MATHS

BOOKS - R G PUBLICATION

REVISION

Exercise

1. Which of the following ratios are in proportion? 12 : 21 and 32 : 56

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2. Which of the following ratios are in proportion? 18 :

30 and 14 : 21

3. Which of the following ratios are in proportion? 22

: 33 and 33 : 24

4. Which of the following ratios are in proportion?

24:28 and 20:25

5. Which of the following sets of numbers are in proportions: 2,6,6,8

6. Which of the following sets of numbers are in proportions: 10,20,30,60

7. Which of the following sets of numbers are in proportions: $p, pq, p^2 q, q^2$

8. Which of the following sets of numbers are in proportions: 6 : 30 and 4 : 20

9. Fill in the blanks : Area of circle,$A = \pi r^2$. If A increases then r_____ . If r decreases A____.

10. If $p \propto q$ and when p=6 then q=30. Now if p=2, then what is the value of q?

A. 12

B. 20

C. 10

D. 15

Answer:

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11. The value of y in the blank space of the following table is

x	1	2	4	8
y	32	16	8	–

A. 8

B. 6

C. 4

D. 2

Answer:

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12. What will be the unit digit of the square of the following numbers?

272

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13. What will be digits in the unit place of the squares of the following numbers? 79

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14. What will be digits in the unit place of the squares of the following numbers? 400

15. What will be digits in the unit place of the squares of the following numbers? 2637

16. Why do the following numbers are not perfect square? 1057

17. Why do the following numbers are not perfect square? 7928

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18. Why do the following numbers are not perfect square? 222

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19. Why do the following numbers are not perfect square? 640

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20. What are the squares of the following numbers?

19

21. What are the squares of the following numbers?

37

22. What are the squares of the following numbers?

53

23. What are the squares of the following numbers?

78

24. Find the square roots of the following numbers by Prime factorisation method ,

1764

25. Find the square roots of the following numbers by Prime factorisation method ,

9216

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26. Find the square roots of the following numbers by Prime factorisation method ,

7744

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27. Find the square roots of the following by prime factorisation method. 9801

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28. Find the least numbers (integer) with which the following numbers are to be multiplied so that they become perfect square. 1525

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29. Find the least numbers (integer) with which the following numbers are to be multiplied so that they

become perfect square. 1008

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30. Find the least numbers (integer) with which the following numbers are to be multiplied so that they become perfect square. 2028

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31. Find the least numbers (integer) with which the following numbers are to be multiplied so that they become perfect square. 768

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32. With what least number (integer) the following numbers are to be divided so that they become perfect squares. 468

33. With what least number (integer) the following numbers are to be divided so that they become perfect squares. 1584

34. With what least number (integer) the following numbers are to be divided so that they become perfect squares. 2645

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35. With what least number (integer) the following numbers are to be divided so that they become perfect squares. 1620

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36. In a military camp the major has to arrange 1764 soldiers in a square shape such that the number of

solidiers along the length and breath are equal. How many soldiers are there in each row?

37. Find the smallest perfect square number which is divisible by 4,9,and 10.

38. Find the square root by division process: 2116

39. Find the square root by division process: 4761

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40. Find the square root by division process: 576

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41. Find the square root by division process: 6084

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42. Find the square root of the following decimal numbers: 12.25

43. Find the square root of the following decimal numbers: 24.01

44. Find the square root of the following decimal numbers: 146.41

45. Find the square root of the following decimal numbers: 102.01

46. Which of the following is a square of an odd natural number?

A. 256

B. 169

C. 546

D. 754

Answer:

47. Which of the following will have 1 (one) in the unit

place?

A. 19^2

B. 34^2

C. 18^2

D. 20^2

Answer:

48. Between 18^2 and 19^2 how many natural numbers

are there?

   A. 38

   B. 36

   C. 42

   D. 40

Answer:

49. Which of the following is not a perfect square?

A. 441

B. 572

C. 576

D. 729

Answer:

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50. If $\sqrt{2025} = 45$ then $\sqrt{20.25}$ is equal to

A. 45

B. 4.5

C. 0.45

D. 0.045

Answer:

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51. Which of the following is not a perfect cube? 3757

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52. Which of the following are perfect cubes?

