

Quantitative Aptitude Questions for ICAR IARI Technician (T-I)

- Q1.** A can do 75% of a job in 18 days and B can do 25% of the job in 12 days. If they work on it together, in how many days can they do 75% of the job?
(a) 16 (b) 8
(c) 20 (d) 12
- Q2.** Area of 4 walls of a cuboid is 57 sq m, if its length is 5.5 m and height is 3 m. What is its breadth (in m)?
(a) 4.5 (b) 4
(c) 3 (d) 3.5
- Q3.** At 30% discount the selling price of an article is Rs 1050. What is the selling price (in Rs) if the discount is 15%?
(a) 1200 (b) 1175
(c) 1100 (d) 1275
- Q4.** What is the fourth proportional to 336, 288 and 161?
(a) 184 (b) 115
(c) 138 (d) 134
- Q5.** What is the average of all numbers between 9 and 90 which are divisible by 8?
(a) 53 (b) 52
(c) 51 (d) 50
- Q6.** A trader had 630 kgs of rice. He sold a part of it at 15% profit and the rest at 8% profit, so that he made a total profit of 12%. How much rice (in kgs) did he sell at 8% profit?
(a) 270 (b) 300
(c) 280 (d) 290
- Q7.** 50% of $a = b$, then $b\%$ of 40 is the same as _____ of a .
(a) 0.25 (b) 0.16
(c) 2 (d) 0.2
- Q8.** Excluding stoppages, the speed of a train is 120 kmph and including stoppages, it is 50 kmph. For how many minutes does the train stop per hour?
(a) 25 (b) 40
(c) 35 (d) 20
- Q9.** The simple and compound interest that can be earned in two years at the same rate is Rs 4000 and Rs 4180 respectively. What is the rate (percent per annum) of interest?
(a) 18 (b) 4.5
(c) 9 (d) 12
- Q10.** If $2x/3 - [5(4x/5 - 4/3)]/2 = 1/3$, then what is the value of x ?
(a) $9/4$ (b) $4/9$
(c) $-9/4$ (d) $-4/9$
- Q11.** Find the length of the longest pole that can be placed in a room 32 m long, 16 m broad and 11 m high? (upto 2 decimal)
(a) 78.22 m (b) 39.61 m
(c) 46.26 m (d) 37.42 m
- Q12.** The ratio of the curved surface area and total surface area of right circular cylinder is 7: 11. If total surface area is 5038 cm^2 what is the volume (in cm^3) of the cylinder?
(a) $1603 \sqrt{\frac{3206}{11}} \text{ cm}^3$ (b) $1403 \sqrt{\frac{3208}{11}} \text{ cm}^3$
(c) $1633 \sqrt{\frac{1206}{11}} \text{ cm}^3$ (d) $1243 \sqrt{\frac{4206}{11}} \text{ cm}^3$
- Q13.** Find the radius of a hemisphere with maximum volume inside a cone of height 85 cm and diameter 264 cm.
(a) 82.46 cm (b) 71.46 cm
(c) 69.31 cm (d) 52.31 cm
- Q14.** The height of a cone is 42 cm. The cone is cut parallel to its base such that volume of cone and frustum so formed is in the ratio 8: 19. Find at which height from base cone is cut?
(a) 24 cm (b) 28 cm
(c) 14 cm (d) 16 cm
- Q15.** The radii of the two circular faces of the frustum of a cone is 6 cm and 8 cm. If the height of frustum is 63 cm, find the volume (in cm^3)?
(a) 7698 cm^3 (b) 8967 cm^3
(c) 16798 cm^3 (d) 9768 cm^3



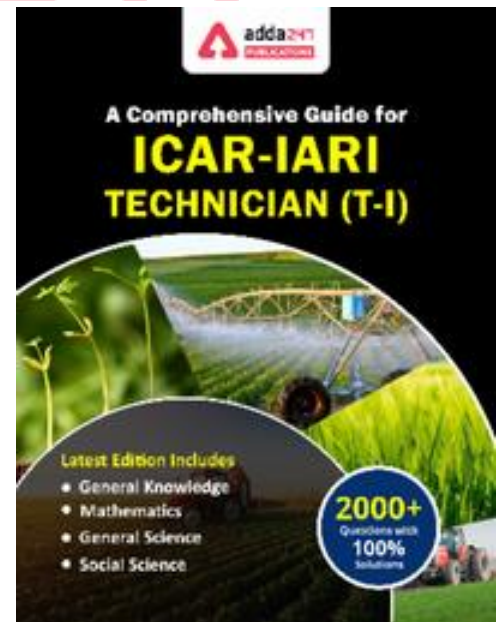
- Q16.** It takes 6 ltrs to paint a surface of a solid sphere if this solid sphere is sliced into 4 identical pieces, how many litres will be required to paint all the surfaces of these 4 pieces?
(a) 14 ltrs (b) 8 ltrs
(c) 12 ltrs (d) 16 ltrs
- Q17.** Find the TSA of pyramid whose base is hexagon with side $10\sqrt{3}$ cm and height 8 cm?
(a) $890\sqrt{3}$ cm² (b) $960\sqrt{3}$ cm²
(c) $940\sqrt{3}$ cm (d) $810\sqrt{3}$ cm²
- Q18.** Water is flowing at the rate of 1 km/hr through a circular pipe of 40 cm diameter into circular cistern of diameter 12 m and depth 5m. In how much time will the cistern be filled?
(a) 4.5 hrs. (b) 3.2 hrs.
(c) 4 hrs. (d) 3.5 hrs.
- Q19.** A cylinder of maximum volume is cut out of a solid wooden cube. How much % of solid is wasted in this process? (Approx.)
(a) 33.3% (b) 29.3%
(c) 21.5% (d) 22.6%
- Q20.** A cone of radius 48 cm and slant height 73 cm has a cube of maximum volume inside it. Find the side of cube? (take $\sqrt{2} = 1.4$)
(a) 30.3 cm (b) 49.6 cm
(c) 28.7 cm (d) 32.2 cm
- Q21.** A kite is flying at a height of 50 meter. If the length of string is 100 meter then the inclination of string to the horizontal ground in degree measure is?
(a) 90° (b) 60°
(c) 45° (d) 30°
- Q22.** If $\tan x = \sin 45^\circ \cdot \cos 45^\circ + \sin 30^\circ$ then the value of x is?
(a) 90° (b) 60°
(c) 45° (d) 30°
- Q23.** If $a + b = 3$, then the value of $a^3 + b^3 + 9ab$ is?
(a) 27 (b) 9
(c) 16 (d) 81
- Q24.** If ABCD be a rhombus, AC is its smallest diagonal and $\angle ABC = 60^\circ$, find length of a side of the rhombus when AC = 6 cm?
(a) 3 cm (b) $6\sqrt{2}$ cm
(c) $3\sqrt{3}$ cm (d) 6 cm
- Q25.** The area of a sector of a circle of radius 5 cm, formed by an arc of length 3.5 cm is?
(a) 8.5 cm² (b) 8.75 cm²
(c) 7.75 cm² (d) 7.50 cm²
- Q26.** The average pocket money of 3 friends A, B, C is Rs. 80 in a particular month. If B spends double and C spends triple of what A spends during that month and if the average of their unspent pocket money is Rs. 60, then A spends (in Rs.)?
(a) Rs. 10 (b) Rs. 20
(c) Rs. 30 (d) Rs. 40
- Q27.** Three numbers are in the ratio 5: 6: 7. If the product of the numbers is 5670, then the greatest number is?
(a) 3 (b) 18
(c) 27 (d) 21
- Q28.** The difference between the selling prices of an article at a profit of 15% and at a profit of 10% is Rs. 10. The cost price of the article is?
(a) Rs. 100 (b) Rs. 150
(c) Rs. 200 (d) Rs. 120
- Q29.** If a man earns Rs. 2000 for his first 50 hours of work in a week and is then paid one and a half times his regular hourly rate for any additional hours, then the hours must he work to make Rs. 2300 in a week is?
(a) 6 hrs. (b) 5 hrs.
(c) 4 hrs. (d) 7 hrs.
- Q30.** A train is moving with the speed of 180 km/hr. Its speed (in meters per second) is?
(a) 20 (b) 40
(c) 50 (d) 30
- Q31.** If $a + b = 10$ and $ab = 21$, then the value of $(a - b)^2$ is?
(a) 15 (b) 16
(c) 17 (d) 18
- Q32.** If θ be an acute angle and $7 \sin^2 \theta + 3 \cos^2 \theta = 4$, then the value of $\tan \theta$ is?
(a) 1 (b) 0
(c) $\sqrt{3}$ (d) $\frac{1}{\sqrt{3}}$
- Q33.** O is the orthocenter of ΔABC , and if $\angle BOC = 110^\circ$, then $\angle BAC$ will be?
(a) 40° (b) 55°
(c) 70° (d) 110°
- Q34.** The radii of two circles are 10 cm and 24 cm. The radius of a circle whose area is equal to the sum of the areas of these two circles is?
(a) 34 cm (b) 36 cm
(c) 26 cm (d) 17 cm

- Q35.** A boat goes 75 km upstream in 3 hours and 60 km downstream in 1.5 hours. The speed of the boat in still water is?
 (a) 32.5 kmph (b) 30 kmph
 (c) 65 kmph (d) 60 kmph
- Q36.** A book-seller bought 200 textbooks for Rs. 12,000. He wanted to sell them at a profit so that he got 20 books free. At what profit percent should he sell them?
 (a) 10% (b) 12%
 (c) 11.5% (d) 11%
- Q37.** 90% of the students in a school passed in English, 85% passed in Mathematics and 150 students passed in both the subjects. If no student failed in both the subjects, find the total number of students?
 (a) 120 (b) 220
 (c) 200 (d) 300
- Q38.** Rs. 1980 is divided among A, B and C so that half of A's part, one-third of B's part and one sixth of C's part are equal. Then B's part is?
 (a) Rs. 360 (b) Rs. 540
 (c) Rs. 660 (d) Rs. 1080
- Q39.** A cricketer has a certain average of runs for his 8 innings. In the ninth innings, he scores 100 runs, thereby increases his average by 9 runs. His new average of runs is?
 (a) 20 (b) 24
 (c) 28 (d) 32
- Q40.** What least number must be subtracted from 1936 so that the resulting number when divided by 9, 10 and 15 will leave in each case the same remainder 7?
 (a) 37 (b) 36
 (c) 30 (d) 39
- Q41.** One side of a square is increased by 30%. To maintain the same area, the other side will have to be decreased by?
 (a) $76\frac{12}{13}\%$ (b) $23\frac{1}{13}\%$
 (c) 30 % (d) 13 %
- Q42.** A polygon has 54 diagonals. The number of sides in the polygon is?
 (a) 7 (b) 9
 (c) 12 (d) 15
- Q43.** If $\sin 2\theta = \frac{\sqrt{3}}{2}$ then the value of $\sin 3\theta$ is equal to (Take $0^\circ \leq \theta \leq 90^\circ$)
 (a) $\frac{1}{2}$ (b) 1
 (c) 0 (d) $\frac{\sqrt{3}}{2}$
- Q44.** If $x = 5$, $y = 6$ and $z = -11$, then the value of $x^3 + y^3 + z^3$ is?
 (a) - 890 (b) - 970
 (c) - 870 (d) - 990
- Q45.** The speed $3\frac{1}{3}$ m/sec when expressed in km/hour becomes?
 (a) 8 (b) 9
 (c) 12 (d) 10
- Q46.** A pipe can fill a cistern in 9 hours. Due to a leak in its bottom, the cistern fills up in 10 hours. If the cistern is full, in how much time will it be emptied by the leak?
 (a) 90 hrs. (b) 70 hrs.
 (c) 80 hrs. (d) 100 hrs.
- Q47.** A tradesman marks his goods at 20% above the cost price. He allows his customers a discount of 8% on marked price. Find out his profit per cent?
 (a) 12% (b) 10.4%
 (c) 8.6% (d) 8.2%
- Q48.** The population of a town increases by 5% every year. If the present population is 9261, the population 3 years ago was?
 (a) 8000 (b) 7800
 (c) 7300 (d) 6800
- Q49.** Two numbers are in ratio 5: 8. If their difference is 48, then the larger number is?
 (a) 80 (b) 144
 (c) 128 (d) 118
- Q50.** The average of 15 numbers is 7. If the average of the first 8 numbers be 6.5 and the average of last 8 numbers be 9.5, then the middle number is?
 (a) 20 (b) 21
 (c) 23 (d) 18
- Q51.** A student, by mistake, wrote 64 in place of 46 as a number at the time of finding the average of 10 given numbers and got the average as 50. The correct average of the numbers is?
 (a) 48.2 (b) 48
 (c) 48.1 (d) 49

- Q52.** A mixture contains spirit and water in the ratio 3:2. If it contains 3 liters more spirit than water, the quantity of spirit in the mixture is?
 (a) 6 liters (b) 8 liters
 (c) 9 liters (d) 12 liters
- Q53.** The number that is to be added to 10% of 320 to have the sum as 30% of 230 is?
 (a) 23 (b) 32
 (c) 73 (d) 37
- Q54.** A man buys 12 articles for 12 and sells them at the rate of 1.25 per article. His gain percentage is?
 (a) 20% (b) 25%
 (c) 15% (d) 18%
- Q55.** A person deposited Rs. 400 for 2 years, Rs. 550 for 4 years and Rs. 1,200 for 6 years. He received the total simple interest of 1,020. The rate of interest per annum is?
 (a) 10% (b) 5%
 (c) 15% (d) 20%
- Q56.** A, B and C can complete a piece of work in 12, 24 and 36 days respectively. In how many days will they together complete the same work?
 (a) $5\frac{6}{11}$ days (b) 4 days
 (c) $6\frac{6}{11}$ days (d) 6 days
- Q57.** A train 100m long is running at the speed of 30 km/hr. The time (in second) in which it will pass a man standing near the railway line is?
 (a) 10 (b) 15
 (c) 11 (d) 12
- Q58.** If $7^x = \frac{1}{343}$, then the value of x is?
 (a) 3 (b) -3
 (c) $1/3$ (d) $1/7$
- Q59.** If $\tan \theta + \cot \theta = 5$, then the value of $\tan^2 \theta + \cot^2 \theta$ is?
 (a) 22 (b) 25
 (c) 23 (d) 27
- Q60.** The difference between the greatest and least prime numbers which are less than 100 is?
 (a) 96 (b) 97
 (c) 94 (d) 95
- Q61.** The price of tea increases by 32% and so a housewife's expenditure on tea increases by 10%. If she bought 12 kgs earlier, what is the quantity bought now?
 (a) 10 (b) $8\frac{1}{2}$
 (c) 8 (d) 7.9
- Q62.** A person sells an article at a profit of 10%. If he had bought it at 10% less and sold it for Rs. 3 more, he would have gained 25%. Find the cost price.
 (a) Rs. 120 (b) Rs. 150
 (c) Rs. 175 (d) Rs. 225
- Q63.** A shopkeeper sells a TV set on discount of 8% of printed price and gains 25%. If marked price was Rs. 12500 then, what was the cost price?
 (a) Rs. 13800 (b) Rs. 9200
 (c) Rs. 14800 (d) Rs. 13720
- Q64.** Two trains start from stations A and B and travel towards each other at speed of 50 km/hr and 60 km/hr respectively. At the time of their meeting, the second train has travelled 120 km more than the first. The distance between A and B is:
 (a) 990 km (b) 1200 km
 (c) 1320 km (d) 1440 km
- Q65.** Rs. 76 is divided among A, B and C such that A gets Rs. 7 more than B and B get Rs. 6 more than C. Find the ratio of their share?
 (a) 19 : 24 : 33 (b) 32 : 25 : 19
 (c) 32 : 24 : 20 (d) 19 : 25 : 33
- Q66.** The sum of internal angle if a regular polygon is 1440° . What is the number of its sides?
 (a) 8 (b) 12
 (c) 10 (d) 6
- Q67.** A shopkeeper purchased 510 eggs at the rate of Rs. 20 per dozen. 30 eggs were broken on the way. In order to make a gain of 20%, he must sell the remaining eggs at the rate of
 (a) Rs. 22.50 per dozen (b) Rs. 25.50 per dozen
 (c) Rs. 26 per dozen (d) Rs. 26.50 per dozen
- Q68.** A sells a watch to B and makes a loss of 12%. B makes a profit of $12\frac{1}{2}\%$ by selling the watch to C. If A sells the watch to B at the cost of which C purchased it, then the percentage of loss or profit of A will be.
 (a) 1% loss (b) 1% Profit
 (c) 2% loss (d) 2% Profit
- Q69.** A man buys 3 type-I cakes and 6 types-II cakes for Rs. 900. He sells type-I cakes at a profit of 15% and type-II cakes at a loss of 10%. If his overall profits is Rs. 30, the cost price (in Rs.) of a type-I and of a type-II cakes is
 (a) 100, 100 (b) 160, 70
 (c) 180, 60 (d) 120, 90

- Q70.** A car moving in the morning fog passes a man walking at 4 km/h in the same direction. The man can see the car for 3 minutes and visibility is upto a distance of 130 m. The speed of the car is:
 (a) 10 km/hr (b) 6.6 km/hr
 (c) 7 km/hr (d) 5 km/hr
- Q71.** The ratio of the numbers giving the measure of the circumference and the area of a circle of radius 3 cm is?
 (a) 1: 3 (b) 2: 3
 (c) 3: 2 (d) 2: 9
- Q72.** In a right-angled triangle ABC, $\angle ABC = 90^\circ$, AB = 5 cm and BC = 12 cm. The radius of the circumcircle of the triangle ABC is?
 (a) 7.5 cm (b) 6 cm
 (c) 6.5 cm (d) 7 cm
- Q73.** A person observes that the angle of elevation at the top of a pole of height 5 meter is 30° . Then the distance of the person from the pole is?
 (a) $\frac{5}{\sqrt{3}}$ meter (b) $5\sqrt{3}$ meter
 (c) $\sqrt{3}$ meter (d) $10\sqrt{3}$ meter
- Q74.** If $5x - 40 = 3x$, then the numerical value of $(2x - 11)$ is?
 (a) 29 (b) 39
 (c) 19 (d) 9
- Q75.** Walking at a speed of 6 km per hour, a man takes 5 hours to complete his journey. How much time will he need to complete the same journey at the rate of 8 km per hr.?
 (a) 3 hrs. (b) $3\frac{3}{4}$ hrs.
 (c) $2\frac{3}{4}$ hrs. (d) 3.5 hrs.
- Q76.** Twenty women together can complete a work in 16 days. 16 men together can complete the same work in 15 days. The ratio of the working capacity of a man to that of a woman is?
 (a) 4: 3 (b) 3: 4
 (c) 5: 3 (d) 4: 5
- Q77.** In how many years will the simple interest on a sum of money be equal to the principal at the rate of $16\frac{2}{3}\%$ per annum?
 (a) 4 years (b) 5 years
 (c) 6 years (d) 8 years
- Q78.** Fresh fruit contains 68% water and dry fruit contains 20% water. How much dry fruit can be obtained from 100 kgs of fresh fruits?
 (a) 32 kgs. (b) 40 kgs.
 (c) 80 kgs. (d) 52 kgs.
- Q79.** The number of pupils of a class is 55. The ratio of the number of male pupils to the number of female pupils is 5: 6. The number of female pupils is?
 (a) 11 (b) 25
 (c) 30 (d) 35
- Q80.** The average of five numbers is 27. If one number is excluded, the average becomes 25. The excluded number is?
 (a) 25 (b) 27
 (c) 30 (d) 35
- Q81.** The number of factors of 3600 is?
 (a) 44 (b) 45
 (c) 43 (d) 42
- Q82.** The value of $7 \div [5 + 1 \div 2 - \{4 + (4 \text{ of } 2 \div 4) + (5 \div 5 \text{ of } 2)\}]$ is?
 (a) 7 (b) $7/2$
 (c) $-7/2$ (d) -7
- Q83.** The average of all prime numbers 21 to 50 is (round off to one decimal number)?
 (a) 35.9 (b) 34.8
 (c) 33.7 (d) 32.9
- Q84.** Three numbers are in the ratio $\frac{1}{2} : \frac{2}{3} : \frac{3}{4}$. the difference between the greatest and the smallest number is 27. The smallest number is?
 (a) 81 (b) 40
 (c) 72 (d) 54
- Q85.** A container contains 20 L mixture in which there is 10% Sulphuric acid. Find the quantity of Sulphuric acid to be added in it to make the solution to contain 25% Sulphuric acid?
 (a) 3L (b) 5L
 (c) 4L (d) 2L
- Q86.** Two students, A and B, appeared for an examination. A secured 8 marks more than B and the marks of the former was 55% of the sum of their marks. The sum of the marks obtained by A and B is?
 (a) 100 (b) 80
 (c) 75 (d) 90
- Q87.** A sold an article on 15% profit for Rs. 1495. He purchased another article whose cost price was equal to that of the first article. He sold this new article at 10% profit. What is the total profit of A?
 (a) Rs. 325 (b) Rs. 450
 (c) Rs. 375 (d) Rs. 425

