

- The least number which must be added to the greatest number of 4 digits so that the sum may be exactly divisible by 307 is—  
(A) 32 (B) 43  
(C) 75 (D) 32
- If  $\left(\frac{5}{12} + \frac{17}{16} + x\right)$  be a whole number, then the least value of  $x$  is—  
(A)  $\frac{23}{48}$  (B)  $\frac{25}{48}$   
(C)  $\frac{13}{48}$  (D)  $\frac{45}{46}$
- The simplest value of  $\frac{1}{\sqrt{2} + \sqrt{3}} + \frac{1}{\sqrt{3} + \sqrt{4}} + \frac{1}{\sqrt{4} + \sqrt{5}} + \frac{1}{\sqrt{5} + \sqrt{6}}$  is—  
(A)  $\sqrt{2}(\sqrt{3} - 1)$   
(B)  $\sqrt{3}(\sqrt{2} - 1)$   
(C)  $\sqrt{2}(1 - \sqrt{3})$   
(D)  $\sqrt{3}(1 - \sqrt{2})$
- Each member of a club has contributed ₹ 10 more than 3 times the number of the members. If the total contribution is ₹ 3,000, the number of members is—  
(A) 10 (B) 30  
(C) 20 (D) 50
- If the numbers  $a = \frac{127}{128}$ ,  $b = \frac{211}{3125}$ ,  $c = \frac{125}{84}$  are expressed in decimal, then the decimal representation of—  
(A)  $a$  is terminating, but  $b$  and  $c$  are non-terminating  
(B)  $a, b, c$  all are non-terminating  
(C)  $b$  and  $c$  are terminating, but  $a$  is non-terminating  
(D)  $a$  and  $b$  are terminating, but  $c$  is non-terminating
- If 3 men and 5 women can do a piece of work in 8 days, while 2 men and 7 children can do the same piece of work in 12 days, then how many women can do as much work in a day as 21 children?  
(A) 10 women (B) 15 women  
(C) 20 women (D) 25 women
- A tank is filled by pipe A in 30 minutes and by pipe B in 45 minutes. When the tank is full, pipe C can empty it in 90 minutes. If all the pipes are opened together, then the tank will be full in—  
(A) 25 minute  
(B)  $26\frac{1}{2}$  minute  
(C)  $22\frac{1}{2}$  minute  
(D) 35 minute
- An auto dealer who gives a discount of 12% on the labelled price of a car realizes a profit of 10%. What is the cost price if the list price is ₹ 1,26,000?  
(A) ₹ 1,00,000 (B) ₹ 1,01,800  
(C) ₹ 1,02,800 (D) ₹ 1,03,800
- A wholesale merchant sells 12 articles to a retail merchant at the price of 9 articles. If the retail merchant sells them at their marked price, find his gain per cent.  
(A)  $33\frac{1}{3}\%$  (B)  $11\frac{1}{9}\%$   
(C)  $9\frac{1}{11}\%$  (D)  $16\frac{2}{3}\%$
- The ratio of men and women working in an office is 4 : 7. If the number of women is 330 more than the number of men, then the total number of workers in the office is—  
(A) 960 (B) 810  
(C) 770 (D) 1210
- Let  $a, b, c, d, e, f (\neq 2)$  be six distinct positive real numbers such that  $a : b = c : d = e : f = 2 : 3$ . Then  $\frac{3e - 4}{3f - 6}$  can never be equal to the expression—  
(A)  $\frac{3a + 4c + 2}{3b + 4d + 3}$  (B)  $\frac{2e + 7c}{2f + 7d}$   
(C)  $\frac{a + c + 4}{b + d + 6}$  (D)  $\frac{3c + 4a + 2}{3b + 4d + 3}$
- A batsman makes a score of 78 runs in 19th inning and thus decreases the average score by 2. The average score after the 19th inning is—  
(A) 118 (B) 122  
(C) 156 (D) 114
- The average of 2 numbers is 6 and the average of their reciprocals is  $\frac{3}{16}$ . The numbers are—  
(A) 8 and 4 (B) 7 and 5  
(C) 3 and 9 (D) 2 and 10
- The cost price of 15 apples is equal to the selling price of 25 apples. The loss per cent is—  
(A) 66.6 (B) 56.0  
(C) 46.6 (D) 40.0
- A man sells an article at a profit of 20%. If he had bought it at 20% less and sold it for ₹ 5 less, he would have gained 25%. The cost price of that article is—  
(A) ₹ 15 (B) ₹ 20  
(C) ₹ 25 (D) ₹ 30
- A number reduces to 30 by a reduction of 10%. To convert it into 40, the number should be increased by—  
(A) 10% (B) 15%  
(C) 20% (D) 25%
- $33\frac{1}{3}\%$  of a man's daily output is equal to 50% of a second man's daily output. If the second man turns out 1500 screws daily, then the first man's output in terms of making screws is—  
(A) 500 (B) 1000  
(C) 2000 (D) 2250
- A motorboat moves from point A to point B and back again, both points being located on the river