3375

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53. Which of the following is not a perfect cube? 3332

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54. Which of the following is not a perfect cube? 4096

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55. Find the cubes of the following numbers. 19

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56. Find the cubes of the following numbers. 21

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57. Find the cubes of the following numbers. 23

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58. Find the cubes of the following numbers. 27

59. Write the digit in the unit place of the cubes of the following numbers. 14

60. Write the digit in the unit place of the cubes of the following numbers. 18

61. Write the digit in the unit place of the cubes of the following numbers. 13

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62. Write the digit in the unit place of the cubes of the following numbers. 27

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63. Find the smallest integers with which the following numbers are to be multiplied so that they become perfect cubes. 5324

64. Find the smallest integers with which the following numbers are to be multiplied so that they become perfect cubes. 3087

65. Find the smallest integers with which the following numbers are to be multiplied so that they become perfect cubes. 3125

66. Find the smallest integers with which the following numbers are to be multiplied so that they become perfect cubes. 648

67. Find the smallest numbers with which the following numbers are to be divided so that they become perfect cube. 10,368

68. Find the smallest numbers with which the following numbers are to be divided so that they become perfect cube. 2187

69. Find the smallest numbers with which the following numbers are to be divided so that they become perfect cube. 5000

70. Find the smallest numbers with which the following numbers are to be divided so that they become perfect cube. 8192

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71. Find the cube roots of the following numbers. 1331

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72. Find the cube roots of the following numbers.1728

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73. Find the cube roots of the following numbers.

2197

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74. Find the cube roots of the following numbers.

2744

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75. Find the cube roots of the following by factorisation. 3375

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76. Find the cube roots of the following by factorisation. 4913

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77. Find the cube roots of the following by factorisation. 9261

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78. Find the cube root of each of the following numbers by prime factorisation method.

13824

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79. Find the cube roots of the following without factorisation. 12167

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80. Find the cube roots of the following without factorisation. 8000

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81. Find the cube roots of the following without factorisation. 4096

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82. Find the cube roots of the following without factorisation. 5832

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83. The length of the edge of a cube is 1.2 cm. Find its volume.

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84. The value of a cube shaped box is $6859cm^3$. Find its volume.

85. The digit in the unit place in the cube of 23 is

A. 6

B. 7

C. 8

D. 9

Answer:

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86. Which of the following is a perfect cube?

A. 652

B. 933

C. 343

D. 1002

Answer:

87. The value of is $\sqrt[3]{1000}$ is

    A. 30

    B. 100

    C. 10

    D. 1000

Answer:

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88. If m is the cube root of n then the value of n is

A. $\sqrt{m}$

B. $\sqrt[3]{m}$

C. m^3

D. m^2

Answer:

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89. The value of $\sqrt[3]{8} + \sqrt[3]{27} + \sqrt[3]{64}$ is

A. 6

B. 7

C. 8

D. 9

Answer:

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90. Find of the value of : 11^3

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91. Find of the value of : 2×10^3

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92. Find of the value of : $\left(\dfrac{1}{2}\right)^{-5}$

93. Find the value of : $(-4)^{-2}$

94. Express the following numbers in terms of power of their prime factors. 729

95. Express the following numbers in terms of power of their prime factors. 3125

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96. Express the following numbers in terms of power of their prime factors. 3600

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97. Express the following numbers in terms of power of their prime factors. 108×192

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98. Simplify: $(-3)^2 \times (-5)^2$

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99. Simplify: $(2^3 \times 2^4)$

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100. Simplify: $2^0 \times 3^0 \times 4^0$

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101. Simplify: $\left(\dfrac{5}{8}\right)^{-7} \times \left(\dfrac{8}{5}\right)^{-4}$

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102. Compare the following numbers: 2^8, 8^2

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103. Compare the following numbers: 2.7×10^{12}, 1.5×10^8

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104. Express the following with the help of positive power. $2^{-3} \times (- 7)^{-3}$

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105. Express the following with the help of positive power. $(- 3)^{-4} \times (- 7)^{-3}$

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106. Express the following numbers in standard form.