- Q88.** Rs 480 is invested at simple interest. It becomes Rs 520 after 20 months. What is the interest rate per annum?
(a) 4% (b) 5%
(c) 6% (d) 8%
- Q89.** The radius of a cylinder is increased by 150 % and its height is decreased by 20 %. What is the percentage increase in its volume?
(a) 80% (b) 500%
(c) 400% (d) 600%
- Q90.** If $a + b + c = 8$ and $ab + bc + ca = 20$, then $a^3 + b^3 + c^3 - 3abc$ is equal to?
(a) 30 (b) 24
(c) 36 (d) 32
- Q91.** To cover a certain distance with a speed of 60 km/hr. a train takes 15 hours. If it covers the same distance in 12 hours, what will be its speed?
(a) 65 km/hr. (b) 70 km/hr.
(c) 75 km/hr. (d) 80 km/hr.
- Q92.** What is the 507th term of the sequence 1, -1, 2, -2, 1, -1, 2, -2, 1,?
(a) -1 (b) 1
(c) -2 (d) 2
- Q93.** If $a + b = 12$, $ab = 22$, then $(a^2 + b^2)$ is equal to?
(a) 188 (b) 144
(c) 100 (d) 34
- Q94.** If $\cos^2 \alpha + \cos^2 \beta = 2$, then the value of $\tan^3 \alpha + \sin^5 \beta$ is?
(a) $\sqrt{3}$ (b) 0
(c) 1 (d) $1/\sqrt{3}$
- Q95.** If O is the orthocenter of a triangle ABC and $\angle BOC = 100^\circ$, the measure of $\angle BAC$ is?
(a) 50° (b) 100°
(c) 140° (d) 80°
- Q96.** The length of diagonal of a square is $15\sqrt{2}$ cm. Its area is?
(a) 225 cm^2 (b) 112.5 cm^2
(c) 450 cm^2 (d) $\frac{225\sqrt{2}}{2} \text{ cm}^2$
- Q97.** In what time will Rs. 72 become Rs. 81 at $6\frac{1}{4}\%$ per annum simple interest?
(a) 2 years (b) 2 years 6 months
(c) 3 years (d) 1 years 6 months
- Q98.** A shopkeeper bought 15kg of rice at the rate of 29 per kg and 25kg of rice at the rate of 20 per kg. He sold the mixture of both types of rice at the rate of 27 per kg. His profit in this transaction is?
(a) Rs. 125 (b) Rs. 150
(c) Rs. 140 (d) Rs. 145
- Q99.** In an examination, 93% of students passed and 259 failed. The total number of students appearing at the examination was?
(a) 4200 (b) 3700
(c) 3850 (d) 3950
- Q100.** If $a : b = 7 : 9$ and $b : c = 15 : 7$, then what is $a : c$?
(a) 5 : 3 (b) 3 : 5
(c) 7 : 21 (d) 7 : 15
- Q101.** If the ratio of volumes of two cones is 2 : 3 and the ratio of the radii of their bases is 1 : 2, then the ratio of their heights will be?
(a) 8 : 3 (b) 3 : 8
(c) 4 : 3 (d) 3 : 4
- Q102.** The distance between centers of two circles of radii 3 cm and 8 cm is 13 cm. If the points of contact of a direct common tangent to the circles are P and Q, then the length of the line segment PQ is?
(a) 11.9 cm (b) 12 cm
(c) 11.58 cm (d) 11.5 cm
- Q103.** Find the value of $\left(\frac{\sin 27^\circ}{\cos 63^\circ}\right)^2 + \left(\frac{\cos 63^\circ}{\sin 27^\circ}\right)^2$
(a) 0 (b) 1
(c) 2 (d) 3
- Q104.** If $x = 12$ and $y = 4$, then the value of $(x + y)^{\frac{x}{y}}$ is?
(a) 48 (b) 1792
(c) 4096 (d) 570



- Q105.** A runs twice as fast as B and B runs thrice as fast as C. The distance covered by C in 72 minutes, will be covered by A in?
 (a) 18 min. (b) 24 min.
 (c) 16 min. (d) 12 min.
- Q106.** A man and a boy received Rs. 800 as wages for 5 days for the work they did together. The man's efficiency in the work was three times that of the boy. What are the daily wages of the boy?
 (a) Rs. 76 (b) Rs. 40
 (c) Rs. 56 (d) Rs. 44
- Q107.** A money lender claims to lend money at the rate of 10% per annum simple interest. However, he takes the interest in advance when he lends a sum for one year. At what interest rate does he lend the money actually?
 (a) 10% (b) $9\frac{1}{11}\%$
 (c) 11% (d) $11\frac{1}{9}\%$
- Q108.** A man bought two goats for Rs. 1008. He sold one at a loss of 20% and other at a profit of 44%. If each goat was sold for the same price, the cost price of the goat which was sold at loss, was?
 (a) Rs. 648 (b) Rs. 360
 (c) Rs. 568 (d) Rs. 440
- Q109.** A number increased by $22\frac{1}{2}\%$ gives 98. The number is?
 (a) 45 (b) 18
 (c) 80 (d) 81
- Q110.** The average of six numbers is 20. If one number is removed, the average becomes 15. What is the number removed?
 (a) 5 (b) 35
 (c) 112 (d) 45
- Q111.** The circumcenter, incentre, orthocenter and the centroid of a triangle are one and the same point. The triangle must be?
 (a) Isosceles triangle (b) Right angle triangle
 (c) Right angle isosceles triangle (d) Equilateral triangle
- Q112.** If $a + \frac{1}{a} = 3$, then $(a^4 + \frac{1}{a^4})$ is equal to?
 (a) 77 (b) 47
 (c) 51 (d) 81
- Q113.** If $\sec 4\theta = \operatorname{cosec}(\theta + 20^\circ)$, θ then is equal to?
 (a) 22° (b) 18°
 (c) 14° (d) 20°
- Q114.** A train travelling at 44 km/h crosses a man walking with a speed of 8 km/h, in the same direction, in 15 seconds. If the train crosses a woman coming from the opposite direction in 10 seconds, then what is the speed (In km/h) of the woman?
 (a) 10.5 km/hr. (b) 10 km/hr.
 (c) 9 km/hr. (d) 8.5 km/hr.
- Q115.** A certain number of persons can complete a work in 34 days working 9 hours a day. If the number of persons is decreased by 40%, then how many hours a day should the remaining persons work to complete the work in 51 days?
 (a) 9 (b) 8
 (c) 12 (d) 10
- Q116.** The difference between the compound interest and simple interest on Rs x at 8% per annum for 2 years is Rs 19.20. What is the value of x?
 (a) 2,500 (b) 2,800
 (c) 3,000 (d) 3,200
- Q117.** When an article is sold for Rs 355, there is a loss of 29%. To gain 21%, it should be sold for Rs?
 (a) 629.20 (b) 580.80
 (c) 605 (d) 635
- Q118.** The price of a commodity is increased by 36% and the quantity purchased is decreased by 30%. What is the percentage increase/decrease in the amount spent on the commodity?
 (a) 4.8% increase (b) 4.8% decrease
 (c) 6% increase (d) 6% decrease
- Q119.** If $a : b = 5 : 7$, then $(5a - 3b) : (4a - 2b)$ is equal to?
 (a) 2 : 3 (b) 5 : 4
 (c) 4 : 3 (d) 3 : 2
- Q120.** The average of the first 101 _____ numbers is equal to 102?
 (a) Odd (b) Even
 (c) Natural (d) Perfect square
- Q121.** A student was asked to divide a number by 6 and add 12 to the quotient. He, however, first added 12 to the number and then divided it by 6, getting 112 as the answer. The correct answer should have been?
 (a) 124 (b) 122
 (c) 118 (d) 114
- Q122.** The HCF and LCM of two numbers are 12 and 924 respectively. Then the number of such pairs is?
 (a) 0 (b) 1
 (c) 2 (d) 3

Q123. On simplify $\frac{(2.644)^2 - (2.356)^2}{0.288}$ we get?

- (a) 1 (b) 4
(c) 5 (d) 6

Q124. A librarian purchased 50 story- books for his library. But he saw that he could get 14 more books by spending Rs. 76 more and the average price per book would be reduced by Rs. 1. The average price (in Rs.) of each book he bought, was?

- (a) 9 (b) 10
(c) 15 (d) 20

Q125. The ratio of $25^{2.5} : 5^3$ is same as?

- (a) 5: 3 (b) 5: 6
(c) 1: 25 (d) 25: 1

Q126. A person who spends $66\frac{2}{3}\%$ of his income is able to save Rs. 1,200 per month. His monthly expenses (in Rs.) is?

- (a) 1,200 (b) 2,400
(c) 3,000 (d) 3,200

Q127. If 10% loss is made on selling price, then the percentage of loss on the cost price will be?

- (a) 11% (b) 10%
(c) $11\frac{1}{9}\%$ (d) $9\frac{1}{11}\%$

Q128. Maha Bazaar offers 20% discount on bags which have been marked 50% above the cost price. Ashish pays Rs. 840 for a bag. Then the cost price of the bag is?

- (a) Rs. 700 (b) Rs. 672
(c) Rs. 790 (d) Rs. 810

Q129. If the simple interest on Rs. 1 for 1 month is 1 paisa, then the rate per cent per annum will be?

- (a) 10% (b) 8%
(c) 12% (d) 24%

Q130. The length of a train and that of a platform are equal. If with a speed of 90 km/hr. the train crosses the platform in one minute, then the length of the train (in meters) is?

- (a) 750 (b) 500
(c) 600 (d) 900

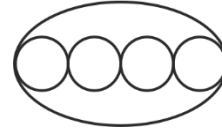
Q131. If $x^{y^z} = 1, y^{z^x} = 125$ and $z^{x^y} = 243$, then what is the value of $9x - 10y - 18z = ?$

- (a) 18 (b) 15
(c) 12 (d) 5

Q132. The ratio of curved surface area of a right circular cylinder to the total area of its two bases is 2 : 1. If the total surface area of cylinder is 23100 cm^2 , then what is the volume of the cylinder?

- (a) 247200 cm^3 (b) 269500 cm^3
(c) 312500 cm^3 (d) 341800 cm^3

Q133. A solid cylinder has radius of base 14 cm and height 15 cm 4 identical cylinders are at from each base as shown in the figure. Height of small cylinder is 5 cm. What is the total surface area of the remaining part?



- (a) 3740 (b) 3432
(c) 3124 (d) 2816

Q134. The radius of base of a solid cylinder is 7 cm and its height is 21 cm. It is melted and converted into small bullets, each bullet is of same size. Each bullet consists of two parts a cylinder and a hemisphere on one of its base. The total height of bullet is 3.5 cm and radius of base is 2.1 cm. Approximately how many complete bullets can be obtained?

- (a) 83 (b) 89
(c) 74 (d) 79

Q135. $P^3 + Q^3 + R^3 - 3PQR = 4$, If $a = Q + R, b = R + P$ and $c = P + Q$, then what is the value of $a^3 + b^3 + c^3 - 3abc$?

- (a) 4 (b) 8
(c) 2 (d) 12

Q136. If $a^4 + 1 = \frac{a^2}{b^2}(4b^2 - b^4 - 1)$, then what is the value of $a^4 + b^4$?

- (a) 2 (b) 16
(c) 32 (d) 64

Q137. If $a + b + c = 9, ab + bc + ca = 26, a^3 + b^3 = 91, b^3 + c^3 = 72$ and $a^3 + c^3 = 35$, then find the value of abc ?

- (a) 48 (b) 24
(c) 36 (d) 42

Q138. If $x^3 - 4x^2 + 19 = 6(x - 1)$, then what is the value of $x^2 + \frac{1}{x-4}$?

- (a) 3 (b) 5
(c) 6 (d) 8

Q139. x & y are positive integers. If $x^4 + y^4 + x^2y^2 = 481$ and $xy = 12$, then what is the value of $x^2 - xy + y^2$?

- (a) 16 (b) 13
(c) 11 (d) 15

- Q140.** $x^{y+z} = 1, y^{x+z} = 1024$ and $z^{x+y} = 729$, (x, y, z are natural numbers) then what is the value of $(z + 1)^{y+x+1}$?
 (a) 6561 (b) 10000
 (c) 4096 (d) 14641
- Q141.** A man distributes 10%, 18% and 22% his salary into his three children who spends 40%, 60% and 25% of that amount respectively. The difference between the amount left with the children and man is Rs. 1015. What is the salary of the man?
 (a) Rs. 5000 (b) Rs. 6000
 (c) Rs. 4800 (d) Rs. 5600
- Q142.** Out of total students 100/3% are is hosted A and remaining are in hostel B. If 20 students from hostel B are shifted to hostel A, then total student in hostel A becomes 50% of total students. If 20 students from hostel A are shifted to hostel B, then the total students in hostel A becomes what percent of total students?
 (a) 26.34% (b) 12.75%
 (c) 20% (d) 16.67%
- Q143.** A dishonest salesman buys $x\%$ more grains that what he pays for while selling he uses counterfeit weight which measures. 800 grams for every 1000 grams. If he sells the grains at 10% above the cost price and earn an overall profit of 65%, then find the value of x ?
 (a) 30% (b) 35%
 (c) 25% (d) 20%
- Q144.** The production of a company has ups and downs every year. The production increases for two consecutive years consistently by 15% and in the third-year decreases by 20%. Again in the next two years it increases by 25% each year and decreases by 10% in the third year. If we start counting from the year 2014 approximately what will be the effect on the production of the company in 2019?
 (a) 66.1% (b) 65.31%
 (c) 67.8% (d) 63.91%
- Q145.** Two candles of the same height are lighten at the same time. The first is consumed in 8 hours and the second in 6 hours. Assuming that each candle burns at a constant rate, in how many hours after being lighten, the ratio between the first and second candle becomes 2 : 1.
 (a) 2 hours 24 minutes (b) 4 hours
 (c) 1 hour 12 minutes (d) 4 hours 48 mintues
- Q146.** One year ago the ratio between Laxman's and Gopal's salary was 3 : 4. The individual ratios between their last year's and this year's salaries are 4 : 5 and 2 : 3 respectively. At present the total of their salary is Rs. 4160. The present salary of Laxman is —
 (a) Rs. 1600 (b) Rs. 2560
 (c) Rs. 1040 (d) Rs. 3120
- Q147.** The ratio of the numbers of boys and girls in a school was 5 : 3. Some new boys and girls were admitted to the school, in the ratio 5 : 7. At this, the total number of students in the school become 1200, and the ratio of boys to girls changed to 7 : 5. The number of students in the school before new admission was —
 (a) 960 (b) 720
 (c) 900 (d) 700
- Q148.** Three dogs are roaming in a zoo in such a way that when dog A takes 5 steps, B takes 6 steps and C takes 7 steps. But the 6 steps of A are equal to the 7 steps of B and 8 steps of C. What is the ratio of their speed.
 (a) 140 : 144 : 147 (b) 40 : 44 : 47
 (c) 15 : 21 : 28 (d) 252 : 245 : 240
- Q149.** Between two stations, the first, second and third class fares are in the ratio 9 : 7 : 2. The number of passengers travelling in a day are in the ratio 5 : 3 : 2, respectively, in the above classes. If the sale of tickets generated revenue of Rs. 98,000 that day and if 200 passengers travelled by third class, what was the fare for a first class ticket?
 (a) Rs. 84 (b) Rs. 92
 (c) Rs. 106 (d) Rs. 126
- Q150.** A student obtained equal marks in History and Sociology. The ratio of marks in Sociology and Geography is 2 : 3 and the ratio of marks in History and Philosophy is 1 : 2. If he has scored an aggregate of 55% marks. The maximum marks in each subject it same. In how many subjects did he score equal to or greater than 60% marks?
 (a) 1 (b) 2
 (c) 3 (d) None of these
- Q151.** In a village the average age of n people is 42 years. But after the verification it was found that the age of a person had been considered 20 years less than the actual age, so the new average, after the correction, increased by 1. The value of n is:
 (a) 21 (b) 20
 (c) 22 (d) None of these

Q152. The average rainfall in the months of January and February is 6 cm and in the months of March to June is 5 cm and July to October is 10 cm and in the November and December, it is 6 cm. The average rainfall for the whole year is:

- (a) 7 (b) 5.5
(c) 7.5 (d) None of these

Q153. On an average 300 people watch the movie in Sahu Cinema hall on Monday, Tuesday and Wednesday and the average number of visitors on Thursday and Friday is 250. If the average number of visitors per day in the week be 400, then the average number of people who watch the movie in weekends (i.e., on Saturday and Sunday) is:

- (a) 500 (b) 600
(c) 700 (d) None of these

Q154. The average salary is being paid to all its employees by the Biotech corporation is Rs. 15,500. The average salary of the senior employees is Rs. 18000 per month and the average salary of the junior employees is Rs. 12,000 per month. If there are only two levels of employees viz junior and senior level, then what fraction of the total employees is the junior level employees are:

- (a) $7/10$ (b) $5/12$
(c) $5/10$ (d) None of these

Q155. The average income of A, B and C is Rs. 12,000 per month and the average income of B, C and D is Rs. 15,000 per month. If the average salary of D be twice that of A, then the average salary of B and C is (in Rs.):

- (a) 8,000 (b) 18,000
(c) 13,500 (d) 9,000



Q156. A travel agency has three types of vehicles viz. four seater, autorickshaw, 10 seater maxi cab and 20 seater minibus. The rate of each passenger (irrespective of its age or weight or seniority) for the auto rickshaw is Rs. 12 and for the maxi cab is Rs. 15 and for the minibus is Rs. 8 for the one round. The average occupancy of the seats is 100%, 80% and 75% respectively. If he has only one vehicle of each kind, then the average earning for one round of each vehicle is:

- (a) Rs. 96 (b) Rs. 90
(c) Rs. 86 (d) Rs. 70

Q157. In a particular week the average number of people who visited the Tajmahal is 40. If we exclude the holidays then the average is increased by 16. Further if we exclude also the day on which the maximum number of 112 people visited the Tajmahal, then the average becomes 42. The number of holiday in the week is:

- (a) 1 (b) 2
(c) 3 (d) Data insufficient

Q158. The labourers A, B, C were given a contract of Rs. 750 for doing a certain piece of work. All the three together can finish the work in 8 days. A and C together can do it in 12 days, while A and B together can do it in $13 \frac{1}{3}$ days. The money will be divided in the ratio

- (a) 4 : 5 : 6 (b) 4 : 7 : 5
(c) 5 : 7 : 4 (d) 5 : 6 : 8

Q159. A can do a piece of work in 10 days and B can do it in 12 days. They work together for 3 days. Then B leaves and A alone continues. 2 days after that C joins and the work is completed in 2 days. In how many days can C do it, if he works alone?

- (a) 30 days (b) 50 days
(c) 40 days (d) 60 days

Q160. A man can do a job in 5 hrs. After 2 hrs 20 mins, the man stops working. He is replaced by a woman to complete the job. She does the remainder of the work in 1 hr 40 mins. If the woman works alone, how much faster will she be than the man?