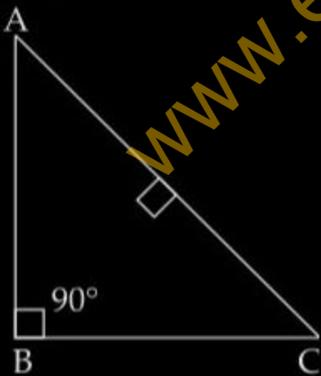
bank. If the speed of the boat in still water is doubled, then the trip from A to B and back again would take 20% of the original time. The ratio of the actual speed of the motorboat to the speed of the river is—

- (A)  $\sqrt{6} : 2$  (B)  $\sqrt{3} : 3$   
(C)  $2 : 3$  (D)  $3 : 2$

19. Jyoti invests ₹ 50,000 at 5% per annum compound interest for two years. The amount standing to her credit at the end of the second year is—

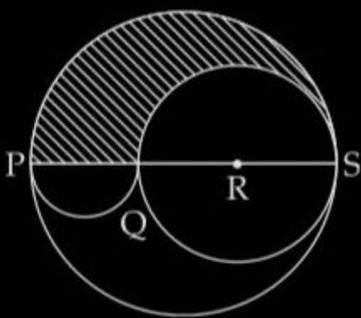
- (A) ₹ 52,500 (B) ₹ 55,000  
(C) ₹ 55,125 (D) ₹ 55,625

20. In  $\Delta ABC$ , where  $BC = 9$  cm,  $AB = 7$  cm and  $AC = 12$  cm, a square of side 2 cm is cut off from  $AC$ . The perimeter of the remaining figure is—



- (A) 26 cm (B) 20 cm  
(C) 32 cm (D) 22 cm

21. PQRS is the diameter of a circle of radius 6 cm; PQ, QR and RS are equal. Semicircles with PQ and QS as diameters are drawn. Ratio of shaded to unshaded region is—



- (A) 1 : 3 (B) 5 : 18  
(C) 25 : 12 (D) 5 : 13

22. A cuboid that measures 6 cm  $\times$  12 cm  $\times$  15 cm is cut into exact number of equal cubes. The least possible number of cubes without any wastage will be—

- (A) 6 (B) 16  
(C) 33 (D) 40

23. The perimeter of the front wheel of a two wheeler is 6 feet and that of the back wheel is 9 feet. To travel a distance  $x$ , the front

wheel makes 10 revolutions more than the back wheel. The value of  $x$  (in feet) is—

- (A) 160 (B) 150  
(C) 540 (D) 180

24. How many metres of cloth 2.5 m wide is needed to make a conical tent with base radius 7m and height 24 m ?

- (A) 120 (B) 180  
(C) 220 (D) 550

25. The number of square centimetres of the surface of the sphere is numerically equal to the number of cubic centimetres of the volume. Then the radius of the sphere in centimetres is—

- (A)  $\frac{3}{4}$  (B) 3  
(C) 12 (D) 1

26. A circular cylindrical can (having horizontal base) with internal diameter 20 cm and height 30 cm contains water to a height of 5 cm. How many metal spheres of radius 5 cm have to be placed in the can, so that the water just fills up the can ?

- (A) 12 (B) 15  
(C) 18 (D) 20

27. The ordinate of the point on the line  $7x - 8y = 25$  whose abscissa is  $-1$  is—

- (A) 3 (B)  $-3$   
(C) 4 (D)  $-4$

28. If  $px + qy = 6$ ,  $qx - py = 2$  and  $x^2 + y^2 = 4$ , then the value of  $(p^2 + q^2)$  would be—

- (A) 2 (B) 4  
(C) 5 (D) 10

29. If  $\frac{a}{b+c} = \frac{b}{c+a} = \frac{c}{a+b}$ , then each of the ratios is equal to—

- (A) 0 (B)  $-1$   
(C)  $\frac{1}{2}$  (D) 3

30. If  $2x = \sqrt{5} + \frac{1}{\sqrt{5}}$ , then the value of

$$\frac{\sqrt{x^2 - 1}}{x - \sqrt{x^2 - 1}}$$

- is—  
(A) 2 (B) 1  
(C) 3 (D) 5

31. For what value(s) of  $k$ , do the two equations  $kx + y = 2$  and  $x + ky = 1$  have no unique solutions ?

- (A)  $\pm 1$  (B)  $\pm 3$   
(C)  $\pm 2$  (D)  $\pm 5$

32. The distance between the centres of two circles having radius 10 cm each is 8 cm. The number of common tangents to the circles will be—