3430,000

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107. Express the following numbers in standard form. 70,040,000,000

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108. Express the following numbers in standard form.

0.00000015

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109. Express the following numbers in standard form.

0.00001436

110. Express the following in general form.

1.0001×10^9

111. Express the following in general form.

3.02×10^{-6}

112. Find the value of m such that

$$(-3)^{m+1} \times (-3)^5 = (-3)^7.$$

113. The size (diameter) of a plant cell is 0.00001275m.

Express it in standard form.

114. In a stack there are 5 books each of thickness 20 mm and 5 paper sheets each of thickness 0.016 mm. What is the total thickness of the stack?

115. The value of 3^{-3} is

    A. 3^3

    B. $3^{\frac{1}{3}}$

    C. $\dfrac{1}{3^3}$

    D. 3×3

Answer:

116. The value of $\left(\dfrac{2}{3}\right)^2$ is:

A. $\dfrac{1}{(2 \times 3)^2}$

B. $(2 \times 3)^{-2}$

C. $\left(\dfrac{3}{2}\right)^{-2}$

D. $\left(\dfrac{3}{2}\right)^{\frac{1}{2}}$

Answer:

117. The value of $\left(-\dfrac{2}{3}\right)^4$ is:

A. $\dfrac{8}{12}$

B. $\dfrac{16}{81}$

C. $-\dfrac{16}{81}$

D. $-\dfrac{8}{12}$

Answer:

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118. The standard form of 0.000064 is:

A. 64×10^4

B. 64×10^{-4}

C. 6.4×10^5

D. 6.4×10^{-5}

Answer:

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119. Find common factors of the following:

$14pq, \ 28p^2q^2$

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120. Find the common factors of the given terms.

$16x^3, \ -4x^2, 32x$

121. Find common factors of the following:

20pq,30pr,40rp

122. Find the common factors of the given terms.

$3x^2y^3, \ 10x^3y^2, 6x^2y^2z$

123. Factorise: $4a^2 + 8a^3$

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124. Factorise: $7x^2y - 21xy^2$

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125. Factorise: $a^2bc + ab^2c + abc^2$

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126. Factorise: $a^3 - a^2b^2$

127. Factorise: $x^2 + xy + 6x + 6y$

128. Factorise: $xy + x + y + 1$

129. Factorise: $24x^2y + 12x^2 - 12xy - 6x$

130. Factorise

$z - 7 + 7xy - xyz$

131. Express in factors : $4x^2 + 12x + 9$

132. Factorise the following expressions.

$25m^2 + 30m + 9$

133. Express in factors : $x^2 - 10x + 25$

134. Express in factors : $121b^2 + 88bc + 16c^2$

135. Express in factors : $9p^2 - 16q^2$

136. Express in factors : $(1 + m)^2 - (1 - m)^2$

137. Express in factors : $x^2 - 13x + 30$

138. Express in factors : $y^2 - 5y - 36$

139. Express in factors : $4y^2 + 25y + 21$

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140. Express in factors : $3x^6 - 6x^2y - 45x^2y^2$

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141. Divide the given polynomial by the given monomial.

$$\left(3y^8 - 4y^6 + 5y^4\right) \div y^4$$

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142. Divide the given polynomial by the given monomial.

$$\left(p^3 q^6 - p^6 q^3\right) \div p^3 q^3$$

143. Find division: $(10x - 25) \div (2x - 5)$

144. Find division:

$$20(y + 4)\left(y^2 + 5y + 3\right) \div 5(y + 4)$$

145. Divide using factorisation:

$$\left(4u^2 + 25u - 21\right) \div (u + 7)$$

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146. Divide using factorisation:

$$\left(m^2 - 14m - 32\right) \div (m + 2)$$

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147. The length and breadth of a rectangle are 12 cm and 4 cm. respectively. Find the perimeter and area of

the rectangle.