- (a) 1 hr 25 mins (b) 1 hr 53 mins
(c) 2 hrs (d) 1 hr 17 mins

- Q161.** Three cars leave A for B in equal time intervals. They reach B simultaneously and then leave for Point C which is 240 km away from B. The first car arrives at C an hour after the second car. The third car, having reached C, immediately turns back and heads towards B. The first and the third car meet a point that is 80 km away from C. What is the difference between the speed of the first and the third car?
 (a) 60 kmph (b) 80 kmph
 (c) 20 kmph (d) 40 kmph
- Q162.** Mr. X decides to travel from Delhi to Gurgaon at a uniform speed and decides to reach Gurgaon after T hr. After 30 km, there is some engine malfunction and the speed of the car becomes $\frac{4}{5}$ th of the original speed. So, he travels the rest of the distance at a constant speed $\frac{4}{5}$ th of the original speed and reaches Gurgaon 45 minutes late. Had the same thing happened after he travelled 48 km, he would have reached only 36 minutes late. What is the distance between Delhi and Gurgaon?
 (a) 90 km (b) 120 km
 (c) 20 km (d) 40 km
- Q163.** Tom, Jerry and Bill start from point A at the same time in their cars to go to B. Tom reaches point B first and turns back and meets Jerry at a distance of 9 miles from B. When Jerry reaches B, he too turns back and meets Bill at a distance of 7 miles from B. If 3 times the speed with which Tom drives his car is equal to 5 times Bill's speed, what could be the distance between the points A and B
 (a) 40 miles (b) 24 miles
 (c) 31 miles (d) 63 miles
- Q164.** Two trains start together from a Station A in the same direction. The second train can cover 1.25 times the distance of first train in the same time. Half an hour later, a third train starts from same station and in the same direction. It overtakes the second train exactly 90 minutes after it overtakes the first train. What is the speed of third train, if the speed of the first train is 40 Km/hr?
 (a) 20 Km/hr (b) 50 Km/hr
 (c) 60 Km/hr (d) 80 Km/hr
- Q165.** Two trains left from two stations P and Q towards station Q and station P respectively. 3 hours after they met, they were 675 Km apart. First train arrived at its destination 16 hours after their meeting and the second train arrived at its destination 25 hours after their meeting. How long did it take the first train to make the whole trip?
 (a) 18h (b) 36h
 (c) 25h (d) 48h
- Q166.** A bus starts from a bus stop P and goes to another bus stop Q. In between P and Q, there is a bridge AB of certain length. A man is standing at a point C on the bridge such that $AC : CB = 1 : 3$. When the bus starts at P and if the man starts running towards A, he will meet the bus at A. But if he runs towards B, the bus will overtake him at B. Which of the following is true?
 (a) Bus travels 3x times faster than the man
 (b) Bus travels 2x times faster than the man
 (c) The bus and the man travel at the same speed
 (d) 4x the speed of the man is equal to 3x the speed of the bus
- Q167.** Two friends A and B leave City P and City Q simultaneously and travel towards Q and P at constant speeds. They meet at a point in between the two cities and then proceed to their respective destinations in 54 minutes and 24 minutes respectively. How long did B take to cover the entire journey between City Q and City P?
 (a) 60 (b) 36
 (c) 24 (d) 48
- Q168.** A man travels 450 km to his home partly by train and partly by car. He takes 8 hrs 40 min if he travels 240 km by train and rest by car. He takes 20 mins more if he travels 180 km by train and the rest by car. The speed of the car in km/hr is
 (a) 45 (b) 50
 (c) 60 (d) 48
- Q169.** Train A travelling at 63 kmph takes 27 to sec to cross Train B when travelling in opposite direction whereas it takes 162 seconds to overtake it when travelling in the same direction. If the length of train B is 500 meters, find the length of Train A.
 (a) 400 m (b) 810 m
 (c) 500 m (d) 310 m

- Q170.** Akash when going slower by 15 Km/hr, reaches late by 45 hours. If he goes faster by 10 Km/hr from his original speed, he reaches early by 20 hours than the original time. Find the distance he covers.
 (a) 8750 Km (b) 9750 Km
 (c) 1000 Km (d) 3750 Km
- Q171.** Satish invested 16000 Rs. in simple interest for 2 years on certain rate and gets an interest of 4800 Rs, if he invested total amount (Principle + Interest) in a scheme, which offered compound interest of 5% more interest rate as earlier rate. Then find total interest obtained by Satish after 2 years?
 (a) 9252 Rs. (b) 9225 Rs.
 (c) 9512 Rs. (d) 9152 Rs.
- Q172.** The sum of the ages of father and son is 50 years. Eight years ago, the product of their ages was two time the father's age at that time, then the present ages (in years) of the father and son respectively are
 (a) 39,6 (b) 35,10
 (c) 36,9 (d) 40,10
- Q173.** A vessel contains 60 lit of pure honey. If m lit of pure honey is replaced with n lit of water then ratio of honey to water becomes 10: 1 and if $2m$ lit of pure honey were replaced by n lit of water, then ratio of honey to water becomes 8: 1. Find the value of ' $m + n$ '?
 (a) 10 (b) 12
 (c) 15 (d) 30
- Q174.** The price of a car is Rs. 3,25,000. It was insured to 85% of its price. The car was damaged completely in an accident and the insurance company paid 90% of the insurance. What was the difference between the price of the car and the amount received?
 (a) Rs. 32,500 (b) Rs. 48,750
 (c) Rs. 76,375 (d) Rs. 81,250
- Q175.** Nitin borrowed some money at the rate of 6% p.a. for the first three years, 9% p.a. for the next five years and 13% p.a. for the period beyond eight years. If the total interest paid by him at the end of eleven years is Rs. 8160, how much money did he borrow?
 (a) Rs. 8000 (b) Rs. 10,000
 (c) Rs. 12,000 (d) Rs. 10,500
- Q176.** Out of the total number of students in a college 12% are interested in sports only. $\frac{3}{4}$ of the remaining number of students are interested in dancing only. 10% of the total number of students are interested in singing only and the remaining 15 students are not interested in any of the activities. What is the total number of students in the college?
 (a) 115 (b) 120
 (c) 125 (d) 150
- Q177.** Annually income of Sameer is 8.4 lakh Rs. he spend $14\frac{2}{7}\%$ on Rent, $16\frac{2}{3}\%$ of remaining on Food and $\frac{11}{20}$ of remaining spend on Cloth and travel together monthly. then find the difference between total saving and amount spend on travel annually, if given ratio between amount spend on Cloth to travel is 17 : 8 ?
 (a) 164400 Rs. (b) 165400 Rs.
 (c) 160400 Rs. (d) 175400 Rs.
- Q178.** A , B and C invested different amounts in a business for 4 months, 6 months and 12 months respectively. B's investment was 2 times A's investment and C's investment was 2.5 times A's investment. If at the end of the year, they together received an amount of Rs 5,819/- as total profit, what was B's share in the total profit.
 (a) Rs 1,404/- (b) Rs 1,428/-
 (c) Rs 1,518/- (d) Rs 1,536/-
- Q179.** A tank is fitted with 8 pipes, some of which that fill the tank and others that empty the tank. Each of the pipes that fills the tank fills it in 8 hours, while each of those that empty the tank empties it in 6 hours. If all the pipes are kept open when the tank is full, it will take 6 hours to drain the tank. How many of these are filling pipes?
 (a) 5 (b) 3
 (c) 4 (d) 6
- Q180.** The barrel of a fountain pen is cylindrical in shape whose radius of base is 0.7 cm and is 5 cm long. One such barrel in the pen can be used to write 300 words. A barrel full of ink which has a capacity of 15.4 cubic cm can be used to write how many words?
 (a) 540 words (b) 430 words
 (c) 600 words (d) 590 words

- Q181.** A gave 40% of his monthly salary to B. B spent 20% of this amount on taxi fare. He spent the remaining amount in the respective ratio of 3 : 5 on tuition fees and library membership. If he spent Rs 1720 for membership, what is A's monthly salary?
 (a) Rs 8500 (b) Rs 8600
 (c) Rs 7600 (d) Rs 7500
- Q182.** Muskaan gives 20% of her salary to Simran. Simran gives 40% of this money to her Mom and remaining money is invested for 2 years in a scheme which offer Compound Interest at the rate of 20% p.a. If Interest earned on amount invested is Rs6600 then, find the salary of Muskaan.
 (a) 150000 (b) 175000
 (c) 140000 (d) 125000
- Q183.** Difference between the compound interest and simple interest earned on a certain amount in 2 years at the rate of 12 % p.a. is Rs 144. If same amount is invested in scheme 'P' which offer simple interest at the rate of 15% p.a. for 4 years then, find the simple interest earned from scheme 'P'.
 (a) 4000 (b) 6000
 (c) 14400 (d) 4500
- Q184.** Raman is travelling with a speed of 15 km/hr and reached point 'X' at 12:00 pm. If he had travelled with a different speed he would reach 'X' at 3 : 00 pm but if he further increased its changed speed by 80% then, he reach 'X' at 11 : 00 am. Find the speed with which Raman reach 'X' at 11 : 00 am.
 (a) 10 (b) 20
 (c) 15 (d) 18
- Q185.** Rakesh lent Rs. P to Rahul on an agreement that for first two year, interest will be calculated on SI at 15% per annum and for next two years interest will be calculated on C.I at 5% additional rate. If Rahul paid total amount of Rs. 17971.2 at the end of four year, Find the amount borrowed by Rahul?
 (a) 9000 Rs. (b) 9800 Rs.
 (c) 9900 Rs. (d) 9600 Rs.
- Q186.** Marked price of two articles A and B are in the ratio of 7 : 9, at the time of selling shopkeeper gives discount of d% on article A and (d + 5)% on article B and made a profit of 25% on each article, if cost price of article A and B are in ratio 112 : 135. Then find percent of discount given by shopkeeper on both articles?
 (a) 12.5%, 17.5% (b) 25%, 30%
 (c) 10%, 15% (d) 20%, 25%
- Q187.** An alloy contains only zinc and copper. One such alloy weighing 15 gm contains zinc and copper in the ratio of 2 : 3 by weight. If 10 gm of zinc is added then find what amount of copper has to be removed from the alloy such that the final alloy has zinc and copper in the ratio of 4 : 1 by weight?
 (a) 5 gm (b) 5.5 gm
 (c) 6 gm (d) 4.8 gm
- Q188.** Speed of train 'Y' is 100% more than speed of train 'X'. Length of train 'Y' is 150% of the length of train 'X'. If train 'X' can cross a pole in 2 seconds, then find in how much time train 'X' can cross train 'Y' when they travel in same direction?
 (a) 4 seconds (b) 5 seconds
 (c) 6 seconds (d) 8 seconds
- Q189.** There are total 30 students in class 'A' and class 'B' together. Average marks of class 'A' is 30 while average marks of class 'B' is 36. If total marks of class 'B' is 80% more than that of class 'A' then find total number of student in class 'B'?
 (a) 12 (b) 15
 (c) 9 (d) 18
- Q190.** Anushka has certain amount with herself. She invested half of amount in scheme 'A' which offers compound interest at the rate of 10% p.a. and remaining half in scheme 'B' which offers compound interest at the rate of 20% p.a. If after 2 years she earns total interest of Rs5200, then find the amount Anushka has initially?
 (a) 8,000 (b) 12,000
 (c) 16,000 (d) 20,000
- Q191.** Two trains A and B with their length difference 17 m cross each other in 2.6 seconds while running in opposite direction. Train A crosses train B in 13 seconds while they are running in same direction. If train A takes 2 seconds to cross a pole, then find the sum of speed of both the trains, assuming that train B is longer than train A.
 (a) 34 m/s (b) 51 m/s
 (c) 68 m/s (d) 85 m/s
- Q192.** Train X having length 130 m and train Y having length 145 m moving in opposite direction. They enter into a tunnel, simultaneously, which have length equal to the sum of length of both trains. Trains meet after 10 second of entering in the tunnel. What percent of train X part is leave out the tunnel when it meet train Y if they have speeds in the ratio of 5:6.
 (a) $2\frac{11}{13}\%$ (b) $3\frac{11}{13}\%$
 (c) $4\frac{1}{3}\%$ (d) 5%

- Q193.** Two pipes A and B together can fill a tank in 20 hours. Ratio of efficiency A to B is 5 : 4. They together filled the tank for the first 4 hours and then B is closed and another pipe C is opened. Now if tank is filled in another 9 hours then find time taken by C to complete the work alone.
(a) 90/7 hour (b) 80/5 hour
(c) 180/11 hour (d) 180/7 hour
- Q194.** A person bought some mobiles and he sold 60% of them at the profit of 3.5% & sold rest of them at the rate of Rs. 6,660 each. In this transaction, he earned an overall profit% of 6.5%. Find the SP (in Rs.) of each mobile which were sold at 3.5% profit.
(a) Rs 6210 (b) Rs 7230
(c) Rs 5830 (d) Rs 5760
- Q195.** A tank is filled by three pipes with uniform flow. The first two pipes operating simultaneously fill the tank in the same time during which the tank is filled by the third pipe alone. The second pipe fills the tank 5 hrs faster than the first pipe and 4 hrs slower than the third pipe. The time required by the first pipe is:
(a) 6 hrs (b) 10 hrs
(c) 15 hrs (d) 30 hrs
- Q196.** Rihana had Rs. 4200. She invested some of it in scheme A for 4 years and rest of the money she invested in scheme B for two years. Scheme A offers simple interest at a rate of 22% p.a. and scheme B offers compound interest (compounded annually) at a rate of 10% p.a. If the interest received from scheme A is Rs. 1516 more than the interest received from Scheme B, what was the sum invested by her in scheme A ?
(a) Rs. 2,600 (b) Rs. 2,000
(c) Rs. 2,200 (d) Rs. 2,400
- Q197.** Panchhi's age 8 years ago is equal to the sum of present ages of her son and her daughter. 5 years hence, the ratio between her daughter's age and her son's age will be 7 : 6 respectively. Panchhi's husband is 7 years elder than her. Her husband's present age is thrice the present age of his son. What is her daughter's present age?
(a) 23 years (b) 24 years
(c) 28 years (d) 25 years
- Q198.** Shobha and Saurabh have equal amount. Shobha invested on C.I. for two years at the rate of 10% p.a. and Saurabh invested $66\frac{2}{3}\%$ of amount at the rate of R% p.a. on simple interest and remaining amount at the rate of 6.5% p.a. on simple interest. If interest received by both at the end of two years are equal, then find the value of 'R'?
(a) 10% (b) 12.5%
(c) 15% (d) 12%
- Q199.** Profit on selling 10 pencils equals selling price of 3 pen. While loss on selling 10 pen equals selling price of 4 pencils. Also profit percent-age equals to the loss percentage and cost of a pencil is half of the cost of a pen. What is the ratio of selling price of pencil to the selling price of a pen?
(a) 5 : 4 (b) 3 : 2
(c) 4 : 5 (d) 3 : 4
- Q200.** A train, an hour after starting, meets with an accident which detains it for half an hour, after which it proceeds at $\frac{3}{4}$ of its former rate and arrives $3\frac{1}{2}$ hrs late. Had the accident happened 90 Km farther along the line, it would have arrived only 3 hrs late. The length of the trip in kilometres was:
(a) 400 (b) 465
(c) 600 (d) 640
- Q201.** Total distance between Delhi to Lucknow is 480 km. A train starts running with an average speed of 60 km/hr from Delhi to Lucknow while another train starts Journey after 120 minutes of first train and reaches Lucknow 30 minutes before first train. If first train stops for 5 minutes on each station and second train did not stop at any station, then find the ratio between speed of first train to speed of second train given that total number of station between Delhi and Lucknow are nine?
(a) 25 : 33 (b) 25 : 32
(c) 35 : 25 (d) 25 : 31
- Q202.** Rinki invested 30% less than charu, who invested 20% less than Purvi in partnership for first eight months. If for next four months Rinki, Charu and Purvi withdraw $\frac{2}{7}$, $\frac{2}{5}$ and $\frac{1}{5}$ of their initial capital respectively, and charu got Rs. 2800 more as profit than Rinki, find sum of profit share of Charu and Purvi?
(a) Rs. 29700 (b) Rs. 25800
(c) Rs. 26600 (d) Rs. 24400

- Q203.** In vessel A mixture, petrol and kerosene oil are in the ratio of 7 : 5 and in vessel B it is in the ratio of 8 : 5. P liter of mixture from vessel A and Q liter of mixture from vessel B are taken out and poured into vessel C. If vessel C contains total 150 liter mixture with 40% kerosene oil, then find value of P/Q?
 (a) 12/19 (b) 12/17
 (c) 11/13 (d) 12/13
- Q204.** A, B and C entered into a partnership with some investment for one year. After one-year A got $\frac{2}{5}$ profit and B and C got equal part of remaining profit. If total profit after one year is 15% instead of 10% then A got 900 Rs. more. Find the investment of B.
 (a) 12000 (b) 45000
 (c) 27000 (d) 13500
- Q205.** A boat cover 60 km upstream and 60 km downstream in 22.5 hr with its usual speed. If boat double its speed then new upstream speed is 150% more than the usual upstream speed. Find the time taken by boat to cover 80 km in downstream with usual speed.
 (a) 12 hr (b) 20 hr
 (c) 5 hr (d) 10 hr
- Q206.** The daily work of 2 women is equal to that of 3 men or that of 4 children. By employing 14 women, 12 men, and 12 children a certain work can be finished in 24 days. If it is required to finish it in 14 days and as an additional labour, only women are available, how many of them will be required?
 (a) 18 (b) 20
 (c) 48 (d) 28
- Q207.** Equal amounts of each Rs. 43,892 is lend to two persons for 3 years. One at the rate of 30% S.I. and second at the rate of 30% C.I. annually. By how much percent the C.I. is greater than the simple interest received in this 3 years duration?
 (a) 33% (b) 36%
 (c) 39% (d) 30%
- Q208.** Mr. Giridhar spends 50% of his monthly income on household items and out of the remaining he spends 50% on transport, 25% on entertainment, 10% on sports and remaining amount of Rs. 900 is saved. What is Mr. Giridhar's monthly income?
 (a) Rs. 6000 (b) Rs. 12000
 (c) Rs. 9000 (d) Can't be determined
- Q209.** A manufacturer sells a pair of glasses to a wholesale dealer at a profit of 18%. The wholesaler sells the same to a retailer at a profit of 20%. The retailer in turn sells them to a customer for Rs. 30.09, thereby earning a profit of 25%. The cost price for the manufacturer is
 (a) Rs. 16 (b) Rs. 20
 (c) Rs. 17 (d) Rs. 24
- Q210.** HB produces very fine quality of sketching pencils. Company knows that on an average 10% of the produced pencils are always defective so are rejected before packing. Company promises to deliver 7200 pencils to its wholesaler at Rs. 10 each. It estimates the overall profit on all the manufactured pencils to be 25%. What is the manufacturing cost of each pencil?
 (a) Rs. 6 (b) Rs. 7.2
 (c) Rs. 5.6 (d) Rs. 8
- Q211.** The least number which must be added to the greatest number of 4 digits in order that the sum may be exactly divisible by 307 is?
 (a) 32 (b) 43
 (c) 75 (d) 132
- Q212.** The value of: $2.8 + (5.2 \div 1.3 \times 2) - 6 \times 3 \div 8 + 2$?
 (a) 6.45 (b) 8.45
 (c) 10.55 (d) 4.55
- Q213.** The average age of four brothers is 15 years. If their father is included, the average is increased by 5 years. The age of the father (in years) is?
 (a) 35 (b) 40
 (c) 38 (d) 36
- Q214.** What is the ratio of the mean proportional between 4.8 and 10.8 and the third proportional to 0.4 and 2.4?
 (a) 2: 1 (b) 3: 2
 (c) 1: 2 (d) 2: 3
- Q215.** 25 liters of a mixture contains 30% of spirit and rest water. If 5 liters of water be mixed in it, the percentage of spirit in the new mixture is?
 (a) 25 % (b) 45 %
 (c) $33\frac{1}{3}$ % (d) $12\frac{1}{2}$ %
- Q216.** If 60% of a number is 120 more than 20% of the number, then 28% of the number is less than $33\frac{1}{3}$ % of the number by?
 (a) 14 (b) 16
 (c) 12 (d) 15

- Q217.** The simple interest on a principal for 6 months at an interest rate of 10% per annum is Rs100. What is the principal?
(a) Rs. 1000 (b) Rs. 2000
(c) Rs. 1500 (d) Rs. 2500
- Q218.** 18 men can complete a work in 9 days. After they have worked for 5 days, 6 more men join them. How many days will they take to complete the remaining work?
(a) 3 days (b) $2\frac{1}{2}$ days
(c) 2 days (d) $3\frac{1}{2}$ days
- Q219.** The areas of the three adjacent faces of a cuboid are 32 cm^2 , 24 cm^2 and 48 cm^2 . What is the volume of the cuboid?
(a) 288 cm^3 (b) 256 cm^3
(c) 128 cm^3 (d) 192 cm^3
- Q220.** $\triangle ABC \sim \triangle DEF$ and their perimeters are 64 cm and 48 cm respectively. What is the length AB, if DE is equal to 9 cm?
(a) 17.5 cm (b) 16 cm
(c) 12 cm (d) 18 cm
- Q221.** A boat goes 20 km downstream in one hour and the same distance upstream in two hours. The speed of the boat in still water is?
(a) 15 km/hr. (b) 10 km/hr.
(c) 5 km/hr. (d) 7.5 km/hr.
- Q222.** If $2^{x+3} = 32$, then the value of 3^{x+1} is equal to?
(a) 9 (b) 27
(c) 72 (d) 81
- Q223.** If $\frac{2 \sin \theta - \cos \theta}{\cos \theta + \sin \theta} = 1$, then value of $\cot \theta$ is?
(a) $1/2$ (b) $1/3$
(c) 3 (d) 2
- Q224.** The area (in m^2) of the square which has the same perimeter as a rectangle whose length is 48 m and is 3 times its breadth, is?
(a) 1000 (b) 1024
(c) 1600 (d) 1156
- Q225.** For what sum will the simple interest at R% per annum for 2 years will be R?
(a) Rs. $\frac{100}{2R}$ (b) Rs. $\frac{100}{R}$
(c) Rs. $\frac{200}{R}$ (d) Rs. 50
- Q226.** A merchant fixes the sale price of his goods at 15% above the cost price. He sells his goods at 12% less than the fixed price. His percentage of profit is?
(a) $2\frac{1}{2}\%$ (b) $1\frac{1}{2}\%$
(c) $1\frac{1}{5}\%$ (d) 2%
- Q227.** A number, on subtracting 15 from it, reduces to its 80%. What is 40% of the number?
(a) 75 (b) 60
(c) 30 (d) 90
- Q228.** Three persons walk from place A to place B. Their speeds are in the ratio 4:3: 5. The ratio of the time taken by them to reach B will be?
(a) 10 : 15 : 13 (b) 2 : 3 : 4
(c) 16 : 18 : 15 (d) 15 : 20 : 12
- Q229.** The average weight of 12 crewmen in a boat is increased by $\frac{1}{3}$ kg, when one of the crewmen whose weight is 55kg is replaced by a new man. What is the weight of that new man?
(a) 59 kg (b) 60 kg
(c) 58 kg (d) 57 kg
- Q230.** What is the smallest number by which 625 must be divided so that the quotient is a perfect cube?
(a) 25 (b) 5
(c) 2 (d) 3
- Q231.** Three times a number is 24 more than the one-third of this number. This number is?
(a) 9 (b) 15
(c) 12 (d) 8
- Q232.** An oil merchant has 3 varieties of oil of volumes 432, 594 and 702 respectively. The number of cans of equal size that would be required to fill the oil separately is?
(a) 13, 15, 17 (b) 8, 13, 15
(c) 8, 11, 13 (d) 6, 9, 11
- Q233.** The simplified value of $\frac{1}{2} \text{ of } \frac{8}{5} \div \{2\frac{1}{5} - (\frac{5}{16} + \frac{3}{5} \times 1\frac{7}{8} \div \frac{2}{3})\}$
(a) 1 (b) $2/5$
(c) $1/5$ (d) 4
- Q234.** Given four different numbers, the average of first three numbers is four times the fourth number and the average of all the four numbers is 52. What is the average of the first three number?
(a) 64 (b) 70
(c) 65 (d) 70
- Q235.** What is the ratio between the fourth proportional of 3, 4, 9 and the mean proportional between 2 and 98?
(a) 7: 8 (b) 7: 6
(c) 8: 7 (d) 6: 7

