 \times 4 + 1)]$,

and find the values of each of the following

$1^2 + 2^2 + 3^2 + 4^2 + \ \ddot{}+ 10^2,$

$5^2 + 6^2 + 7^2 + 8^2 + 9^2 + 10^2 + 11^2 + 12^2$

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50. Which of the following square numbers are squares of even numbers ? 121,225, 256, 324,1296, 6561, 5476, 4489

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51. By just examining the units digits, can you tell which of the following cannot be whole squares? (I)1026

(ii)　1028　　　　　(iii)　1024 (iv)1022

(v)　1023　　　　(vi)　1027

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52. Write five numbers for which you cannot decide whether they are squares just by looking at unit digit.

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53. Write five numbers which you connot decide whether they are square just by looking at the units digit.

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54. Find the square root of the following number by prime factorization. 324

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55. Find the squares of the following numbers using column method. (I)25 (ii) 96

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56. Find the squares of the following numbers using column method: (I)99 (ii) 89

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57. Find the squares of the following numbers by visual method. (I)54   (ii) 97

58. Find the square of the following numbers by visual method: (I)205   (ii) 315

59. Find the squares of the following using diagonal method: (I)89   (ii) 68

60. Find the square of the following numbers by diagonal method: (I)349   (ii) 293

61. Find the squares of the following numbers:

(I)65   (ii) 85   (iii) 95

62. Find the squares of the following numbers:

(I)56   (ii) 58   (iii) 59

63. Find the squares of the following numbers:

(I)527   (ii) 514   (iii) 525

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64. Find the square of the following numbers:

(I)125   (ii) 215   (iii) 1235

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65. Find the square of 87 by using column method and diagonal method.

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66. Find the squares of the following numbers by diagonal method: (I)854   (ii) 2576

67. Find the squares of the following numbers: (I)35   (ii) 105   (iii) 2005

68. Find the squares of the following numbers; (I)515   (ii) 580   (iii) 509

69. Find the squares of the following numbers using the identity $(a + b)^2 = a^2 + 2ab + b^2$ (I)509 (ii) 211 (iii) 625

70. Find the squares of the following numbers using the identity $(a - b)^2 = a^2 - 2ab + b^2$ (I)491 (ii) 189 (iii) 575

71. Find the squares of the following numbers using column method. Verify the result by finding the square using the usual multiplication: (I)25 (ii) 37 (iii) 54 (iv)71 (v) 96

72. Find the square root of the following number by prime factorization. 1764

73. Find the squares of the number127

74. Find the squares of the following numbers:

(I)425   (ii)   575   (iii)   405

(iv)205   (v)   95   (vi)   745

(vii)125   (viii)   995

75. Find the squares of the following numbers using the identity $(a + b)^2 = a^2 + 2ab + b^2$: (I)405 (ii) 510 (iii) 1001 (iv)209 (v) 605

76. 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

77. Find the squares of the following number by visual method: 52

78. $\sqrt{4} = 2.$ *because* $2^2 = 4.$ $\sqrt{9} = 3,$ *because* $3^2 = 9.$ $\sqrt{324} = 18,$ *because* $18^2 = 324.$

79. Find the square root of 36 by successive subtractions.

80. Find the square root of 11025 by prime factorization.

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81. Find the square root of 7744 by prime factorization.

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82. Find the square root of 298116 by prime factorization.

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83. Find the smallest number by which 1100 must be multiplied so that the product becomes a perfect square. Also in each find the square root of the perfect square so obtained.

84. Find the smallest number by which 9408 must be divided so that it becomes a perfect square. Also, find the square root of the perfect square so obtained.

85. 5929 students are sitting in an auditorium in such a manner that there are as many students in a row as there are rows in the auditorium. How many rows are there in the auditorium.

86. A general wishing to arrange his men, who were 335250 in number in the form of a square found that there were 9 men left over. How many were there in each row?

87. The product of two numbers is 1575 and their quotient is $\dfrac{9}{7}$. Find the numbers.

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88. Find the smallest square number divisible by each one of the numbers 8, 9 and 10.

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89. What could be the possible ones digits of the square root of each of the following numbers? (i) 9801 (ii) 99856 (iii) 998001 (iv) 657666025

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90. Find the square root of the following number by prime factorization. 441

91. Find the square root of each of the following by prime factorization. (I)7056   (ii)   8281

(iii)   11664 (iv)47089   (v)   24336   (vi) 190969

92. Find the square root of each of the following by prime factorization. (I)586756   (ii)   27225

(iii)   3013696

93. Find the smallest number by which 180 must be multiplied so that it becomes a perfect square. Also find the square root of the perfect square so obtained.

94. Find the smallest number by which 147 must be multiplied so that it becomes a perfect square. Also find

the square root the number so obtained.

95. Find the smallest number by which 3645 must be divided so that it becomes a perfect square. Also find the square root of the resulting number.

96. Find the smallest number by which 1152 must be divided so that it becomes a perfect square. Also, find the square root the number obtained.

97. The product of two numbers is 1296. If one number is 16 times the other, find the numbers.

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98. A welfare association collected Rs 202500 as donation from the residents. If each paid as many rupees as there were residents, find the number of residents.

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99. A society collected Rs 92.16. Each member collected as many paise as there were members. How many members

were there and how much did each contribute?

100. A school collected Rs 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 ?

101. The area of a square field is 5184 m^2. A rectangular field, whose length is twice its breadth has its breadth

has its permeter equal to the perimeter of the square field. Find the area of the rectangular field.