148. The breadth of a rectangle is 5 cm. and its length is 3 times of the breadth. What is the perimeter of the rectangle?

149. Find the area of a square of length 7 cm.

150. Length of one side of the parallelogram is 6 cm. If the height of the parallelogram with respect to this side is 3 cm., then find its area.

151. The length of one diagonal of a parallelogram is 8 cm. and height of each of the triangles whose common base is the given diagonal of the parallelogram is 4 cm. Find the area of the parallelogram.

152. The length of the diagonals of a plot of land in the form of a rhombus are 125 m. and 85 m. respectively. Find the area of the plot of land.

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153. The length of the diagonals of a rhombus are 24 m. and 10 m. Then find perimeter of the rhombus

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154. The length of the diagonals of a rhombus are 24 m. and 10 m. Then find area of the rhombus.

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155. The breadth of a rectangle is 5 cm. and its area is $100m^2$. Find the length of the rectangle.

156. The base of a parallelogram is 9 cm. and the area is $54cm^2$. Find the height of the parallelogram.

157. Area of a rectangle is equal to the area of a square of length 12 decametre. If the length of the rectangle is 24 decametre then find its breadth.

158. The length of a rectangle is three times of its breadth. If the area of the rectangle is $432cm^2$ then find its perimeter.

159. The length of one diagonal of a parallelogram is 86 m. and length of the perpendicular drawn from any one of the remaining vertices to the diagonal is 36 m. Find the area of the parallelogram.

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160. If the length of the diagonals of a rhombusare 10 cm and 24 cm. then find the length of its sides.

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161. The measures of the parallel sides of a trapezium are 6m and 4m.and the perpendicular distance between them is 7 m. Find the area of the trapezium.

162. Area of a trapezium is $1350m^2$ and sum of the lengths of its parallel sides is three times the height. Find the height.

163. Radius of a wheel is 28cm, what is its perimeter.

164. Find the area of a circle of radius 35 cm.

165. Find the radius of circle whose area is equal to the sum of the areas of four other circles of radii 5m,6m,8m and 10m.

166. There is a path of width 3.5 m around the circular field of diameter 70m. Find the area of the whole path.

167. The length breadth and height of two cuboids are 30 cm., 25 cm., 15cm. and 35cm., 20cm., 12cm. Compare their surface area. Which will have more volume?

168. Find the length of the canvus cloth of width 110 cm, required to make 25 numbers of covers of suitcases having size $60cm \times 40cm \times 20cm$.

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169. Find the length of the edge of a cube whose surface area is $600m^2$.

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170. How many metal sheets of size $1m \times 1m$ will be required tp form a cylinder of height 14m. and radius

of the base 2 m?

171. Wrapping a paper of breath 14cm. a cylinder of radius 20cm. is formed. Find the volume of the cylinder.

172. Diameter of a cylinder A is 7 cm. and height is 14 cm. Diameter of another cylinder B is 14 cm. and height is 7 cm. Which have more volume, A and B?

173. Find the height of the cylinder whose volume is $1.54m^3$ and diameter of the base is 140 cm?

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174. Find the surface area of a cylinder whose- Radius of the base is 7m and height 10m.

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175. Find the surface area of a cylinder whose- Radius of the base is 4m and height 5.6m.

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176. Find the surface area of a cylinder whose- Perimeter of the base 85m and height 12m.

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177. The radius of a cylinder is 14cm and height is 20 cm. then- Find curved surface area.

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178. The radius of a cylinder is 14cm and height is 20 cm. then- Find total surface area.

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179. The radius of a cylinder is 14cm and height is 20 cm. then- Find the volume.

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180. Find the height of a cylinder if- area of the base $360m^2$ and volume is $2880m^3$

181. Find the height of a cylinder if- Permeter of the base is 160 m and the curved surface area is $1440 m^2$

182. Himadri has a collection of 625 Indian postal stamps and 325 International postal stamps She wants to display them in identical groups of Indian and International stamps with no stamps left out. What is the greatest number of groups Himadri can display the stamps?