- Q236.** A is 20% more than B, B is 25% more than C, C is 60% less than D and D is 20% more than E. Based on the above information which of the following is true?
 (a) D is 60% less than B (b) A is 40% less than D
 (c) E is 28% more than A (d) C is 24% less than A
- Q237.** The cost prices of article A and article B are Rs. 1200 and Rs. 1600 respectively. The selling price of article A is Rs. 1380 and the total profit after selling both the articles is 25%. What is the profit percentage on the article B?
 (a) 32.5% (b) 27.5%
 (c) 29.5% (d) 35.5%
- Q238.** Walking at $\frac{3}{4}$ of his usual speed, a person reaches his office 18 minutes later than the usual time. His usual time in minutes is?
 (a) 60 (b) 72
 (c) 54 (d) 45
- Q239.** Diagonals of a rhombus are respectively 4 cm and 12 cm. Its area (in cm^2) is equal to?
 (a) 12 (b) 24
 (c) 36 (d) 8
- Q240.** In a circle, chords PQ and TS are produced to meet at R. If RQ = 14.4 cm, PQ = 11.2 cm and SR = 12.8 cm, then the length of chord TS is?
 (a) 12.4 cm (b) 14.2 cm
 (c) 18 cm (d) 16 cm
- Q241.** A train with a uniform speed passes a platform, 122 meters long, in 17 seconds and a bridge, 210 meters long, in 25 seconds. The speed of the train is?
 (a) 46.5 km/hour (b) 37.5 km/hour
 (c) 37.6 km/hour (d) 39.6 km/hour
- Q242.** A canteen requires 56 kgs of rice for seven days. The quantity of rice required for the months of April and May together is?
 (a) 468 kg (b) 488 kg
 (c) 498 kg (d) 508 kg
- Q243.** A sum of Rs. 3000 amounts to Rs. 6000 in two years at compound interest. The interest for four years is?
 (a) Rs. 12000 (b) Rs. 6000
 (c) Rs. 9000 (d) Rs. 3000
- Q244.** A fruit seller makes a profit of 20% by selling Kiwi at a certain price. If he charges Rs. 1 more for each Kiwi, he can make a profit of 40%. Find the selling price of a Kiwi in the first case?
 (a) Rs. 6 (b) Rs. 5
 (c) Rs. 5.50 (d) Rs. 7
- Q245.** In a big garden 60% of the trees are coconut trees, 25% of the number of coconut trees are mango trees and 20% of the number of mango trees are apple trees. If the number of apple trees are 1500, then the number of trees in the garden is?
 (a) 48000 (b) 50000
 (c) 51000 (d) 45000
- Q246.** The rates of working of A and B are in the ratio of 2: 3. The number of days taken by each of them to finish the work is in the ratio?
 (a) 4: 9 (b) 2: 3
 (c) 3: 2 (d) 9: 4
- Q247.** The average weight of A, B and C is 45 kg. If the average weight of A and B be 40 kg and that of B and C be 43 kg, then the weight of B is?
 (a) 31 kg (b) 32 kg
 (c) 29.5 kg (d) 35 kg
- Q248.** If x, y and z are real numbers such that $(x - 3)^2 + (y - 4)^2 + (z - 5)^2 = 0$ then $(x + y + z)$ is equal to?
 (a) -12 (b) 0
 (c) 8 (d) 12
- Q249.** The angles of a triangle are $(x + 5)^\circ$, $(2x - 3)^\circ$ and $(3x + 4)^\circ$. The value of x is?
 (a) 30 (b) 31
 (c) 29 (d) 28
- Q250.** The area (in m^2) of the square which has the same perimeter as a rectangle whose length is 48 m and is 3 times its breadth, is?
 (a) 961 (b) 1024
 (c) 1600 (d) 1156
- Q251.** A sum of 1240 is distributed among A, B and C such that the ratio of amount received by A and B is 6: 5 and that of B and C is 10: 9 respectively. Find the share of C?
 (a) Rs. 480 (b) Rs. 360
 (c) Rs. 400 (d) Rs. 630
- Q252.** There are 30 students in a class. The average age of first 10 students is 12.5 years. The average age of the remaining 20 students is 13.1 years. The average age (in years) of the students of the whole class is?
 (a) 12.5 years (b) 12.7 years
 (c) 12.8 years (d) 12.9 years

- Q253.** The value of $\frac{(75.8)^2 - (35.8)^2}{40}$ is?
 (a) 111.6 (b) 121.6
 (c) 40 (d) 160
- Q254.** How many positive integers less than 1000 are multiples of 11 whose square roots are whole numbers?
 (a) 4 (b) 2
 (c) 8 (d) 11
- Q255.** A man has some hens and cows. If the number of heads: number of feet = 12: 35, find out the number of hens, if the number of heads alone is 48?
 (a) 22 (b) 24
 (c) 26 (d) 28
- Q256.** One-third of 1206 is what percent of 134?
 (a) 100% (b) 150%
 (c) 200% (d) 300%
- Q257.** The difference between CI and SI for 2 years at 10% rate of interest is Rs. 4. Find the sum of money?
 (a) Rs. 200 (b) Rs. 300
 (c) Rs. 400 (d) Rs. 800
- Q258.** A and B can do a piece of work in 28 and 35 days respectively. They began to work together but A leaves after sometime and B completed remaining work in 17 days. After how many days did A leave?
 (a) 8 days (b) 9 days
 (c) $14\frac{2}{5}$ days (d) $7\frac{5}{9}$ days
- Q259.** A car can finish a certain journey in 10 hours at the speed of 42 kmph. In order to cover the same distance in 7 hours, the speed of the car (km/h) must be increased by?
 (a) 12 (b) 15
 (c) 18 (d) 24
- Q260.** The length and breadth of a rectangular field are in the ratio of 3: 2. If the perimeter of the field is 80m, its breadth (in meters) is?
 (a) 18 (b) 16
 (c) 10 (d) 24
- Q261.** A sector is cut out from a circle of diameter 42 cm. If the angle of the sector is 150° , then its area (in square cm) is: (Take $\pi = 22/7$)?
 (a) 564 (b) 574
 (c) 580.6 (d) 577.5
- Q262.** In a ΔABC , the bisectors of $\angle B$ and $\angle C$ meet at point O inside the triangle. If $\angle BOC = 122^\circ$, then the measure of $\angle A$?
 (a) 62° (b) 64°
 (c) 72° (d) 68°
- Q263.** The speed of a boat in still water is 6 km/h. If it takes four times more time to go against the current than to go in the direction of the current, what will be the speed of the current?
 (a) 2.5 km/hr. (b) 5 km/hr.
 (c) 4.2 km/hr. (d) 3.6 km/hr.
- Q264.** The distance between two stations A and B is 800 km. A train X starts from point A and moves towards point B at a speed of 40 km/h and another train Y starts from point B and moves towards A at 60 km/h. How far from A will they cross each other?
 (a) 380 (b) 320
 (c) 300 (d) 360
- Q265.** 18 men can complete a work in 9 days. After they have worked for 5 days, 6 more men join them. How many days will they take to complete the remaining work?
 (a) 3 (b) 2
 (c) $2\frac{1}{2}$ (d) $3\frac{1}{2}$
- Q266.** In what time will a sum double itself at 8% p.a. Simple interest?
 (a) 8 years (b) 16 years
 (c) 12.5 years (d) 6.5 years
- Q267.** A shopkeeper decides to raise the marked price of an article by 10%. How much discount should he allow so as to be able to sell the article at the original marked price?
 (a) $9\frac{1}{11}\%$ (b) $8\frac{1}{9}\%$
 (c) $9\frac{1}{2}\%$ (d) 10 %
- Q268.** A person spends 10% of his salary on food. He spends 20% of the remaining amount on fuel. If he has Rs. 4680 now, then what is his salary?
 (a) 6000 (b) 5000
 (c) 6500 (d) 5500
- Q269.** The sum of two numbers is 77 and their ratio is 6: 5. What is their difference?
 (a) 4 (b) 6
 (c) 7 (d) 5
- Q270.** What is the average of the first 15 odd numbers among the natural numbers?
 (a) 18 (b) 15
 (c) 16 (d) 17
- Q271.** A takes three times as long as B and C together to do a job. B takes four times as long as A and C together to do the work. If all the three, working together can complete the job in 24 days, then the number of days, A alone will take to finish the job is?
 (a) 100 (b) 96
 (c) 95 (d) 90

Q272. A can do a piece of work in 25 days and B can do the same work in 30 days. They work together for 5 days, how much of work is left?

- (a) $\frac{11}{30}$ (b) $\frac{30}{11}$
(c) $\frac{19}{30}$ (d) $\frac{13}{30}$

Q273. A, B and C working separately can do a piece of work in 11 days, 20 days and 55 days respectively. In how many days, the work will be completed if A is assisted by B and C on alternate days?

- (a) 2 (b) 4
(c) 6 (d) 8

Q274. A, B and C can complete a work in 10, 12 and 15 days respectively. They started the work together. But A left the work before 5 days of its completion. B also left the work 2 days after A left. In how many days was the work completed?

- (a) 4 days (b) 5 days
(c) 7 days (d) 8 days

Q275. 40 men can complete a work in 40 days. They started the work together. But at the end of each 10th day, 5 men left the job. The work would have been completed in?

- (a) $56\frac{2}{3}$ days (b) 52 days
(c) $53\frac{1}{3}$ days (d) 50 days

Q276. 16 women take 12 days to complete a work which can be completed by 12 men in 8 days. 16 men started working and after 3 days 10 men left and 4 women joined them. How many days will it take them to complete the remaining work?

- (a) 4 (b) 6
(c) 8 (d) 10

Q277. A certain number of men can do a piece of work in 60 days. If there were 6 men more, the work can be finished 20 days earlier. The number of men working is?

- (a) 12 (b) 6
(c) 24 (d) 18

Q278. If 1 man or 2 women or 3 boys can complete a piece of work in 88 days, then 1 man, 1 woman and 1 boy together will complete it in?

- (a) 36 days (b) 42 days
(c) 48 days (d) 54 days

Q279. A does half as much work as B in three fourth of the time. If together they take 18 days to complete the work, how much time will B alone take to do it?

- (a) 50 days (b) 45 days
(c) 40 days (d) 30 days

Q280. A contractor was engaged to construct a road in 16 days. After working for 12 days with 20 labors it was found that only $\frac{5}{8}$ th of the road had been constructed. To complete the work in stipulated time the number of extra labors required is?

- (a) 20 (b) 36
(c) 16 (d) 18

Q281. The ratio of milk and water in a vessel is 14 : 13 . If 54 ltr of mixture is taken out and 82 ltr water is added then ratio of milk and water becomes 13 : 15. Then find the initial quantity of milk in the mixture ?

- (a) 364 litre (b) 392 litre
(c) 138 litre (d) 540 litre

Q282. Two vessel contain water and spirit in the ratio 3 : 9 and 7 : 6, If both the vessels are mixed in the ratio 1 : 1. Find the ratio of water and spirit in the new mixture ?

- (a) 41 : 63 (b) 51 : 64
(c) 37 : 29 (d) 7 : 13

Q283. There are 2 types of coins 10p and 25p in a box. The total money in the box is Rs. 46 and the total number of coins is 250. Find the number of 10p coins.

- (a) 140 (b) 110
(c) 100 (d) 108

Q284. The ratio of milk and water in a mixture is 4 : 5. How much part of the mixture should be replaced by water so that ratio of milk and water is 2 : 3 ?

- (a) $\frac{2}{45}$ (b) $\frac{3}{46}$
(c) $\frac{1}{45}$ (d) $\frac{4}{45}$

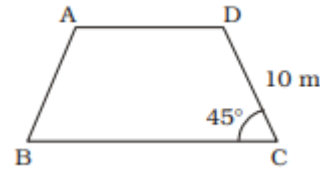


- Q285.** No stag is allowed in a party. $\frac{2}{3}$ of the males are interested in dancing. If overall 50% people are interested in dancing. Find the ratio of females interested in dancing to those females who are not.
(a) 3 : 2 (b) 1 : 4
(c) 1 : 2 (d) 1 : 3
- Q286.** A, B and C are three partners in a business. A receives $\frac{2}{5}$ th part of the total profit and remaining profit is distributed between B and C. If profit return will increase from 5% to 9%, then profit of A increase by Rs 420. Find the total investment of B & C?
(a) Rs. 32575 (b) Rs. 15750
(c) Rs. 29840 (d) Rs. 18480
- Q287.** P, Q R are partners in a company P's money is used for 6 months and claims $\frac{4}{7}$ of the profit. Q's money is used for 5 months and claims $\frac{3}{14}$ of the profit. R invested Rs. 2400 for 6 months. How much total money (in Rs) did P and Q invested?
(a) 9361 (b) 9280
(c) 7385 (d) 12400
- Q288.** A contractor hires 36 men for a work, they complete $\frac{3}{4}$ th of the work in 15 days. After that work is stopped due to rain, 25% of the completed work is destroyed by rain and 6 men falls sick. Find the time in which remaining work will be completed. ?
(a) 9 days (b) $12\frac{1}{2}$ days
(c) $8\frac{1}{3}$ days (d) $10\frac{1}{2}$ days
- Q289.** A and B started working together but after some days, A left the work and the whole work will be completed in 24 days. Find after how many days A left the work if A and B complete the work in 32 and 48 days respectively.
(a) 8 days (b) 16 days
(c) 18 days (d) 12 days
- Q290.** A and B can build a wall in 12 hours and 18 hours respectively. But if they work together they put 180 less bricks per hour and build a wall in 9 hours. Find the number of bricks in the wall.
(a) 5820 (b) 6120
(c) 6480 (d) 7260

- Q291.** Two circles touch each other externally at P. AB is a direct common tangent to the two circles, A and B are point of contact and $\angle PAB = 35^\circ$. Then $\angle ABP$ is?
(a) 35° (b) 55°
(c) 45° (d) 75°

- Q292.** Two chords AB and PQ of a circle intersect at D inside a circle. If AD = 4 cm. DB = 6 cm. QD = 3 cm. the length of PQ is equal to?
(a) 8 cm (b) 9 cm
(c) 10 cm (d) 11 cm

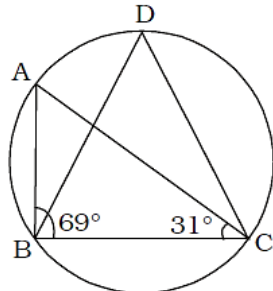
- Q293.** . ABCD is a trapezium in which AD || BC and AB = DC = 10 m. then the distance of AD from BC is?



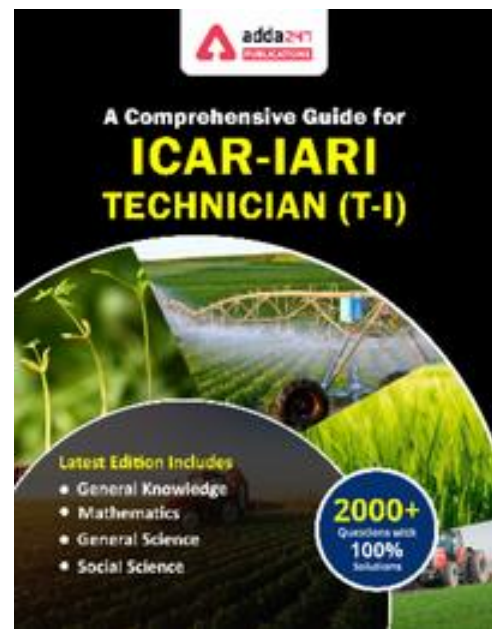
- (a) $10\sqrt{2}$ (b) $4\sqrt{2}$
(c) $5\sqrt{2}$ (d) $2\sqrt{2}$
- Q294.** ABCD is a rhombus whose side AB = 4 cm and $\angle ABC = 120^\circ$, then the length of diagonal BD is equal to?
(a) $4\sqrt{2}$ cm (b) 6 cm
(c) 3 cm (d) 4 cm
- Q295.** ABCD is a cyclic quadrilateral. AB and DC when produced meet at P, if PA = 8 cm, PB = 6 cm, PC = 4 cm, then the length (in cm) of PD is?
(a) 12 cm (b) 10 cm
(c) 8 cm (d) 6 cm
- Q296.** If the sum of the interior angles of a regular polygon be 1080° , the number of sides of the polygon is?
(a) 6 (b) 8
(c) 10 (d) 12
- Q297.** In ΔABC , E and D are points on sides AB and AC respectively such that $\angle ABC = \angle ADE$. If AE = 3 cm, AD = 2 cm and EB = 2 cm, then length of DC is?
(a) 4 cm (b) 4.5 cm
(c) 5 cm (d) 5.5 cm
- Q298.** . In a triangle the length of the side opposite the angle which measures 45° is 8 cm, what is the length of the side opposite to the angle which measures 90° ?
(a) $8\sqrt{3}$ (b) $8\sqrt{2}$
(c) $4\sqrt{3}$ (d) $4\sqrt{2}$

- Q299.** In $\triangle ABC$, $\angle B = 65^\circ$, and $\angle C = 35^\circ$, AD and AE are respectively the bisector of $\angle A$ and perpendicular on BC. The measure of $\angle EAD$ is?
 (a) 10° (b) 11°
 (c) 15° (d) 16°

- Q300.** In the following figure, $\angle ABC = 69^\circ$, $\angle ACB = 31^\circ$ then $\angle BDC = ?$



- (a) 111° (b) 149°
 (c) 100° (d) 80°



Solutions

S1. Ans.(d)

Sol. A $\rightarrow 75\% \rightarrow \frac{3}{4}$ work $\rightarrow 18$ days

1 work $\rightarrow 24$ days

B $\rightarrow 25\% \rightarrow \frac{1}{4}$ work $\rightarrow 12$ days

1 work $\rightarrow 48$ days

A 24 2

48

B 48 1

75% of work $= \frac{3}{4} \times 48 = 36$

A + B, will complete 36 work in $= \frac{36}{3} = 12$ days

S2. Ans.(b)

Sol. Area of 4 walls of cuboid $= 57 \text{ m}^2$

$2(l + b) \times h = 57$

$2(l + b) \times 3 = 57$

$5.5 + b = \frac{19}{2}$

$5.5 + b = 9.5$

$b = 4 \text{ cm}$

S3. Ans.(b)

Sol. Discount % $= 30\%$

$= \frac{30}{100} = \frac{3}{10} \rightarrow$ Discount

$(10 - 3)r = 1050$

$7r \rightarrow 1050$

$1r \rightarrow 150$

$10r \rightarrow 1500$

S.P at 15% discount

$= 1500 \times \frac{17}{20} = 1275 \text{ Rs.}$

S4. Ans.(c)

Sol. Fourth Proportion $\rightarrow x$

$$\frac{336}{288} = \frac{161}{x}$$

$$x = \frac{161 \times 288}{336}$$

$$x = 138$$

S5. Ans.(b)

Sol. First number divisible by 8 $\Rightarrow 16$

Last number divisible by 8 $\Rightarrow 88$

$$88 = 16 + (n - 1) 8$$

$$72 = (n - 1) 8$$

$$9 = n - 1$$

$$n = 10$$

$$\text{Sum} = \frac{10}{2} [2 \times 16 + (10 - 1) \times 8]$$

$$= 5 [32 + 72]$$

$$= 520$$

$$\text{Average} = \frac{520}{10} = 52$$

S6. Ans.(a)

Sol. Using Alligation

15% 8%

12%

4 : 3

Quantity sold at 8%

$$= 630 \times \frac{3}{7}$$

$$= 270$$

S7. Ans.(d)

Sol. 50% of a = b

$$\frac{1}{2}a = b$$

$$b\% \text{ of } 40 = \frac{a}{200} \times 40$$

$$= 0.2a$$

S8. Ans.(c)

Sol. Speed including stoppages = 50 km/hr

Distance travelled in 1 hour = 50 km

Time taken by train to travel 50 km at 120 km/hr

$$= \frac{50}{120}$$

$$= \frac{5}{12} \times 60 \text{ minutes}$$

$$= 25 \text{ minutes}$$

Train stopped per hour

$$= 60 - 25$$

$$= 35 \text{ minutes}$$

S9. Ans.(c)

Sol.