102. Find the least square number, exactly divisible by each one of the numbers: 6, 9, 15 and 20

103. Find the square roots of 121 and 169 by the method of repeated subtraction.

104. Write the prime factorization of the number and hence find their square roots. 7744

105. The students of class VIII of a school donated Rs 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.

106. A PT teacher wants to arrange maximum possible number of 6000 students in a field such that the number

rows is equal to the number of columns. Find the number of rows if 71 were left out after arrangement.

107. Find the number of digits in the square roots of each of the following perfect squares : (I)390625

(ii) 1758276   (iii) 152399025

108. Find the square root of the following numbers by long division method :54756

109. Find the least number which must be subtracted from 18265 to make it a perfect square. Also, find the square root of the resulting number.

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

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111. Find the greatest number of six digits which is a perfect square.

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

113. Find the square root of each of the following by long division method: (i)12544(ii)97344

114. Find the square root of each of the following by long division method: (i)120409

115. Find the square root of the following by long division method: 20657025

116. Find the square root of the following by long division method: 6407522209

117. Find the least number which must be subtracted from the following numbers to make them a perfect square : (i) 2361(ii)194491

118. Find the least number which must be subtracted from 5607 to make a perfect square.

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

120. Find the least number of 4 digits which is a perfect square.

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

122. Find the greatest number of 4 digits which is a perfect square.

123. A general arranges his soldiers in rows to form a perfect square. He finds that in doing so, 60 soldiers are left out. If the total number of soldiers be 8160, find the number of soldiers in each row.

124. The area of a square field is 60025 m^2. A man cycles along its boundary at 18 km/ hr. In how must time will he return at the starting point ?

125. The cost of levelling and turfing a square lawn at Rs 2.50 per m^2 is Rs 13322.50. Find the cost of fencing it at Rs 5 per metre.

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

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127. Find the smallest number which must be added to 2300 so that it becomes a perfect square.

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128. Find the square root of $\dfrac{256}{441}$.

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129. Find the square root of $\dfrac{625}{1296}$.

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130. Find the square root of $52\dfrac{857}{2116}$.

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

132. Find the square root of the 0.813604 in the decimal form.

133. Find the square root of the 0.00002025 in the decimal form.

134. Find the square root of : $\dfrac{441}{961}$

135. Find the square root of : $\dfrac{324}{841}$

136. Find the square root of the 225.6004 in the decimal form.

137. Find the square root of the 3600.720036 in the decimal form

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

139. The area of a square field is $30\dfrac{1}{4}\ m^2$. Calculate the length of the side of the square.

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

141. Find the square root of 447. 3225.

142. Find the square root of 0.00008281.

143. Find the square root of 0.053361.

144. A decimal fraction is multiplied by itself. If the product is 251953. 8025, find the fraction.

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

146. Find the square roots of 2304 and 1764 and hence find the value of $\dfrac{\sqrt{0.2304} + \sqrt{0.1764}}{\sqrt{0.2304} - \sqrt{0.1764}}$

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147. Find the square root of the following numbers in decimal form: 0.7225

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148. Find the square root of the following numbers in decimal form: 84.8241

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149. What is that fraction which when multiplied by itself

given 227. 798649 ?

150. The area of a square playground is 256.6404 square

metres. Find the length of one side of the playground.

151. What is the fraction which when multiplied by itself

gives 0.00053361 ?

152. Simplify : (I) $\dfrac{\sqrt{59.29} - \sqrt{5.29}}{\sqrt{59.29} + \sqrt{5.29}}$ (ii)

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

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153. Evaluate $\sqrt{50625}$ and hence find the value of

$\sqrt{506.25} + \sqrt{5.0625}$

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

value of (I) $\sqrt{10302.25}$ (ii) $\sqrt{1.030225}$

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

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

157. Find the square root of 237. 615 correct to three places of decimal.

158. Find the square root of $10\dfrac{2}{3}$ correct to three places of decimal.

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159. Find the square root of $\dfrac{3}{7}$ correct to four places of decimal.

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160. Given that $\sqrt{2} = 1.\,414\ and\ \sqrt{5} = 2.\,236,$ evaluate each of the following $\sqrt{\dfrac{36}{5}}$ (ii) $\sqrt{\dfrac{625}{98}}$

161. Find the square root of each of the following correct to three places of decimal. 5

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162. Find the square root of each of the following correct to three places of decimal. 20

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163. Find the square root of each of the following correct to three places of decimal. 1.7

164. Find the square root of each of the following correct to three places of decimal. 0.9

165. Find the square root of each of the following correct to three places of decimal. 0.1

166. Find the square root of each of the following correct to three places of decimal. (i) 7

167. Find the square root of the following correct to three places of decimal. $2\frac{1}{2}$

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

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

170. Given that : $\sqrt{2} = 1.414, \ \sqrt{3} = 1.732, \ \sqrt{5} = 2.236 \ and \ \sqrt{7} = 2.646,$ evaluate each of the following : $\sqrt{\dfrac{144}{7}}$

171. 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 : $\dfrac{169}{75}$

172. 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 : $\dfrac{276}{50}$

173. 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 : $\dfrac{150}{7}$

174. 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 : $\dfrac{256}{5}$

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175. Using square root table, find the square roots of the following :(i)7(ii) 15

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176. Using square root table, find the square roots of the following : (i)82

177. Using square root table, find the square roots of the following : (i) 8700　　　(ii) 3509　　　(iii) 6929

178. Using square root table, find the square roots of the following :(i) 1312

179. Using square root table, find the square roots of the following : (i) $\dfrac{99}{144}$ (ii) $\dfrac{57}{100}$

180. 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 : $\dfrac{16}{3}$

181. Using square root table, find the square roots of the following : (i) 110 (ii) 1110 (iii) 11.11

182. The area of a square field is $325\,m^2$. Find the approximate length of one side of the field.

183. 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.