- (A) 2 (B) 3  
(C) 4 (D) 1

33. In the right angled triangle ABC,  $\angle A = 90^\circ$ ,  $\angle C = 65^\circ$ ,  $BC \perp AD$ . The measure of  $\angle BAD$  is—

- (A)  $55^\circ$  (B)  $65^\circ$   
(C)  $75^\circ$  (D)  $85^\circ$

34. The length of two parallel chords lying on the same side of a circle are 6 cm and 4 cm respectively. The distance between them is 1 cm. Then the radius of the circle (in cm) is—

- (A) 15 (B)  $\sqrt{37}$   
(C)  $\sqrt{23}$  (D)  $\sqrt{13}$

35. In a triangle ABC, incentre is O,  $\angle BOC = 112^\circ$ , then the measure of  $\angle BAC$  is—

- (A)  $36^\circ$  (B)  $56^\circ$   
(C)  $44^\circ$  (D)  $52^\circ$

36. ABCD is a cyclic quadrilateral. If  $\angle ADC = \angle BCD = 100^\circ$ ,  $\angle DBC = 25^\circ$ , then the magnitude of  $\angle OBD$  is—

- (A)  $25^\circ$  (B)  $10^\circ$   
(C)  $45^\circ$  (D)  $20^\circ$

37. If  $f(x) = \cos^2 x + \sec^2 x$ , then which of the following values of  $f(x)$  is always true ?

- (A)  $f(x) < 1$   
(B)  $f(x) \geq 2$   
(C)  $f(x) = 1$   
(D)  $2 > f(x) > 1$

38. If  $\sin(3x - 20^\circ) = \cos(3y + 20^\circ)$ , then the value of  $(x + y)$  is—

- (A)  $90^\circ$  (B)  $60^\circ$   
(C)  $45^\circ$  (D)  $30^\circ$

39. If  $\operatorname{cosec} \theta + \cot \theta = \sqrt{3}$ , then the value of  $\sin \theta$  is—

- (A)  $\frac{\sqrt{3}}{2}$  (B)  $\frac{2}{\sqrt{3}}$   
(C)  $\frac{1}{\sqrt{3}}$  (D)  $\sqrt{3}$

40. The angle of elevation of a balloon from two consecutive kilometre stones in its same side are  $60^\circ$  and  $30^\circ$  respectively. Then the height of the balloon in km is

- (A)  $\frac{\sqrt{3}}{2}$  (B)  $\frac{1}{2}$   
 (C)  $\frac{\sqrt{3}}{4}$  (D)  $\frac{1}{3}$

41. If  $\sin(\alpha - \beta) + \cos(\alpha + \beta) = \frac{1}{2}$ , then the value of  $\tan \alpha$  is—

- (A) 0 (B) 1  
 (C)  $\frac{1}{\sqrt{3}}$  (D) undefined

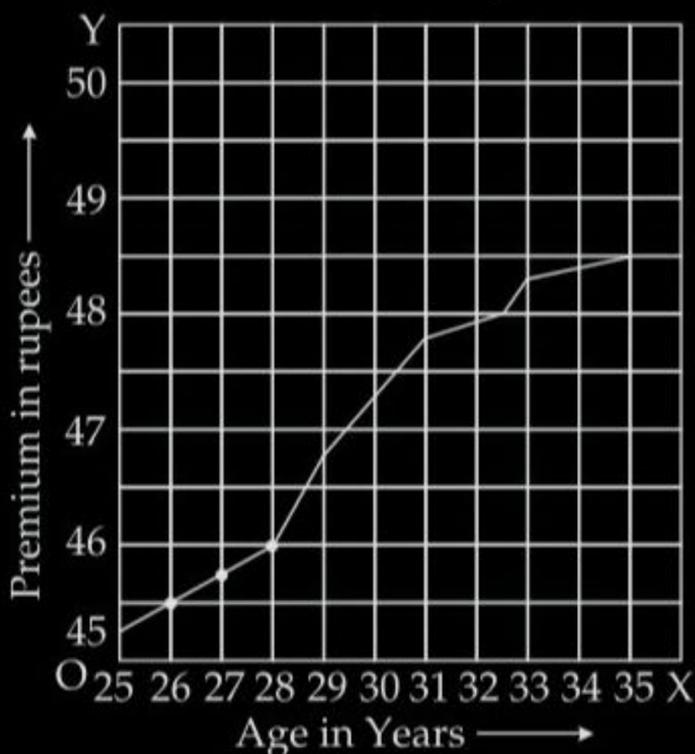
**Directions**—The following graph shows the annual premium of an insurance company, charged for an insurance of ₹ 1,000 for different ages. Study the graph and answer the questions 42–45.