	S.I	C.I
1 st year	2000	2000
2 nd year	2000	2180

$$\text{Rate \%} \Rightarrow \frac{180}{2000} \times 100$$

$$= 9\%$$

S10. Ans.(a)

Sol.

$$\frac{2x}{3} - \frac{5}{2} \left(\frac{4x}{5} - \frac{4}{3} \right) = \frac{1}{3}$$

$$\frac{2x}{3} - 2x + \frac{10}{3} = \frac{1}{3}$$

$$\frac{-4x}{3} = -3$$

$$x = \frac{9}{4}$$

S11. Ans.(d)

Sol.

$$D = \sqrt{l^2 + b^2 + h^2} = \sqrt{(32)^2 + (16)^2 + (11)^2} = 37.42 \text{ m}$$

S12. Ans.(a)

Sol.

$$\frac{CSA}{TSA} = \frac{2\pi rh}{2\pi r(r+h)} = \frac{h}{r+h} = \frac{7}{11}$$

$$11 \text{ -- } 5038$$

$$7 \text{ -- } 3206$$

$$V = \frac{1}{2}(2\pi rh)r = 1603 \text{ r}$$

$$3206 = 2 \times \frac{22}{7} \times r \times \frac{7}{4} r$$

$$r = \sqrt{\frac{3206}{11}}$$

$$V = 1603 \sqrt{\frac{3206}{11}} \text{ cm}^3$$

S13. Ans.(b)

Sol.

$$\text{pythagoras triplet} \begin{cases} h = 85 \text{ cm} \\ r = 132 \text{ cm} \\ l = 157 \text{ cm} \end{cases}$$

$$R = \frac{r \times h}{l} = \frac{85 \times 132}{157} = 71.46 \text{ cm}$$

S14. Ans.(c)

Sol.

$$\frac{v_1}{v_2} = \frac{8 \times 8}{19 \times 8} = \frac{64}{152} = \frac{v_1}{v_1 + v_2} = \frac{64}{216} \text{ (Small cone)}$$

$$\frac{h_1}{h_2} = \sqrt[3]{\frac{v_1}{v_2}} = \sqrt[3]{\frac{4}{6}} = \frac{2}{3} \quad \begin{matrix} 3 - 42 \\ 1 - 14 \text{ cm} \end{matrix}$$

$$h_1 = 28$$

$$\text{Therefore height from base} = 42 - 28 = 14 \text{ cm}$$

S15. Ans.(d)

Sol.

$$V = \frac{1}{3}\pi h(r_1^2 + r_2^2 + r_1 r_2)$$

$$= \frac{1}{3} \times \frac{22}{7} \times 63 (36 + 64 + 48)$$

$$= 9768 \text{ cm}^3$$

S16. Ans.(c)

Sol.

$$4\pi r^2 \text{ -- } 6 \text{ ltr}$$

$$8\pi r^2 \text{ -- } 12 \text{ ltr}$$

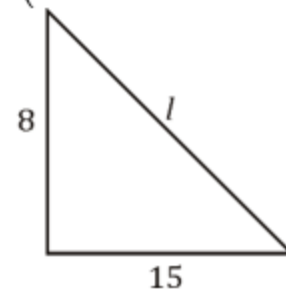
S17. Ans.(b)

Sol.

$$\text{T.S.A} - \text{L.S.A} + \text{area of base}$$

$$= \frac{1}{2} \times 60\sqrt{3} \times 17 + \sqrt{3} \times 75 \times 6$$

$$\left((h) = \frac{\sqrt{3}}{2} \times 10\sqrt{3} = 15 \text{ cm} \right)$$



$$= 510\sqrt{3} + 450\sqrt{3}$$

$$= 960\sqrt{3} \text{ cm}^2$$

S18. Ans.(a)

Sol.

$$\Pi (6)^2 \times (5) = \pi (0.2)^2 \times 1000 \times t$$

$$t = \frac{36 \times 5}{40} = \frac{36}{8} = \frac{9}{2} = 4.5 \text{ hrs.}$$

S19. Ans.(c)

Sol.

Let side of cube = 2 cm

Volume = 8 cm^3

Volume of cylinder = $\pi (1)^2 \times 2$
= 2π

% required = $\frac{8-2\pi}{8} \times 100$
= 21.5%

S20. Ans.(a)

Sol.

$$h = \sqrt{(73)^2 - (48)^2}$$

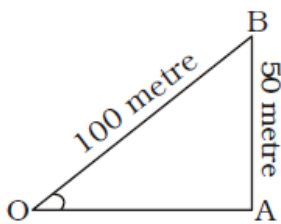
$$h = 55 \text{ cm}$$

$$a = \frac{\sqrt{2}rh}{\sqrt{2}r+h} = \frac{\sqrt{2} \times 48 \times 55}{48\sqrt{2}+55}$$

$$a = 30.3 \text{ cm}$$

S21. Ans.(d)

Sol.



AB = Height of kite

= 50 metre

OB = length of thread

= 100 metre

$$\therefore \sin BOA = \frac{AB}{OB} = \frac{50}{100} = \frac{1}{2}$$

$$= \sin 30^\circ$$

$$\therefore \angle BOA = 30^\circ$$

S22. Ans.(c)

Sol. $\tan x = \sin 45^\circ \cdot \cos 45^\circ + \sin 30^\circ$

$$= \frac{1}{\sqrt{2}} \cdot \frac{1}{\sqrt{2}} + \frac{1}{2} = \frac{1}{2} + \frac{1}{2} = 1$$

$$\therefore \tan x = \tan 45^\circ \Rightarrow x = 45^\circ$$

S23. Ans.(a)

Sol. It is given, $a + b = 3$

$$\therefore a^3 + b^3 + 9ab$$

$$= a^3 + b^3 + 3ab \times 3$$

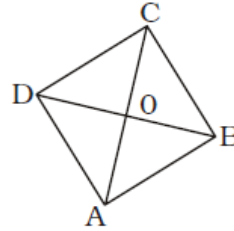
$$= a^3 + b^3 + 3ab(a + b)$$

$$= (a + b)^3$$

$$= (3)^3 \Rightarrow 27$$

S24. Ans.(d)

Sol.



$$\angle ABC = 60^\circ$$

$$AB = BC$$

$$\therefore \angle BAC = \angle BCA = 60^\circ$$

$\therefore \Delta ABC$ is an equilateral triangle. Hence side of Rhombus is 6 cm becoz $AC = AB = BC$

S25. Ans.(b)

Sol. Here, l = arc length = 3.5 cm r = radius = 5 cm

$$\therefore \text{Area of sector} = \frac{1}{2} l \cdot r$$

$$= \frac{1}{2} \times 3.5 \times 5 = 8.75 \text{ cm}^2$$

S26. Ans.(a)

Sol. $A + B + C = 3 \times 80 = \text{Rs. } 240$

Then money spent = $240 - 180 = \text{Rs. } 60$

$$\rightarrow A + 2A + 3A = 60$$

$$\rightarrow 6A = 60$$

$$\rightarrow A = \text{Rs. } 10$$

S27. Ans.(d)

Sol. Let the numbers be $5x$, $6x$ and $7x$ respectively.

$$\therefore 5x \times 6x \times 7x = 5670$$

$$\rightarrow x^3 = \frac{5670}{5 \times 6 \times 7} = 27$$

$$\therefore x = \sqrt[3]{27} = 3$$

$$\therefore \text{The greatest number} = 7x$$

$$= 7 \times 3 = 21$$

S28. Ans.(c)

Sol. Let the CP of the article be x .

ATQ,

$$\frac{115x}{100} - \frac{110x}{100} = 10$$

$$\rightarrow \frac{5x}{100} = 10$$

$$\rightarrow x = \text{Rs. } 200$$

S29. Ans.(b)

Sol. Earning in the first one hour = $\frac{2000}{50}$

= Rs. 40

Earnings for additional 5 hours

$$= 40 \times \frac{3}{2} \times 5 = \text{Rs. } 300$$

S30. Ans.(c)

Sol.

Speed = 180 kmph

$$= \frac{180 \times 5}{18} \text{ m/sec} = 50 \text{ m/sec}$$

$$\left[\because 1 \text{ km/hr} = \frac{5}{18} \text{ m/s} \right]$$

S31. Ans.(b)

Sol. $a + b = 10$; $ab = 21$

$$\begin{aligned}\text{We know } (a - b)^2 &= (a + b)^2 - 4ab \\ &= (10)^2 - 4 \times 21 \\ &= 100 - 84 = 16\end{aligned}$$

S32. Ans.(d)

Sol. $7 \sin^2 \theta + 3 \cos^2 \theta = 4$

→ Divide by $\cos^2 \theta$ both side

$$\rightarrow 7 \frac{\sin^2 \theta}{\cos^2 \theta} + 3 = \frac{4}{\cos^2 \theta} \text{ or } 4 \sec^2 \theta$$

$$\rightarrow 7 \tan^2 \theta + 3 = 4(1 + \tan^2 \theta)$$

$$\rightarrow 7 \tan^2 \theta - 4 \tan^2 \theta = 4 - 3$$

$$\rightarrow 3 \tan^2 \theta = 1$$

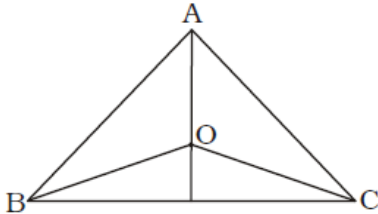
$$\rightarrow \tan^2 \theta = 1/3$$

$$\rightarrow \tan \theta = \frac{1}{\sqrt{3}}$$

Trick: Put $\theta = 30^\circ$

S33. Ans.(c)

Sol.



Point O is orthocentre.

$$\therefore \angle BOC = 180^\circ - \angle A$$

$$\therefore 110^\circ = 180^\circ - \angle A$$

$$\Rightarrow \angle A = 180^\circ - 110^\circ = 70^\circ$$

S34. Ans.(c)

Sol. Let the required radius = r cm, then ATQ

$$\rightarrow \pi r^2 = \pi r_1^2 + \pi r_2^2$$

$$\rightarrow r^2 = r_1^2 + r_2^2$$

$$\rightarrow r^2 = 10^2 + 24^2$$

$$\rightarrow r^2 = 676$$

$$\rightarrow r = 26 \text{ cm}$$

S35. Ans.(a)

Sol. Rate upstream of boat = $\frac{75}{3} = 25$ kmph

Rate downstream of boat = $\frac{60}{1.5} = 40$ kmph

$$\begin{aligned}\therefore \text{Speed of boat in still water} &= \frac{1}{2} * (25 + 40) \\ &= \left(\frac{1}{2} * 65\right) = 32.5 \text{ kmph}\end{aligned}$$

S36. Ans.(a)

Sol. Cost price of a book

$$= \frac{12000}{200} = \text{Rs. } 60$$

$$\therefore \text{Total profit} = 60 \times 20 = 1200$$

$$\therefore \text{Profit per cent} = \frac{1200}{12000} * 100 = 10\%$$

S37. Ans.(c)

Sol. If the total number of students be x , then

$$x = \frac{90x}{100} + \frac{85x}{100} - 150$$

$$\rightarrow 100x = 90x + 85x - 15000$$

$$\rightarrow 175x - 100x = 15000$$

$$\rightarrow 75x = 15000$$

$$\rightarrow x = 200$$

S38. Ans.(b)

Sol. According to the question,

$$\frac{A}{2} : \frac{B}{3} : \frac{C}{6}$$

$$\therefore A : B : C = 2 : 3 : 6$$

Sum of the terms of ratio = $2 + 3 + 6 = 11$

Total amount = Rs. 1980

$$\therefore \text{B's share} = \text{Rs. } \left(\frac{3}{11} * 1980\right) = \text{Rs. } 540$$

S39. Ans.(c)

Sol. Let the average of runs of the cricketer in 8 innings be x .

According to the question,

$$\frac{8x + 100}{9} = x + 9$$

$$\rightarrow 8x + 100 = 9x + 81$$

$$\rightarrow x = 100 - 81 = 19$$

$$\therefore \text{New average of runs} = 19 + 9 = 28$$

S40. Ans.(d)

Sol. LCM of 9, 10 and 15 = 90

→ The multiple of 90 are also divisible by 9, 10 or 15.

∴ $21 \times 90 = 1890$ will be divisible by them.

∴ Now, 1897 will be the number that will give remainder 7.

$$1936 - 1897$$

$$\text{Required number} = 1936 - 1897 = 39$$

S41. Ans.(b)

Sol. If the required percentage be x ,

Then,

$$\left(\begin{array}{c} \text{Percentage} \\ \text{Effect} \\ = \left(x + y + \frac{xy}{100} \right) \% \end{array} \right)$$

$$30 - x - \frac{30x}{100} = 0$$

$$300 - 10x - 3x = 0$$

$$13x = 300$$

$$x = \frac{300}{13} = 23\frac{1}{13} \%$$

S42. Ans.(c)

Sol. Number of diagonals = $\frac{n(n-3)}{2}$

$$\rightarrow 54 = \frac{n(n-3)}{2}$$

$$\rightarrow n(n-3) = 108 \text{ or } 12 \times 9$$

$$\rightarrow n(n-3) = 12(12-3)$$

$$\rightarrow n = 12$$

S43. Ans.(b)

Sol. $\sin 2\theta = \frac{\sqrt{3}}{2} = \sin 60^\circ$

$\therefore 2\theta = 60^\circ$

$\theta = 30^\circ$

$\therefore \sin 3\theta \rightarrow \sin 90^\circ \rightarrow 1$

S44. Ans.(d)

Sol. When $x + y + z = 5 + 6 - 11 = 0$

$\therefore x^3 + y^3 + z^3 = 3xyz$

$x^3 + y^3 + z^3 = 3 \times 5 \times 6 \times (-11) = -990$

S45. Ans.(c)

Sol. $\therefore 1 \text{ m/sec} = \frac{18}{5} \text{ kmph}$

$\therefore \frac{10}{3} \text{ m/sec} = \frac{18}{5} \times \frac{10}{3} = 12 \text{ kmph}$

S46. Ans.(a)

Sol. Part of the tank emptied by the leak in 1 hour

$= \frac{1}{9} - \frac{1}{10} \rightarrow \frac{1}{90}$

$\therefore \text{Required time} = 90 \text{ hours}$

S47. Ans.(b)

Sol.

On 20% above S.P. = 120

On discount of 8%

$= 120 - 120 \times \frac{8}{100}$

$= 120 - \frac{48}{5} = 120 - 9.6 = 110.4$

$\text{Gain} = 110.4 - 100 = 10.4\%$

S48. Ans.(a)

Sol. ATQ, population is increasing by 5% every year

$5\% = \frac{1}{20}$

$20 \times 1 \rightarrow 1 \text{ year}$

$20 \times 2 \rightarrow 2 \text{ year}$

$20 \times 3 \rightarrow 3 \text{ year}$

8000 9261

ATQ, present population = 9261

\therefore population 3 years before = 8000

S49. Ans.(c)

Sol. Numbers = $5x$ and $8x$

According to the question,

$8x - 5x = 48$

$3x = 48$

$x = 16$

\therefore Larger number = $8x$

$= 8 \times 16 = 128$

S50. Ans.(c)

Sol. The middle number

$= 8 \times 6.5 + 8 \times 9.5 - 15 \times 7$

$= 52 + 76 - 105$

$= 128 - 105 = 23$

S51. Ans.(a)

Sol. Correct sum of numbers

$= 10 \times 50 - 64 + 46$

$= 500 - 18 = 482$

$\therefore \text{Correct average} = \frac{482}{10}$

$= 48.2$

S52. Ans.(c)

Sol. Let the amount of water be x liters.

Then,

$\frac{x+3}{x} = \frac{3}{2}$

Or $2x + 6 = 3x$

Or $x = 6$

\therefore The quantity of spirit in the mixture

$= x + 3 = 6 + 3 = 9 \text{ liters}$

S53. Ans.(d)

Sol. Number to be added = x (let)

ATQ,

$\frac{320 \times 10}{100} + x = \frac{230 \times 30}{100}$

$32 + x = 69$

$x = 69 - 32$

$x = 37$

S54. Ans.(b)

Sol. C.P. = 12

S.P. = $12 \times 1.25 = 15$

Total Profit = $15 - 12 = 3$

$\% \text{ gain} = \frac{3}{12} \times 100 = 25\%$

S55. Ans.(a)

Sol. Let the rate of interest be R per cent per annum.

$\therefore \frac{400 \times 2 \times R}{100} + \frac{550 \times 4 \times R}{100} + \frac{1200 \times 6 \times R}{100} = 1020$

$\rightarrow 8R + 22R + 72R = 1020$

$\rightarrow 102R = 1020$

$\rightarrow R = \frac{1020}{102} = 10\%$

S56. Ans.(c)

Sol. (A + B + C)'s 1 day's work

$= \frac{1}{12} + \frac{1}{24} + \frac{1}{36} = \frac{11}{72}$

\therefore (A + B + C) together will complete the work in $\frac{72}{11}$ days

$= 6\frac{6}{11} \text{ days}$

S57. Ans.(D)

Sol. In this situation, the train covers its length.

Required time = $\frac{100}{30 \times 1000} \text{ hr.}$

$= \frac{100 \times 60 \times 60}{30 \times 1000} \rightarrow 12 \text{ sec.}$

S58. Ans.(b)

Sol. $7^x = \frac{1}{343}$

$\rightarrow 7^x = \frac{1}{7^3} = 7^{-3}$

$\rightarrow x = -3$

S59. Ans.(c)

Sol. $\tan \theta + \cot \theta = 5$

On squaring both sides,

$$(\tan \theta + \cot \theta)^2 = 25$$

$$\tan^2 \theta + \cot^2 \theta + 2 \tan \theta \cdot \cot \theta = 25$$

$$\tan^2 \theta + \cot^2 \theta + 2 = 25$$

$$\tan^2 \theta + \cot^2 \theta = 25 - 2 = 23$$

S60. Ans.(d)

Sol. Required difference

$$= 97 - 2 \rightarrow 95$$

S61. Ans.(a)

Sol.

Expenditure = Price \times Consumption

$$10 = 32 \times x$$

Using successive rule,

$$10 = 32 + x + \frac{32x}{100}$$

$$x = \frac{-50}{3} \%$$

Thus, consumption reduces by

$$\frac{1}{6} \rightarrow \text{Before}$$

Now, she is buying 5 kg instead of 6 kg.

Earlier	Now
6 \rightarrow 5	
1 \rightarrow $\frac{5}{6}$	
12 \rightarrow $\frac{5}{6} \times 12$	
	= 10 kg

Now she buys 10 kg.

S62. Ans.(a)

Sol.

Let the C.P be Rs. x

$$\text{S.P} \rightarrow (1.1) x$$

According to the questions,

$$\text{C.P (new)} \rightarrow (0.9 x)$$

$$\text{S.P (new)} = (1.1 x) + 3$$

$$\text{gain} = 25\%$$

A/Q,

$$(0.9 x) (1.25) = (1.1 x) + 3$$

$$1.125 x - 1.10 x = 3$$

$$0.025x = 3$$

$$x = 120$$

$$\text{C.P} = \text{Rs. } 120$$

S63. Ans.(b)

Sol.



$$\text{S.P} = 12500 (0.92)$$

$$\text{C.P} = \frac{12500 (0.92)}{1.25}$$

$$\text{C.P} = 9200$$

S64. Ans.(c)

Sol.