183. Two ropes are of length 64 cm and 80 cm. Both are to be cut into pieces of equal length. What should be the maximum length of the pieces?

184. The soldiers in a regiment can be stood in some rows consisting of 15, 20 or 25 number of soldiers. Find the least number of soldiers in the regiment.

185. A bell rings at every 18 seconds, another bell rings at every 60 seconds. If these two bells ring simulatanously an instant, then find after how many seconds will the bells ring simulatanously again

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186. A radio station plays 'Assam Sangeet' once every two days. Another radio station plays the same song once every three days. How many times in 30 days will both the radio stations play the same song on the same day.

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187. Find the quadratic polynomials whose zeros are

-4 and $\dfrac{3}{2}$

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188. Find the quadratic polynomials whose zeros are

5 and 2

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189. Find the quadratic polynomials whose zeros are

$\dfrac{1}{3}$ and -1

190. Find the quadratic polynomials whose zeros are $\dfrac{3}{2}$ and -2

191. Divide $P(x) = 2x^4 + 3x^3 - 2x^2 - 9x - 12$ by $g(x) = x^2 - 3$

192. Divide $P(x) = x^6 + 3x^2 + 10$ by $g(x) = x^3 + 1$

193. Divide

$$P(x) = 2x^5 - 5x^4 + 7x^3 + 4x^2 - 10x + 11 \qquad \text{by}$$

$$g(x) = x^3 + 2$$

194. If one zero of the polynomial $3x^3 - x^2 - 3x + 1$ is 1, then find all the other zeros.

195. If two zero of the polynomial $x^4 + x^3 - 9x^2 - 3x + 8$ are $\sqrt{3}$ and $-\sqrt{3}$ then find all the other zero.

196. If two zero of the polynomial $x^4 + 2x^3 - 26x^2 - 54x - 27$ are $3\sqrt{3}$ and $-3\sqrt{3}$, then find all the other zeros.

197. On dividing the polynomial $6x^4 + 11x^3 - 7x^2 - 15x - 50$ by another polynomial 3x+7 the remainder is found as -15. Find the quotient.

198. On dividing a polynomial by $x^2 - 2$, the quotient is found as $2x^2 + 5x - 2$ and the remainder as -x+14. Find the polynomial.

199. Solve $\dfrac{3y}{2} - \dfrac{5x}{3} = 2$ and $\dfrac{y}{3} + \dfrac{x}{3} = \dfrac{13}{16}$

200. Solve $\dfrac{8}{x} - \dfrac{9}{y} = 1$ and $\dfrac{10}{x} + \dfrac{6}{y} = 7$

201. Solve : $2x + 3y = 6$

$4x + 6y = 12$

202. Solve $x - 2y = 6$

$3x - 6y = 0$

203. Solve $\dfrac{3a}{x} - \dfrac{2b}{y} = -5$

$\dfrac{a}{x} + \dfrac{3b}{y} = 2$

204. Solve $2x + y - 15 = 0$

$3x - y - 5 = 0$

205. For what value of p the system equations, px-y=2, 6x-2y=3 has only one solution?

206. Find the value of k that the following system of linear equation has no solution

$$(3k + 1)x + 3y - 2 = 0, \left(k^2 + 1\right)x + (k - 2)y - 5 = 0$$

.

207. Find the value of m such that the following system of linear equations has infinite number of solutions. mx+4y=m-4, 16x+my=m.

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208. Find the roots of the following quadratic equations by factorisation: $2x^2 - 7x + 6 = 0$.