Scale

Along OX  $\rightarrow$  10 small divisions = 1 year

Along OY  $\rightarrow$  1 small division = 5 paise

1 big division = 10 small divisions (not shown in the figure)



42. The premium for a man aged 31 years for an insurance of ₹ 1,000 is—

- (A) ₹ 48 (B) ₹ 47.75  
 (C) ₹ 47 (D) ₹ 46

43. The premium for a man aged 27 years for an insurance of ₹ 10,000 is—

- (A) ₹ 457.50 (B) ₹ 455  
 (C) ₹ 460 (D) ₹ 45.75

44. Two numbers of a family aged 25 years and 30 years are to be insured for ₹ 10,000 each. The total annual premium to be paid by them is—

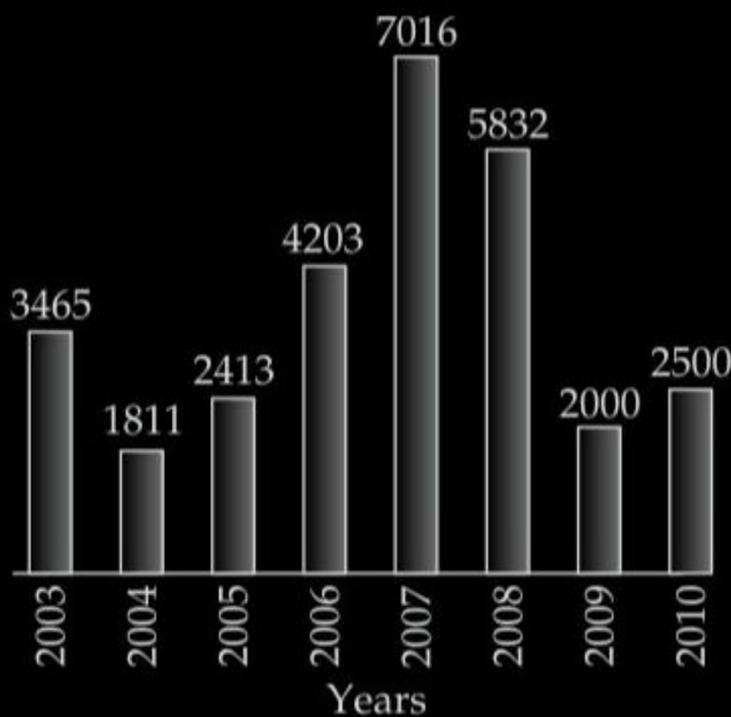
- (A) ₹ 876.25 (B) ₹ 885  
 (C) ₹ 925 (D) ₹ 910.60

45. How much per cent of the premium is increased if a man aged 35 years is insured for ₹ 1,000 instead of a man aged 28 years?

- (A) 5.43% (B) 6.24%  
 (C) 5% (D) 4.75%

**Directions**—The following is the bar chart showing wheat imports. Study the graph and answer the questions 46–50.

**Wheat Imports**  
(in thousand tonnes)



46. In which year did the imports register highest increase over its preceding year?

- (A) 2005 (B) 2006  
 (C) 2007 (D) 2010

47. The imports in 2007 was approximately how many times that of the year 2005?

- (A) 2.7 (B) 2.9  
 (C) 3.15 (D) 4.2

48. What is the ratio of the number of years which have average imports to those which have below average imports?

- (A) 3 : 5 (B) 8 : 3  
 (C) 2 : 6 (D) 3 : 4

49. The increase in imports in 2010 was what per cent of the imports in 2009?

- (A) 5% (B) 80%  
 (C) 30% (D) 25%

50. The imports in 2006 is approximately what per cent of the average imports for the given years?

- (A) 125% (B) 190%  
 (C) 115% (D) 85%