	T1	:	T2
Speed \rightarrow	50	:	60
	5	:	6
Distance \rightarrow	5	:	6
	1R		

$$1R = 120 \text{ km}$$

$$\therefore (6 + 5)R = 11R = 120 \times 11 = 1320 \text{ km}$$

S65. Ans.(b)

Sol.

A	B	C
(13 + x)	(6 + x)	x
$13 + x + 6 + x + x = 76$		
$19 + 3x = 76$		
$x = \frac{57}{3} = 19$		

A	B	C
32	25	19

S66. Ans.(c)

Sol.

$$\text{Sum of internal angle} = 1440$$

$$180(n - 2) = 1440$$

$$n - 2 = \frac{1440}{180}$$

$$n = 8 + 2 = 10$$

S67. Ans.(b)

Sol.

$$\text{Price of 510 eggs} = \frac{510}{12} \times 20 = 850 \text{ Rs.}$$

$$\text{S.P at 20\% gain} = 850 \times \frac{120}{100} = 1020 \text{ Rs.}$$

$$\text{S.P of } (510 - 30) \Rightarrow 480 \text{ eggs} \Rightarrow \text{Rs. } 1020$$

$$\text{S.P of 1} \Rightarrow 1020/480$$

$$\text{S.P of Dozen} = 1020/48 \times 12 = 25.50 \text{ Rs.}$$

S68. Ans.(a)

Sol.

A B C

100 88 99

If A sells to B at 99 Rs.

Then there will be loss of Rs. 1

$$\text{Loss \%} = \frac{1}{100} \times 100$$

$$= 1\%$$

S69. Ans.(b)

Sol.

Let C.P of Type-1 be x & Type-2 be y

$$3x + 6y = 900 \quad \dots(i)$$

$$3x \times \frac{115}{100} + 6y \times \frac{90}{100} = 900 + 30$$

$$115x + 180y = 31000 \quad \dots(ii)$$

$$90x + 180y = 27000$$

$$\frac{25x}{25x} = \frac{4000}{25x}$$

$$x = 160 \text{ Rs.}$$

$$480 + 6y = 900$$

$$6y = 420$$

$$y = 70 \text{ Rs.}$$

S70. Ans.(b)

Sol.

Let the speed of car be x km/hr

$$(x - 4) \times \frac{3}{60} = \frac{130}{1000}$$

$$30x - 120 = 78$$

$$30x = 198$$

$$x = 6.6 \text{ km/hr}$$

S71. Ans.(b)

Sol. Circumference of circle = $2\pi r$

$$= 2\pi \times 3 = 6\pi \text{ cm}$$

$$\text{Area of circle} = \pi r^2 = \pi \times 3 \times 3$$

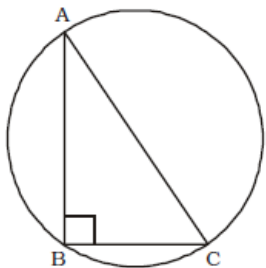
$$= 9\pi \text{ cm}^2$$

$$\therefore \text{Required ratio} = 6\pi : 9\pi$$

$$= 2 : 3$$

S72. Ans.(c)

Sol.



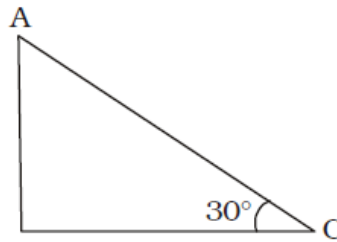
AC = Diameter of circum circle

$$= \sqrt{5^2 + 12^2} = 13 \text{ cm}$$

$$\therefore \text{Circum-radius} = \frac{13}{2} = 6.5 \text{ cm}$$

S73. Ans.(b)

Sol.



AB = pole = 5 metre

$\angle ACB = 30^\circ$, BC = ?

In $\triangle ABC$,

$$\tan 30^\circ = \frac{AB}{BC} \Rightarrow \frac{1}{\sqrt{3}} = \frac{5}{BC}$$

$$\Rightarrow BC = 5\sqrt{3} \text{ metre}$$

S74. Ans.(a)

Sol. $5x - 40 = 3x$

$$\rightarrow 5x - 3x = 40$$

$$\rightarrow 2x = 40$$

$$\rightarrow x = 20$$

$$\therefore 2x - 11 = 2 \times 20 - 11$$

$$= 40 - 11 = 29$$

S75. Ans.(b)

Sol. Time taken = 5 hours

$$\therefore \text{Distance covered} = 6 \times 5 = 30 \text{ kms}$$

\therefore Time required to cover 30 kms at the speed of 8 km/hr.

$$= \frac{\text{distance}}{\text{speed}} = \frac{30}{8} \rightarrow \frac{15}{4}$$

$$= 3 \frac{3}{4} \text{ hours}$$

S76. Ans.(A)

Sol. $20 \times 16 \text{ women} \equiv 16 \times 15 \text{ men}$

$$\rightarrow 4 \text{ women} \equiv 3 \text{ men}$$

$$\rightarrow \frac{\text{Men}}{\text{Women}} = \frac{4}{3}$$

Hence, working capacity of man: woman = 4: 3

S77. Ans.(c)

Sol. Let the principal be x.

$$\text{Time} = \frac{SI \times 100}{\text{Principal} \times \text{Rate}}$$

$$\rightarrow \frac{x \times 100 \times 3}{x \times 50} = 6 \text{ years } [\because 16 \frac{2}{3} \% = \frac{50}{3}]$$

S78. Ans.(d)

Sol. Water in 100 kg fresh fruit = 68%

Water in dry fruit = 20%

Decrease = 48%

\therefore Dry fruit obtained

$$= 100 - 48 = 52 \text{ kg.}$$

S79. Ans.(c)

Sol. Boys: Girls = 5: 6

Sum of the terms of ratio = 5 + 6 = 11

∴ Number of girls

$$= \frac{6}{11} \times 55 = 30$$

S80. Ans.(d)

Sol. Total sum of five numbers = $27 \times 5 = 135$

Total sum of four numbers = $25 \times 4 = 100$

∴ Required number = $135 - 100 = 35$

S81. Ans.(b)

Sol. $3600 = 2^4 \times 3^2 \times 5^2$

⇒ Number of factors of 3600 =

$$(4 + 1)(2 + 1)(2 + 1) = 45$$

S82. Ans.(d)

Sol. $7 \div [5 + 1 \div 2 - \{4 + (4 \text{ of } 2 \div 4) + (5 \div 5 \text{ of } 2)\}]$

$$= 7 \div [5 + 1 \div 2 - \{4 + (8 \div 4) + (5 \div 10)\}]$$

$$= 7 \div [5 + 0.5 - \{4 + 2 + 0.5\}]$$

$$= 7 \div [5 + 0.5 - 6.5]$$

$$= 7 \div [-1]$$

$$= -7$$

S83. Ans.(a)

Sol. All the prime numbers between 21 to 50 = 23, 29, 31, 37, 41, 43 and 47

⇒ Desired average

$$= \frac{23 + 29 + 31 + 37 + 41 + 43 + 47}{7} \rightarrow 35.85 \approx 35.9$$

S84. Ans.(d)

Sol. $\frac{1}{2} : \frac{2}{3} : \frac{3}{4} \Rightarrow 6:8:9$

Let the numbers 6k, 8k and 9k

According to the question

$$9k - 6k = 27$$

$$\Rightarrow k = 9$$

$$\text{Smallest number (6k)} = 6 \times 9 = 54$$

S85. Ans.(c)

Sol. Amount of other components in the mixture is the same in initial and final mixture.

90% of initial (I) = 75% of final (F)

$$I/F = 5/6$$

$$I = 5K, F = 6K$$

Amount of Sulphuric acid to be added = 1k

ATQ,

$$5k = 20L$$

$$\therefore 1k = 4L$$

S86. Ans.(b)

Sol. Let marks scored by B = k

⇒ Marks scored by A = k + 8

According to the question

$$(k + 8) = \frac{55}{100} \times (k + k + 8)$$

$$20k + 160 = 22k + 88$$

$$\Rightarrow k = 36$$

$$\text{Required sum} = \{36 + (36 + 8)\} = 80$$

S87. Ans.(a)

Sol. $15\% = \frac{3}{20}$ and $10\% = \frac{1}{10}$

Let the CP = 20 unit

⇒ SP = 23 unit

According to the question

$$23 \text{ unit} = 1495$$

$$1 \text{ unit} = 65$$

$$20 \text{ unit} = 1300$$

Profit earned (3 unit) = Rs. 195

Now,

$$\text{CP of 2nd article (10 unit)} = 1300$$

$$\text{Profit (1 unit)} = 130$$

$$\text{SP of 2nd article (11 unit)} = 1430$$

$$\text{Total profit earned} = 195 + 130 = \text{Rs. } 325$$

S88. Ans.(b)

Sol. Simple Interest earned in 20 months

$$= 520 - 480 = \text{Rs. } 40$$

Simple interest earned in 1 month = Rs. 2

Simple interest earned in 12 months (1 year) = Rs. 24

$$\text{Desired rate of interest} = \frac{24}{480} \times 100$$

$$= 5\%$$

S89. Ans.(c)

Sol. Old : New

Radius 2 : 5

Height 5 : 4

Volume 20 : 100

$$\text{Required percentage} = \frac{100 - 20}{20} \times 100 = 400\%$$

S90. Ans.(d)

Sol. Put $a = b = 2$ and $c = 4$

$$a + b + c = 8 \Rightarrow 2 + 2 + 4 = 8$$

$$\Rightarrow 8 = 8$$

$$ab + bc + ca = 20$$

$$\Rightarrow 2 \times 2 + 2 \times 4 + 4 \times 2 = 20$$

$$\Rightarrow 20 = 20$$

Both the conditions are satisfied

$$a^3 + b^3 + c^3 - 3abc$$

$$\Rightarrow 2^3 + 2^3 + 4^3 - 3(2 \times 2 \times 4)$$

$$\Rightarrow 32$$



S91. Ans.(c)

Sol. Distance covered by train in 15 hours = Speed \times Time
= (60×15) km. = 900 km.

Required speed to cover 900 km. in 12 hours = $\frac{900}{12}$
= 75 kmph

S92. Ans.(d)

Sol. Clearly, repetition takes place for each set of four terms.

Hence, 507th term will be 2.

507, when divided by 4, gives 3 as remainder and 3rd term is 2.

So, our ans. Is 2

S93. Ans.(c)

Sol. $a + b = 12$, $ab = 22$

$\therefore a^2 + b^2 = (a + b)^2 - 2ab$

= $(12)^2 - 2 \times 22$

= $144 - 44 \rightarrow 100$

S94. Ans.(b)

Sol.

$$\cos^2 \alpha + \cos^2 \beta = 2$$

$$\Rightarrow 1 - \sin^2 \alpha + 1 - \sin^2 \beta = 2$$

$$\Rightarrow \sin^2 \alpha + \sin^2 \beta = 0$$

$$\Rightarrow \sin^2 \alpha = 0 \text{ \& \; } \sin^2 \beta = 0$$

$$\Rightarrow \sin \alpha = \sin \beta = 0$$

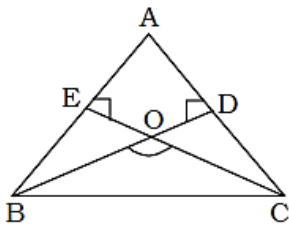
$$\Rightarrow \alpha = \beta = 0$$

$$\therefore \tan^3 \alpha + \sin^5 \beta = 0$$

Or simply put $\alpha = \beta = 0$, since we know $\cos 0^\circ = 1$, which satisfy the given equation.

S95. Ans.(d)

Sol.



$$\angle BOC = 180^\circ - \angle A$$

$$\Rightarrow \angle A = 180^\circ - \angle BOC$$

$$= 180^\circ - 100^\circ = 80^\circ$$

S96. Ans.(a)

Sol. Area of square = $\frac{1}{2} \times (\text{diagonal})^2$

$$= \frac{1}{2} \times 15\sqrt{2} \times 15\sqrt{2} = 225 \text{ sq. cm}$$

S97. Ans.(a)

Sol. Interest = $(81 - 72) = 9$ Let the time be t years. Then,

$$9 = \frac{72 \times 25 \times t}{4 \times 100}$$

$$t = \frac{9 \times 400}{72 \times 25} = 2 \text{ years}$$

S98. Ans.(d)

Sol. C.P. of 40kg of mixture

$$= \text{Rs. } (15 \times 29 + 25 \times 20)$$

$$= \text{Rs. } (435 + 500) = \text{Rs. } 935$$

$$\text{S.P. of 40kg of mixture} = 27 \times 40 = \text{Rs. } 1080$$

$$\therefore \text{Gain} = 1080 - 935 = \text{Rs. } 145$$

S99. Ans.(b)

Sol. If the total number of students be x , Now ATQ,

$$\rightarrow 7\% \text{ of } x = 259$$

$$\rightarrow \frac{x \times 7}{100} = 259$$

$$\rightarrow x = \frac{259 \times 100}{7} = 3700$$

S100. Ans.(a)

Sol. $a : c = (a : b) \times (b : c)$

$$\rightarrow \frac{7}{9} \times \frac{15}{7} = \frac{15}{9} \rightarrow 5 : 3$$

S101. Ans.(a)

Sol.

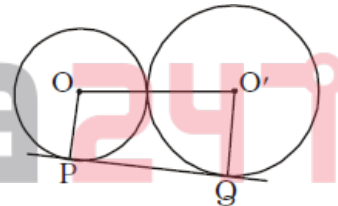
$$\frac{V_1}{V_2} = \frac{\frac{1}{3} \pi r_1^2 h_1}{\frac{1}{3} \pi r_2^2 h_2} = \left(\frac{r_1}{r_2} \right)^2 \times \frac{h_1}{h_2}$$

$$\Rightarrow \frac{2}{3} = \left(\frac{1}{2} \right)^2 \times \frac{h_1}{h_2}$$

$$\Rightarrow \frac{h_1}{h_2} = \frac{2}{3} \times 4 = \frac{8}{3} = 8 : 3$$

S102. Ans.(b)

Sol.



$$PQ = \sqrt{(OO')^2 - (r_2 - r_1)^2}$$

$$= \sqrt{(13)^2 - (8 - 3)^2}$$

$$= \sqrt{169 - 25}$$

$$= \sqrt{144} = 12 \text{ cm.}$$

S103. Ans.(c)

Sol. $\sin 27^\circ = \sin (90^\circ - 63^\circ)$

$$\sin 27^\circ = \cos 63^\circ$$

$$[\because \sin (90^\circ - \theta) = \cos \theta]$$

$$\therefore \left(\frac{\sin 27^\circ}{\cos 63^\circ} \right)^2 + \left(\frac{\cos 63^\circ}{\sin 27^\circ} \right)^2$$

$$= \left(\frac{\sin 27^\circ}{\sin 27^\circ} \right)^2 + \left(\frac{\sin 27^\circ}{\sin 27^\circ} \right)^2$$

$$= 1 + 1 \rightarrow 2$$

S104. Ans.(c)

Sol. $x = 12$ and $y = 4$

$$\therefore (x + y)^{\frac{x}{y}} = (12 + 4)^{\frac{12}{4}} = (16)^3 \\ = 16 \times 16 \times 16 = 4096$$

S105. Ans.(d)

Sol. Ratio of the speed of A, B and C = 6: 3: 1

→ Ratio of the time taken

$$= \frac{1}{6} : \frac{1}{3} : 1$$

$$= 1: 2: 6$$

∴ Time taken by A

$$= \frac{72}{6}$$

$$= 12 \text{ minutes}$$

S106. Ans.(b)

Sol. Man: boy = 3: 1

$$\therefore \text{Boy's share} = \frac{1}{4} * 800 = \text{Rs. } 200$$

$$\therefore \text{The daily wages of boy} = \text{Rs. } \left(\frac{200}{5}\right)$$

$$= \text{Rs. } 40$$

S107. Ans.(d)

Sol. Let the principal be Rs. 100

Interest = Rs. 10

Actual principal = Rs. 90

∴ Interest on Rs. 90 = Rs. 10

∴ Interest on Rs. 100

$$= \frac{10}{90} * 100$$

$$= \frac{100}{9} \rightarrow 11\frac{1}{9}\%$$

S108. Ans.(a)

Sol. If x and y be the cost price of two goats, then,

80% of $x = 144\%$ of y

$$\frac{x}{y} = \frac{144}{80} \rightarrow \frac{9}{5}$$

i.e., $x: y = 9: 5$

Sum of the ratios = $9 + 5 = 14$

∴ Cost of first goat

$$= \text{Rs. } \left(\frac{9}{14} * 1008\right)$$

$$= \text{Rs. } 648$$

S109. Ans.(c)

Sol. If the number be x , then

ATQ,

$$\rightarrow x * \frac{245}{200} = 98$$

$$\rightarrow x = \frac{98 * 200}{245} = 80$$

S110. Ans.(d)

Sol. required number = sum of six numbers – sum of five numbers

$$= 6 \times 20 - 15 \times 5$$

$$= 120 - 75 = 45$$

S111. Ans.(d)

Sol. Equilateral Triangle

S112. Ans.(b)

Sol. We know that

$$\text{If } x + \frac{1}{x} = k, \text{ then } = x^2 + \frac{1}{x^2} = k^2 - 2$$

Here,

$$\rightarrow a + \frac{1}{a} = 3$$

$$\Rightarrow a^2 + \frac{1}{a^2} = 3^2 - 2 = 7$$

$$\Rightarrow a^4 + \frac{1}{a^4} = 7^2 - 2 = 47$$

S113. Ans.(c)

Sol. Given, $\sec 4\theta = \operatorname{cosec}(\theta + 20^\circ)$

Clearly,

$$(4\theta + \theta + 20) = 90$$

$$5\theta = 70$$

$$\theta = 14^\circ$$

S114. Ans.(b)

Sol. Let the speed of the woman = w km/h

$$\Rightarrow (44 - 8) \times 15 = (44 + w) \times 10$$

$$\Rightarrow 540 = 440 + 10w$$

$$\Rightarrow w = 10 \text{ km/hr.}$$

S115. Ans.(d)

Sol. Let the number of Person = 100 and

H be the desired number of hours.

$$\Rightarrow \text{Remaining persons} = 60$$

According to the question

$$100 \times 34 \times 9 = 60 \times 51 \times H$$

$$\Rightarrow H = 10 \text{ hours}$$

S116. Ans.(c)

Sol.

Difference between CI and SI =

$$\frac{R^2}{100} \% \text{ of Principal}$$

$$\Rightarrow 19.20 = \frac{8^2}{100} \% \text{ of } X$$

$$\Rightarrow X = 3000$$

S117. Ans.(c)

Sol. Let the CP = 100 unit

$$\text{SP of the article} = 100 \times \frac{100 - 29}{100} = 71 \text{ unit}$$

According to the question

$$71 \text{ unit} = 355$$

$$1 \text{ unit} = 5$$

$$100 \text{ unit} = 500$$

$$\text{Desired Sale price} = 500 \times \frac{121}{100}$$

$$= 605$$

S118. Ans.(a)

Sol.

Original : New

Price 25 : 34

Quantity 10 : 7

Expenditure 250 : 238

Now, $\frac{250-238}{250} \times 100 = 4.8\%$

S119. Ans.(a)

Sol.

Let $a = 5k$ and $b = 7k$

$(5a - 3b) : (4a - 2b) \Rightarrow$

$\{5(5k) - 3(7k)\} : \{4(5k) - 2(7k)\}$

$\Rightarrow 4k : 6k$

$\Rightarrow 2:3$

S220. Ans.(b)

Sol. Average of n even numbers is always $(n+1)$.

S121. Ans.(b)

Sol. Let the number be x .

ATQ,
 $\frac{x+12}{6} = 112$

$\Rightarrow x + 12 = 672$

$\Rightarrow x = 672 - 12 = 660$

\therefore Correct answer = $\frac{660}{6} + 12$

$= 110 + 12 = 122$

S122. Ans.(c)

Sol. Let the numbers be $12x$ and $12y$ where x and y are prime to each other.

\therefore LCM = $12xy$

$\therefore 12xy = 924$

$\Rightarrow xy = 77$

\therefore Possible pairs = $(1, 77)$ and $(7, 11)$

S123. Ans.(c)

Sol. $\frac{(2.644)^2 - (2.356)^2}{0.288}$

$\Rightarrow \frac{5 \times 0.288}{0.288} [\text{By using } a^2 - b^2 = (a - b)(a + b)]$

$\Rightarrow 5$

S124. Ans.(b)

Sol. Let the average cost of each book bought (of 64 books) be x .

According to the question,

$64 \times x - 50(x + 1) = 76$

$64x - 50x - 50 = 76$

$14x = 76 + 50 \Rightarrow 126$

$x = 9$

\therefore Required average price

$= 9 + 1 = 10$

S125. Ans.(d)

Sol. $25^{2.5} : 5^3$

$\rightarrow (5^2)^{2.5} : 5^3$

$\rightarrow 5^5 : 5^3$

$\rightarrow 5^2 : 1$

$\rightarrow 25 : 1$

S126. Ans.(b)

Sol.