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209. Find the roots of the following quadratic equations by factorisation: $x^2 - 10x - 96 = 0$

210. Find the roots of the following quadratic equations by factorisation: $\sqrt{3}x^2 + 10x + 7\sqrt{3} = 0$

211. Find the roots of the following quadratic equations by factorisation: $x^2 + 2\sqrt{2}x + 2 = 0$

212. Find the roots of the following quadratic equations by factorisation: $14x + 5 - 3x^2 = 0$

213. Find the roots of the following quadratic equations, if they exist, by the method of completing the square: $x^2 + 4x + 1 = 0$

214. Find the roots of the following quadratic equations, if they exist, by the method of completing

the square: $4x^2 + x - 3 = 0$

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215. Find the roots of the following equations:

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

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216. Find the roots of the following equations:

$$2x^2 + \frac{1}{2} = 2x$$

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217. Find the roots of the following equations:

$$x + \frac{1}{x} = 2$$

218. Find the roots of the following equations:

$$\frac{5x - 6}{4x - 1} = \frac{2x + 3}{3x + 2}$$

219. Find the nature of the roots of the following quadratic equations. If the real roots exist find them.

$$9x^2 - 6x + 1 = 0$$

220. Find the nature of the roots of the following quadratic equations. If the real roots exist find them.

$$3x^2 - 5x + 12 = 0$$

221. Find the nature of the roots of the following quadratic equations. If the real roots exist find them.

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

222. Find the nature of the roots of the following quadratic equations. If the real roots exist find them.

$$x^2 - 2\sqrt{3}x - 9 = 0$$

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223. Find the values of k for each of the following quadratic equations, so that they have two equal roots. $x^2 - (k+4)x + 2k + 5 = 0$

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224. Find the values of k for each of the following quadratic equations, so that they have two equal roots. $2x^2 + 8x - k^3 = 0$

225. Find the values of k for each of the following quadratic equations, so that they have two equal roots. $(k - 3)x^2 + 6x + 9 = 0$

226. Find the values of k for each of the following quadratic equations, so that they have two equal roots. $(k - 12)x^2 + 2(k - 12)x + 2 = 0$

227. Evaluate the following:(iv)

$$\frac{\sin 30° + \tan 45° - \cos ec60°}{\sec 30° + \cos 60° + \cot 45°}$$

228. Evaluate the following:

$$\frac{\cos ec30° + \cos ec60° + \cos ec90°}{\sec 0° + \sec 30° + \sec 60°}$$

229. If $\sin(x + y) = 1, \cos(x - y) = \dfrac{\sqrt{3}}{2}$ and x>y, $0° \leq x + y \leq 90°$ then find x and y.

230. Find the value : $\sin 35° \sin 55° - \cos 35° \cos 55°$

231. Find the value : $\tan 35° \tan 60° \tan 55° \tan 30°$

232. Find the value : $\dfrac{\cot 54^\circ}{\tan 36^\circ} + \dfrac{\tan 20^\circ}{\cot 70^\circ} - 2$

233. Find the value : $3\dfrac{\sin 23^\circ}{\cos 67^\circ} + 4\dfrac{\sec 47^\circ}{\cos ec43^\circ}$

234. Find the value :

$\tan 5^\circ \tan 25^\circ \tan 30^\circ \tan 65^\circ \tan 85^\circ$

235. If $\sec 5\theta = \cos ec(\theta - 36°)$ where θ is an acute angle, then find the value of θ.

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236. If $\sin A = \cos 33°$, $A < 90°$. Find the value of A.

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237. If $\sin 2A = \cos(A + 15°)$ where $2A < 90°$, find the value of A.

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238. If sin(3x+10)=cos(x+24) then find the value of x.

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239. Prove that $\tan^4 \theta + \tan^2 \theta = \sec^4 \theta - \tan^2 \theta - 1$

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240. Prove the following

$$\frac{\cos \theta}{1 - \tan \theta} + \frac{\sin \theta}{1 - \cot \theta} = \sin \theta + \cos \theta$$

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241. Prove that $\sqrt{\dfrac{\sec\theta - 1}{\sec\theta + 1}} = \cos ec\theta - \cot\theta$

242. Prove that $\cot\theta + \tan\theta = \sec\theta \cos ec\theta$

243. Show that: $\dfrac{1}{1 + \sin\theta} + \dfrac{1}{1 - \sin\theta} = 2\sec^2\theta$