Savings = $100\% - 66\frac{2}{3}\%$

$= 33\frac{1}{3}\% \therefore 33\frac{1}{3}\% \equiv ₹ 1200$

$\therefore 100\% \equiv \frac{1200}{100} \times 3 \times 100$

$= ₹ 3600$

\therefore Expenses = $3600 - 1200$

$= ₹ 2400$

S127. Ans.(d)

Sol. Loss on SP = 10%

$10\% = \frac{1}{10}$

Where 10 is SP and 1 is loss, So CP should be 11

\therefore Loss on cost price = $\frac{1}{11} \rightarrow 9\frac{1}{11}\%$

S128. Ans.(a)

Sol.

Let the cost price be ₹ 100.

\therefore Marked price = ₹ 150

S.P. = $\frac{150 \times 80}{100} = ₹ 120$

when S.P. = 120, C.P. = 100

when S.P. = 840

C.P. = $\frac{100}{120} \times 840 = ₹ 700$

S129. Ans.(c)

Sol.

Rate = $\frac{\text{S.I.} \times 100}{\text{Principal} \times \text{Time}}$

$= \frac{\frac{1}{100} \times 100}{1 \times \frac{1}{12}} = 12\% \text{ p.a.}$

S130. Ans.(a)

Sol. Let the length of train be x meter

Speed = 90 km/hr.

= 25 meter /sec.

\therefore Distance covered in 60 sec.

= $25 \times 60 = 1500$ meters

Now, according to question,

$2x = 1500$

$\therefore x = 750$ meter

S131. Ans.(b)

Sol. $z = 3, y = 5, x = 1$

Satisfies

$$1^5 = 1, 5^3 = 125 \text{ \& } 3^5 = 243$$

$$9x + 10y - 18z = 9 + 50 - 54 = 5$$

S132. Ans.(b)

$$\text{Sol. } \frac{2\pi rh}{2\pi r^2} = \frac{2}{1}$$

$$h/r = 2/1; h = 2r$$

$$2\pi rh + 2\pi r^2 = 23100$$

$$4\pi r^2 + 2\pi r^2 = 23100 [h = 2r]$$

$$6\pi r^2 = 23100$$

$$r^2 = \frac{23100 \times 7}{22 \times 6}$$

$$r = 35, h = 70$$

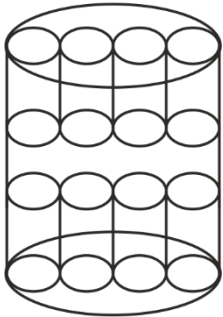
$$\text{Volume of cylinder} = \pi r^2 h$$

$$= \frac{22}{7} \times 35 \times 35 \times 70$$

$$= 269500 \text{ cm}^3$$

S133. Ans.(b)

Sol. Total surface area of the remaining part



$$= \text{TSA} + 8 \times \text{C.S.A}$$

$$= 2\pi r (r + h) + 8 \times 2\pi r_1 h_1$$

$$= 2\pi [14(14 + 15) + 8 \times 3.5 \times 5]$$

$$= 2\pi [14 \times 29 + 140]$$

$$= 2 \times \frac{22}{7} \times 546 = 3432$$

S134. Ans.(a)

Sol. Height of cylinder in bullet = $3.5 - 2.1 = 1.4$

$$\text{Total bullets} = \frac{\text{Volume of solid cylinder}}{\text{Volume of cylinder in Bullet + Volume of hemisphere}}$$

$$= \frac{\pi \times (7)^2 \times 21}{\pi \times (2.1)^2 \times 1.4 + \frac{2}{3} \times \pi \times (2.1)^3} \cong 83$$

S135. Ans.(b)

Sol. Let $q = r = 0$

$$p^3 = 4$$

$$a = 0$$

$$b = p$$

$$c = p$$

$$a^3 + b^3 + c^3 - 3abc$$

$$= 0 + p^3 + p^3 - 0$$

$$= 8$$

S136. Ans.(a)

Sol. Let $a = b = 1$

$$1 + 1 = \frac{1^2}{1^2} (4 \times 1 - 1 - 1)$$

$$2 = 2 \text{ (satisfies)}$$

$$(1)^4 + (1)^4 = 2$$

S137. Ans.(b)

Sol.

$$\begin{array}{ccc|ccc|ccc} a^3 + b^3 = 91 & & & b^3 + c^3 = 72 & & & a^3 + c^3 = 35 \\ \downarrow & \downarrow & & \downarrow & \downarrow & & \downarrow & \downarrow \\ 27 & 64 & & 64 & 8 & & 27 & 8 \end{array}$$

$$a = 3, b = 4, c = 2$$

$$a + b + c = 9$$

$$3 + 4 + 2 = 9$$

$$9 = 9 \text{ (Satisfies)}$$

$$abc = 3 \times 4 \times 2 = 24$$

S138. Ans.(c)

$$\text{Sol. } x^3 - 4x^2 + 19 = 6(x - 1)$$

$$x^2(x - 4) = 6x - 25$$

$$x^2(x - 4) = 6(x - 4) - 1$$

$$x^2 = 6 - \frac{1}{x - 4}$$

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

S139. Ans.(b)

Sol. $xy = 12$

$$(x, y) \rightarrow (4, 3)$$

$$(x, y) \rightarrow (6, 2)$$

Verifying

$$x^4 + y^4 + (x^2 + y^2) [x, y \rightarrow 4, 3]$$

$$= 256 + 81 + 144$$

$$= 481 \text{ (satisfied)}$$

$$x^2 - xy + y^2 = (4)^2 - 4 \times 3 + (3)^2$$

$$= 16 - 12 + 9$$

$$= 13$$

S140. Ans.(b)

$$\text{Sol. } y^{x+z} = 1024 \Rightarrow 2^{10} \text{ or } 4^5$$

$$z^{x+y} = 729 \Rightarrow 9^3 \text{ or } 3^6$$

$$x^{y+z} = 1 \Rightarrow \text{implies } x = 1$$

$$\text{Let } z = 9 \text{ \& } y = 2$$

$$z^{x+y} = 9^{1+3} \Rightarrow 729 \text{ [Satisfies]}$$

$$y^{x+z} = 2^{1+9} \Rightarrow 1024$$

$$(z + 1)^{y+x+1} = (9 + 1)^{2+1+1}$$

$$= 10^4 = 10000$$

S141. Ans.(a)

Sol.

Let man's salary 1000

$$1^{\text{st}} \text{ Children Amount} = 1000 \times \frac{10}{100} = 100$$

$$2^{\text{nd}} \text{ Children Amount} = 1000 \times \frac{18}{100} = 180$$

$$3^{\text{rd}} \text{ Children Amount} = 1000 \times \frac{22}{100} = 220$$

$$\text{Amount left with man} = 1000 - 500 = 500$$

Amount left with children after spending

$$= 500 \left[100 \times \frac{40}{100} + 180 \times \frac{60}{100} + 220 \times \frac{25}{100} \right]$$

$$= 500 - (40 + 108 + 55)$$

$$= 297$$

$$(500 - 297)r \Rightarrow 1015$$

$$203r \rightarrow 1015$$

$$1000r \rightarrow 5000 \text{ Rs.}$$

S142. Ans.(d)

Sol.

Total students $\Rightarrow x$

Student in hostel A $\Rightarrow x/3$

Students in hostel B $\Rightarrow 2x/3$

$$\frac{x}{3} + 20 = \frac{x}{2}$$

$$x = 120$$

$$\text{Required \%} = \frac{\frac{120}{8} - 20}{120} \times 100$$

$$= \frac{100}{6} = 16.67\%$$

S143. Ans.(d)

Sol.

He bought $\Rightarrow 1000 \left(1 + \frac{x}{100}\right) \text{ gm}$

Sells only 800 gm for every 1000 gm

S.P = 10% above cost price

So, he sells only 800 $\left(\frac{10}{11}\right) \text{ gms}$ instead of 800 gms

for every 1000 $\left(1 + \frac{x}{100}\right) \text{ gm}$ bought which earns him a p

$$800 \times \left(\frac{10}{11}\right) \left(\frac{165}{100}\right) = 1000 \left(1 + \frac{x}{100}\right)$$

$$1200 = 1000 + 10x$$

$$x = 20\%$$

S144. Ans.(b)

Sol.

Let 2014 $\rightarrow 100$

Production in year 2019

$$= 100 \times \frac{115}{100} \times \frac{115}{100} \times \frac{80}{100} \times \frac{125}{100} \times \frac{125}{100}$$

$$\cong 165.31$$

$$\% \text{ change} = \frac{165.31 - 100}{100} \times 100$$

$$= 65.31\%$$

S145. Ans.(d)

Sol.

$$\text{Ist candle burning rate per hour} = \frac{1}{8}$$

$$\text{IInd candle burning rate} = \frac{1}{6}$$

Let after x hours

There ratio is 2 : 1

ATQ —

$$\frac{1 - \frac{x}{8}}{1 - \frac{x}{6}} = \frac{2}{1}$$

$$\frac{\frac{8-x}{8}}{\frac{6-x}{6}} = \frac{1}{2}$$

$$\frac{(8-x) \times 6}{(6-x) \times 8} = \frac{2}{1}$$

$$24 - 3x = 48 - 8x$$

$$5x = 24$$

$$x = \frac{24}{5} = 4 \frac{4}{5} \text{ hours}$$

$$= 4 \text{ hours } \frac{4}{5} \times 60 \text{ min}$$

$$= 4 \text{ hours } 48 \text{ min}$$

S146. Ans.(a)

Sol.

Laxman : Gopal

$$3 : 4$$

Last year : this year

Laxman's salary 4 : 5

$$4r \rightarrow 3$$

$$1r \rightarrow \frac{3}{4}$$

$$\text{Laxman's this year salary} \Rightarrow 5r \rightarrow \frac{15}{4}$$

Gopal salary

Last year : this year

$$2 : 3$$

$$2r \rightarrow 4$$

$$1r \rightarrow 2$$

$$3r \rightarrow 6$$

Laxman : Gopal \leftarrow This year salary

$$\frac{15}{4} : 6$$

$$15 : 6 \times 4$$

$$5 : 8$$

$$13r \rightarrow 4160$$

$$1r \rightarrow 320$$

$$\text{Laxman's salary} = 5 \times 320 = 1600 \text{ Rs.}$$

S147. Ans.(a)

Sol.

Boys : Girls $\Rightarrow 5 : 3$

Boys & Girls added in the ratio of $\Rightarrow 5 : 7$

New Ratio $\Rightarrow 7 : 5$

$12r \rightarrow 1200$

$1r \rightarrow 100$

$7r \rightarrow 700$

$5r \rightarrow 500$

New no. of boys = 700

New no. of girls = 500

ATQ

$5x + 5y = 700$

$3x + 7y = 500$

$x + y = 140 \times 3$

$3x + 7y = 500$

$3x + 3y = 420$

$3x + 7y = 500$

$4y = 80$

$y = 20$

No. of students before = $1200 - 240 = 960$

S148. Ans.(a)

Sol.

$6A = 7B = 8C$

$A = \frac{7}{6}B, C = \frac{7}{8}B$

Speeds ratio =

$5 \times \frac{7}{6} : 6 : 7 \times \frac{7}{8}$

$\Rightarrow 140 : 144 : 147$

S149. Ans.(d)

Sol.

Fare $\rightarrow 9 : 7 : 2$

Number of passenger $\rightarrow 5 : 3 : 2$

$2r \rightarrow 200$ passenger

$1r \rightarrow 100$ passenger

1st class passenger = $5 \times 100 = 500$

2nd class passenger = $3 \times 100 = 300$

Let fares of three classes are $9x, 7x, 2x$

ATQ,

$9x \times 500 + 7x \times 300 + 2x \times 200 = 98000$

$4500x + 2100x + 400x = 98000$

$7000x = 98000$

$x = 14$

Fare of 1 first class ticket = $9 \times 14 = 126$ Rs.

S150. Ans.(b)

Sol.

H : So $\rightarrow 1 : 1$

S : Geo $\rightarrow 2 : 3$

History : Pil $\rightarrow 1 : 2$

$H : S : G : P \rightarrow 2 : 2 : 3 : 4$

$\Rightarrow 2x, 2x, 3x, 4x$

Total marks $\Rightarrow 2x + 2x + 3x + 4x$

$\Rightarrow 11x$

Maximum marks in each subject are equal

\therefore Aggregate % = $\frac{11}{4}x$

ATQ,

$\frac{11}{4}x = 55$

$x = 20$

History $\rightarrow 40$

Sociology $\rightarrow 40$

Geography $\rightarrow 60$

Philosophy $\rightarrow 80$

Hence in two subjects he scored more than equal to 60%

S151. Ans.(b)

Sol.

Sum of ages = 42 n

$\frac{\text{sum of ages} + 20}{n} = 43$

$42n + 20 = 43n$

$n = 20$

S152. Ans.(a)

Sol.

Average Rain fall

$\frac{6 \times 2 + 5 \times 4 + 4 \times 10 + 6 \times 2}{12}$

$= \frac{12 + 20 + 40 + 12}{12}$

$= \frac{84}{12} = 7$

S153. Ans.(c)

Sol.

Total no. of people on Saturday & Sunday

$= 400 \times 7 - 300 \times 3 - 250 \times 2$

$= 2800 - 900 - 500$

$= 1400$

Average no. of people on Sunday & Saturday = $1400/2$

$= 700$

S154. Ans.(b)

Sol.

Using Alligation

Senior	Junior
18000	12000

15500

$$\frac{3500}{7} : \frac{2500}{5}$$

$$7 : 5$$

Total Employees = 7 + 5 = 12r

Junior Employees = 5r

$$\text{Fraction} = \frac{5}{12}$$

S155. Ans.(c)

Sol.

$$A + B + C = 12000 \times 3 = 36000 \quad \dots(i)$$

$$B + C + D = 15000 \times 3 = 45000 \quad \dots(ii)$$

From (i) & (ii)

$$D - A = 9000$$

$$D = 2A \text{ (Given)}$$

$$2A - A = 9000$$

$$A = 9000$$

$$9000 + B + C = 36000$$

$$B + C = 36000 - 9000$$

$$B + C = 27000$$

$$\text{Average} = \frac{B + C}{2} = \frac{27000}{2}$$

$$= 13500 \text{ Rs.}$$

S156. Ans.(a)

Sol.

Earning from autorickshaw for 1 round = 4 × 12 = 48 Rs.

Earning from Maxi cab for 1 round = 10 × $\frac{80}{100}$ × 15 = 120 Rs.

Earning from minibus = 20 × $\frac{75}{100}$ × 8 = 120 Rs.

$$\text{Average earning} = \frac{120 + 120 + 48}{3} = \frac{288}{3} = 96 \text{ Rs.}$$



S157. Ans.(b)

Sol.

Total no. of people per week = 40 × 7 = 280

Let n be no. of holidays

$$(7 - n) \times (40 + 16) = 280$$

$$(7 - n) \times 56 = 280$$

$$7 - n = 5$$

$$n = 2$$

No. of holidays = 2

S158. Ans.(a)

Sol.

Efficiency of A + B + C = $\frac{1}{8}$ days

Efficiency of A + C = $\frac{1}{12}$ days

$$\text{Efficiency of B} = \frac{1}{8} - \frac{1}{12} = \frac{3-2}{24} = \frac{1}{24} \text{ days}$$

Efficiency of A + B = $\frac{3}{40}$

$$\text{Efficiency of A} = \frac{3}{40} - \frac{1}{24} = \frac{9-5}{120} = \frac{4}{120} = \frac{1}{30}$$

$$\text{Efficiency of C} = \frac{1}{12} - \frac{1}{30} = \frac{10-4}{120} = \frac{6}{120} = \frac{1}{20}$$

Money will be divided in the ratio

$$= \frac{1}{30} : \frac{1}{24} : \frac{1}{20} = 4 : 5 : 6$$

S159. Ans.(c)

Sol.

	Total work	Efficiency
A	10	6

60

B	12	5
---	----	---

$$3 \text{ days work of (A + B)} = 11 \times 3 = 33$$

$$\text{Remaining work} = 60 - 33 = 27$$

$$2 \text{ days work of A} = 2 \times 6 = 12$$

$$\text{Remaining work} = 27 - 12 = 15$$

$$2 \times \text{Efficiency of A} + 2 \times \text{Efficiency of C} = 15$$

$$2 \times 6 + 2 \times C = 15$$

$$C = 3/2$$

$$C \text{ will complete the whole work in} = \frac{60}{3/2} = 40 \text{ days}$$

S160. Ans.(b)

Sol.

Working efficiency of man = $\frac{1}{5}$

Work done by man in 2 hr 20 minutes, i.e. $\frac{7}{3}$ hours = $\frac{7}{15}$

$$\text{Remaining work} = 1 - \frac{7}{15} = \frac{8}{15}$$

$\frac{8}{15}$ work is done by women in $\rightarrow \frac{5}{3}$ hours \rightarrow 100 minutes

$$1 \text{ work will be done by women in} = 100 \times \frac{15}{8}$$

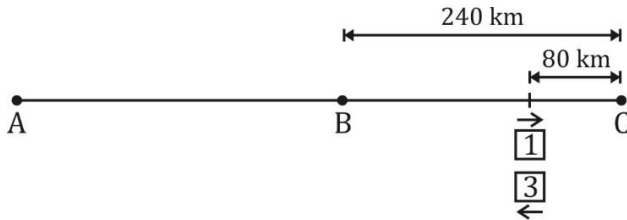
$$= 187.5 \text{ minutes} \cong 187$$

1 work will be done by man in = 300 minutes

Women is faster by = 300 - 187 = 113 = 1 hour 53 minutes

S161. Ans.(a)

Sol.



Let speeds of car be V_1, V_2 & V_3

$$\frac{AB}{V_1} - \frac{AB}{V_2} = \frac{AB}{V_2} - \frac{AB}{V_3} \dots (i)$$

$$\frac{240}{V_1} - \frac{240}{V_2} = 1 \dots (ii)$$

In BC car 1 travels 160 km before meeting Car 3 & Car 3 travels

320 km before meeting car 1

$$\therefore V_3 = 2V_1 \left[\frac{320}{V_3} = \frac{160}{V_1} \right]$$

From equation (i)

$$\frac{1}{V_1} - \frac{1}{V_2} = \frac{1}{V_2} - \frac{1}{2V_1}$$

$$\frac{V_1}{V_1} + \frac{2V_1}{V_2} = \frac{V_2}{V_2} + \frac{V_1}{V_2}$$

$$\frac{V_1}{2V_1} = \frac{V_2}{V_2}, V_2 = \frac{4}{3}V_1$$

From (ii)

$$\frac{240}{V_1} - \frac{240}{\frac{4}{3}V_1} = 1, \frac{240}{V_1} - \frac{180}{V_1} = 1$$

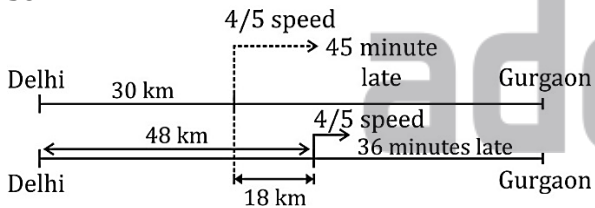
$$V_1 = 60$$

$$V_3 = 2 \times V_1 = 2 \times 60 = 120$$

$$\text{Difference} = 120 - 60 = 60$$

S162. Ans.(b)

Sol.



18 km travelled with $\frac{4}{5}$ speed - 18 km travelled with usual

speed = 45 - 36

$$\frac{18}{\frac{4}{5}s} - \frac{18}{s} = \frac{9}{60}$$

$$18 \left(\frac{5-4}{4s} \right) = \frac{9}{60}$$

$$\frac{18 \times 1}{4s} = \frac{9}{60}$$

$$s = 30 \text{ km/hr}$$

$$d = 30 \times T$$

$$\frac{30}{30} + \frac{(d-30)}{30 \times \frac{4}{5}} = T + \frac{45}{60}$$

$$1 + \frac{(d-30)}{24} = \frac{d}{30} + \frac{3}{4}$$

$$d = 120 \text{ km}$$

S163. Ans.(d)

Sol. Let the distance be x miles.

When Tom meets Jerry

distance travelled by Tom = $x + 9$

distance travelled by Jerry = $x - 9$

$$\frac{x+9}{T} = \frac{x-9}{J}, \frac{T}{J} = \frac{x+9}{x-9}$$

When Jerry meets Bill.

Distance travelled by Jerry = $x + 7$

Distance travelled by Bill = $x - 7$

$$\frac{x+7}{J} = \frac{x-7}{B}, \frac{J}{B} = \frac{x+7}{x-7}$$

$$3T = 5B \text{ [Given]}$$

$$\frac{T}{B} = \frac{5}{3}$$

$$\frac{T}{J} \times \frac{J}{B} = \frac{5}{3}$$

$$\frac{(x+9)}{(x-9)} \times \frac{(x+7)}{(x-7)} = \frac{5}{3}$$

$$5(x-9)(x-7) = 3(x+9)(x+7)$$

$$5x^2 - 80x + 315 = 3x^2 + 48x + 189$$

$$2x^2 - 128x + 126 = 0$$

$$x^2 - 64x + 63 = 0$$

$$x = 63 \text{ or } 1$$

$$x = 63$$

S164. Ans.(c)

Sol. Ratio of distance covered by second train to first train = 125 : 1 = 5 : 4

Time is same

So, ratio of speeds = 5 : 4

Speed of second train = $40 \times \frac{5}{4} = 50 \text{ km/hr}$

Distance covered by 1st train in half an hour = 20 km

Let 3rd train takes 't' hours to overtake 1st train & speed of

3rd train $\rightarrow x \text{ km/hr}$

$$t = \frac{20}{x-40} \dots (ii)$$

Distance covered by 2nd train in half an hour = 25 km

$$t + \frac{3}{2} = \frac{25}{x-50} \dots (i)$$

From (i) & (ii)

$$x = 60 \text{ km/hr}$$

S165. Ans.(b)

Sol. Total distance travelled by both the trains before meeting = D

This distance will be covered in proportion of their speeds.

3 hours after meeting distance travelled by

$$A = 3 \times S_A$$

$$B = 3 \times S_B$$

$$3S_A + 3S_B = 675$$

$$S_A + S_B = 225$$

Remaining distance to be covered by 1st train = $\frac{DS_B}{S_A + S_B}$

$$\text{Time taken} \Rightarrow \frac{DS_B}{(S_A + S_B)S_A} = 16 \dots (i)$$

Remaining Distance covered by second train = $\frac{DS_A}{(S_A + S_B)}$

Time taken $\Rightarrow \frac{DS_A}{(S_A + S_B)S_A} = 25 \dots (ii)$

Dividing (i) by (ii)

$$\frac{S_A^2}{S_B^2} = \frac{25}{16}$$

$$S_A = \frac{5}{4}S_B, S_A + \frac{4}{5}S_A = 225$$

$$S_A = 125$$

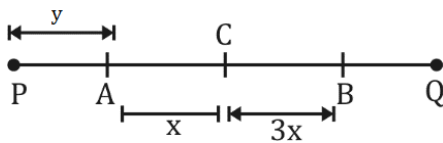
$$S_B = 100$$

From (i)

$$\text{Time} = \frac{D}{S_A} = 16 \times \frac{225}{100} = 36 \text{ h}$$

S166. Ans.(b)

Sol.



Speed of Bus $\rightarrow b$

Speed of Man $\rightarrow m$

When the bus goes from P to A, the man goes from C to A

Time taken by both are equal

$$\therefore \frac{y}{b} = \frac{x}{m}$$

$$\frac{b}{m} = \frac{y}{x} \dots (1)$$

When Bus goes from P to B, the man goes from C to B,

Again time taken by both are equal.

$$\frac{y + x + 3x}{b} = \frac{3x}{m}$$

$$\frac{b}{m} = \frac{y + x + 3x}{3x} \dots (2)$$

From (1) & (2)

$$\frac{y}{x} = \frac{4x + y}{3x}$$

$$3y = 4x + y$$

$$2y = 4x$$

$$y = 2x$$

From (1)

$$\frac{b}{m} = \frac{2x}{x}$$

$$b = 2m$$

S167. Ans.(a)

Sol. Speed of car A = a

Speed of car B = b

Let they meet after t minutes.

Distance travelled by car A before meeting car B = a \times t

Distance travelled by car B before meeting car A = b \times t

Distance travelled by car A after meeting car B = 54 a

Distance travelled by car B after meeting car A = 24 b

Distance travelled by car A after crossing car B = Distance travelled by car B before crossing car A (vice versa)

$$at = 54 b \dots (1)$$

$$bt = 24 a \dots (2)$$

Multiplying (1) & (2)

$$abt^2 = 54 \times 24 \times ab$$

$$t^2 = 54 \times 24$$

$$t = 36 \text{ minutes}$$

Both cars travelled 36 minutes before meeting

Time taken By B = 24 + 36 = 60 minutes.

S168. Ans.(a)

Sol.

Train Car

$$240 \div 210 = 8 \text{ h } 40 \text{ min.}$$

$$180 \div 270 = 9 \text{ h}$$

To travel extra 60 km by car increase in time = 20 min

So, travel extra 240 km by car increase in time = 80 min

$$\therefore 450 \text{ km by car in } = 8 \text{ h } 40 \text{ min} + 80 \text{ min} = 10 \text{ h}$$

$$\text{Speed of car} = 450/10 = 45 \text{ km/h}$$

S169. Ans.(d)

Sol. Let length $\rightarrow x$ meters

speed of B $\rightarrow y$ kmph

$$27 = \frac{x + 500}{(63 + y)}$$

$$\frac{27}{3600} = \frac{x + 0.5}{63 + y} \dots (1)$$

$$\frac{162}{3600} = \frac{x + 0.5}{(36 - y)} \dots (2)$$

Form (1) & (2)

$$\frac{27}{3600} \times (63 + y) = \frac{162}{3600} \times (36 - y)$$

$$63 + y = 6(36 - y)$$

$$63 + y = 378 - 6y$$

$$7y = 315$$

$$y = 45 \text{ km}$$

$$\frac{27}{3600} = \frac{x + 0.5}{108}$$

$$0.81 = x + 0.5$$

$$x = 0.31 \text{ km} = 310 \text{ m}$$

S170. Ans.(b)

Sol.

$$\frac{D}{x - 15} - \frac{D}{x} = 45 \dots (1)$$

$$\frac{D}{x} - \frac{D}{x + 10} = 20 \dots (2)$$

Form (1) & (2)

We will get D = 9750 km.

S171. Ans.(d)

Sol.

$$\text{Rate} = \frac{4800 \times 100}{16000 \times 2}$$

$$R = 15\%$$

$$\text{New rate} = 15 + 5 = 20\%$$

$$2 \text{ year CI on } 20\% = 20 + 20 + \frac{20 \times 20}{100}$$

$$= 44\%$$

Interest obtained Satish

$$= (16000 + 4800) \times \frac{44}{100}$$

$$= 9152 \text{ Rs.}$$

S172. Ans.(d)

Sol.

Let present age of father(F) be x years and age of son(S) is $(50-x)$ years

$$F: S = x: (50 - x)$$

Eight years ago, $x - 8: 42 - x$

$$\text{From question } \rightarrow (x - 8)(42 - x) = 2(x - 8)$$

$$x = 40, \text{ So father's age} = 40, \text{ son} = 10$$

S173. Ans.(c)

Sol.

According to first condition, Ratio of honey and water

$$= \frac{60-m}{n} = \frac{10}{1}$$

$$\Rightarrow m + 10n = 60 \quad \dots(1)$$

According to second condition, Ratio of honey and water

$$= \frac{60-2m}{n} = \frac{8}{1}$$

$$\Rightarrow m + 4n = 30 \quad \dots(2)$$

Solving eq. (1) and (2),

$$m = 10, n = 5$$

$$\therefore m + n = 15$$

S174. Ans.(c)

Sol.

Amount received

$$= 3,25,000 \times \frac{85}{100} \times \frac{90}{100}$$

$$= \text{Rs. } 2,48,625$$

$$\therefore \text{Required difference} = 76,375$$

S175. Ans.(a)

Sol.

Let money borrowed by Nitin was Rs. P

$$\therefore P \times 6 \times 3 + P \times 9 \times 5 + P \times 13 \times 3 = 8160 \times 100$$

$$\Rightarrow P = \text{Rs. } 8000$$

S176. Ans.(c)

Sol.

Let total no. of students = $100x$

Participated in sports = $12x$

Participated in Dancing = $\frac{3}{4}$ of $(100x - 12x) = 66x$

Participated in Singing = 10

Remaining students who didn't participate anywhere = $(100x - 12x - 66x - 10x) = 12x$

According to given condition,

$$12x \rightarrow 15$$

$$\text{Hence, } 100x \rightarrow \frac{15}{12} \times 100 = 125$$

Therefore, total no. of students = 125

S177. Ans.(a)

Sol.

Monthly income of Sameer

$$= \frac{8.4}{12} \text{ lakh}$$

$$= 70000 \text{ Rs.}$$

$$\text{Spend on Rent} = 70000 \times \frac{1}{7}$$

$$= 10000$$

$$\text{Spend on Food} = (70000 - 10000) \times \frac{1}{6}$$

$$= 10000$$

Spend on (Cloth + travel)

$$= (70000 - 20000) \times \frac{11}{20}$$

$$= 27500 \text{ Rs.}$$

$$\text{Saving} = 22500 \text{ Rs.}$$

$$\text{Expend on travel} = 27500 \times \frac{8}{25}$$

$$= 8800$$

$$\text{Required difference} = (22500 \times 12 - 8800 \times 12) \text{ Rs.}$$

$$= (270000 - 105600) \text{ Rs.}$$

$$= 164400 \text{ Rs.}$$

S178. Ans.(c)

Sol.

Let capital of A = x

Then, capital of B = $2x$

Capital of C = $2.5x$

$$A : B : C = x : 2x : 2.5x = 2 : 6 : 15$$

$$\therefore \text{Share of B} = \frac{6}{2+6+15} \times 5819 = \text{Rs } 1,518/-$$

S179. Ans.(c)

Sol.

Let, there are ' x ' filling pipes,

Then no. of pipes that empty the tank = $8 - x$

Now

ATQ,

$$\frac{8-x}{6} - \frac{x}{8} = \frac{1}{6}$$

$$\text{or, } 32 - 7x = 4$$

$$\text{or, } 7x = 28$$

$$\Rightarrow x = 4$$

S180. Ans.(c)

Sol.

Volume of a barrel of fountain pen = $\frac{22}{7} \times 0.7 \times 0.7 \times 5 = 7.7 \text{ cm}^3$

This barrel can be used to write 300 words.

Hence, a barrel of volume 15.4 cm^3 can be used to write

$$\frac{15.4}{7.7} \times 300 = 600 \text{ words}$$

S181. Ans.(b)

Sol. Amount for tuition fee = $\frac{3}{5} \times 1720$

$$= 1032$$

Let, A's monthly salary is Rs x

$$\therefore \frac{40}{100} \times \frac{80}{100} = 1720 + 1032$$

$$\Rightarrow x = \frac{2752 \times 100}{32}$$

$$\Rightarrow x = \text{Rs } 8600$$

S182. Ans.(d)

Sol.

Let Muskaan Salary $\rightarrow 100x$

$$\text{Amount she gives to Simran} = \frac{100x \times 20}{100} = 20x$$

$$\text{Money invested by Simran} = \frac{20x \times 60}{100} = 12x$$

$$\text{Interest earned after 2 years} = 12x \left[\left(1 + \frac{20}{100} \right)^2 - 1 \right] = 6600$$

$$\Rightarrow x = 1250$$

$$\text{Salary of Muskaan} = 1250 \times 100 = 125000$$

S183. Ans.(b)

Sol.

Let amount = P

$$\text{Difference of Interest of CI and SI in 2 years} = \frac{Pr^2}{(100)^3}$$

$$r = 12\%$$

$$\Rightarrow \frac{P \times 12 \times 12}{(100)^2} = 144$$

$$\Rightarrow P = 10000$$

$$\text{Simple interest in 4 years with } 15\% \text{ p.a.} = \frac{10000 \times 15 \times 4}{100} = 6000$$

S184. Ans.(d)

Sol.

Let time taken by Raman to cover the

distance with the speed of 15 km/h is 't' hours

So total distance = $15 \times t$

Let his changed speed = x km/hr

So, distance = $x \times (t + 3)$

$$\text{Now} \rightarrow 15t = x(t + 3) \quad \dots(i)$$

When he increases its changed speed by 80%

$$\Rightarrow \frac{x \times 180}{100} = 1.8x \text{ km/hr}$$

$$\Rightarrow 15t = 1.8x(t - 1) \quad \dots(ii)$$

Equating (i) & (ii)

$$x(t + 3) = 1.8x(t - 1)$$

$$t = 6$$

$$\text{So, } x = 10$$

$$\text{Required speed} = 10 \times 1.8 = 18 \text{ km/hr}$$

S185. Ans.(d)

Sol.

For first two years total S.I = 15×2

$$= 30\%$$

For next two years total C.I on $(15+5)\%$

$$= 20 + 20 + \frac{20 \times 20}{100}$$

$$= 44\%$$

Amount after two year

$$= P + \frac{P \times 30}{100}$$

$$= \text{Rs. } \frac{13P}{10}$$

Amount after 4 years

$$\frac{13P}{10} \times \frac{144}{100} = 17971.2$$

$$P = \frac{17971.2}{1.872}$$

$$P = \text{Rs. } 9600$$

S186. Ans.(d)

Sol.

Let cost price of article A Rs. 112x and cost price of article B Rs. 135x

ATQ,

Selling price of article A

$$= \frac{112x}{4} \times 5$$

$$= 140x \text{ Rs.}$$

Selling price of article B

$$= \frac{135x}{4} \times 5$$

$$= 168.75x \text{ Rs.}$$

Let mark price of article A is 7y

And article B is 9y

$$140x = 7y \times \left(\frac{100-d}{100} \right) \quad \dots(I)$$

$$168.75x = 9y \times \left(\frac{100-(d+5)}{100} \right) \quad \dots(II)$$

From (I) and (II)

$$\frac{140x}{168.75x} = \frac{7y \times \left(\frac{100-d}{100} \right)}{9y \times \left(\frac{95-d}{100} \right)}$$

$$\frac{140 \times 9}{168.75 \times 7} = \frac{100-d}{95-d}$$

$$\frac{16}{15} = \frac{100-d}{95-d}$$

$$16d - 1520 = 15d - 1500$$

$$16d - 1520 = 15d - 1500$$

$$\text{First discount } d = 20\%$$

$$\text{Second discount} = (20 + 5) = 25\%$$

S187. Ans.(a)

Sol.

$$1^{\text{st}} \text{ alloy zinc} = \frac{2}{5} \times 15 = 6$$

$$\text{Copper} = \frac{3}{5} \times 15 = 9$$

Let copper to be removed = x

Then,

$$\frac{6 + 10}{9 - x} = \frac{4}{1}$$

$$\Rightarrow 16 = 36 - 4x$$

$$\Rightarrow x = 5 \text{ gm}$$

S188. Ans.(b)

Sol.

Let speed of Train 'X' = x

$$\Rightarrow \text{Speed of train 'Y'} = \frac{(100+100)}{100} \times x = 2x$$

Let, length of train 'X' = y

$$\Rightarrow \text{Length of train 'Y'} = \frac{150}{100} \times y = 1.5y$$

ATQ,

$$2 = \frac{y}{x} \Rightarrow y = 2x$$

$$\text{Required time} = \frac{1.5y+y}{2x-x} = \frac{2.5y}{x} = \frac{2.5 \times 2x}{x} = 5 \text{ seconds}$$

S189. Ans.(d)

Sol.

Let, total students in class 'A' = x

$$\Rightarrow \text{Number of Students in class 'B'} = 30 - x$$

ATQ,

$$\frac{30x}{36(30-x)} = \frac{100}{180}$$

$$\Rightarrow \frac{x}{30-x} = \frac{5}{9} \times \frac{36}{30}$$

$$\Rightarrow 3x = 2(30-x) \Rightarrow x = 12$$

$$\Rightarrow \text{Total number of students in class 'B'} = 30 - 12 = 18$$

S190. Ans.(c)

Sol.

Let the amount Anushka initially has = x

ATQ,

$$\frac{x}{2} \left[\left(1 + \frac{10}{100} \right)^2 - 1 \right] + \frac{x}{2} \left[\left(1 + \frac{20}{100} \right)^2 - 1 \right] = 5200$$

$$\frac{x}{2} \left[\frac{21}{100} \right] + \frac{x}{2} \left[\frac{44}{100} \right] = 5200$$

$$\frac{65x}{200} = 5200$$

$$\Rightarrow x = \frac{5200 \times 200}{65} = 16000$$

S191. Ans.(d)

Sol.

Let the length of train A be L m and speed is a m/s.

& the length of train B will be L + 17 m and speed is b m/s.

ATQ,

$$\frac{2L+17}{a+b} = 2.6 \dots(i)$$

$$\frac{2L+17}{a-b} = 13 \dots(ii)$$

For train A

$$\frac{L}{2} = a \Rightarrow L = 2a$$

Put L=2a in (i) and (ii)

$$\frac{4a+17}{a+b} = 2.6 \dots(iii)$$

$$\frac{4a+17}{a-b} = 13 \dots(iv)$$

On solving (iii) and (iv),

$$a = 51 \text{ m/s}$$

$$\text{and, } b = 34 \text{ m/s}$$

$$\text{Hence sum of speed} = 51 + 34 = 85 \text{ ms}^{-1}$$

S192. Ans.(b)

Sol.

Let speed of train X and Y are 5x and 6x respectively.

$$\text{Length of tunnel} \rightarrow 130 + 145 = 275 \text{ m.}$$

Speed of trains per second

$$= \frac{275}{10} = 27.5 \text{ m/s}$$

$$5x + 6x = 27.5$$

$$x = 2.5$$

$$\text{speed of train X} \rightarrow 12.5 \text{ m/s}$$

$$\text{Speed of train Y} \rightarrow 15 \text{ m/s}$$

$$\text{Distance cover by train X in tunnel} = 12.5 \times 10 = 125 \text{ m.}$$

$$\text{Length of train X leaves out} = 130 - 125 = 5 \text{ m}$$

$$\text{Required \%} = \frac{5}{130} \times 100 = 3 \frac{11}{13} \%$$

S193. Ans.(c)

Sol.

$$\text{A can fill alone in} = \frac{20 \times (5 + 4)}{5} = \frac{180}{5} = 36 \text{ days}$$

$$\text{B can fill alone in} = \frac{20 \times (5 + 4)}{4} = \frac{180}{4} = 45 \text{ days}$$

According to question

$$\frac{4}{20} + \frac{9}{36} + \frac{9}{C} = 1$$

$$\frac{9}{C} = \frac{11}{20}$$

$$C = \frac{180}{11} \text{ hour}$$

S194. Ans.(a)

Sol.

Let he bought 'n' number of mobiles at the CP of Rs. x each

$$\therefore \text{Total CP} = \text{Rs } nx$$

ATQ,

$$\frac{60}{100} nx \left[1 + \frac{3.5}{100} \right] + \frac{40}{100} n(6660) = nx \left[1 + \frac{6.5}{100} \right]$$

$$\Rightarrow \frac{6}{10} nx \left[\frac{207}{200} \right] + (4 \times 666) n = nx \left[\frac{213}{200} \right]$$

$$\Rightarrow (4 \times 666) n = nx \left[\frac{213}{200} - \frac{6 \times 207}{2000} \right] = nx \left(\frac{2130 - 1242}{2000} \right)$$

$$\Rightarrow x = \frac{4 \times 666 \times 2000}{888} = \text{Rs } 6000$$

$$\therefore \text{SP of each mobile which was sold at 3.5 \% profit} = 6000 \times \frac{207}{200} = \text{Rs } 6210$$

S195. Ans.(c)

Sol.

$$A \rightarrow x + 5 \text{ hr}$$

$$B \rightarrow x \text{ hr}$$

$$C \rightarrow x - 4 \text{ hr}$$

According to question,

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

$$\Rightarrow \frac{2x+5}{x(x+5)} = \frac{1}{x-4}$$

$$\Rightarrow x^2 - 8x - 20 = 0$$

$$\Rightarrow x = 10 \text{ hr}$$

$$\therefore \text{Time required by first pipe} = 15 \text{ hrs.}$$

S196. Ans.(c)

Sol.

Invest in scheme A = Rs. x

in scheme B = Rs. y

ATQ,

$$x + y = 4200 \dots(i)$$

$$x \times 88\% - y \times 21\% = 1516$$

$$\therefore 88x - 21y = 151600 \dots(ii)$$

On solving

$$x = \text{Rs. } 2200$$

$$y = \text{Rs. } 2000$$

S197. Ans.(a)

Sol.

Let P = Panchhi's present age

S = Son's age

D = Daughter's age

ATQ,

$$P - 8 = S + D \dots(i)$$

$$\& P + 7 = 3S$$

$$\Rightarrow P = 3S - 7$$

$$\Rightarrow 2S - D = 15 \dots(ii)$$

$$\text{now, } \frac{D+5}{S+5} = \frac{7}{6}$$

$$\Rightarrow 7S - 6D = -5 \dots(iii)$$

Solving equations (ii) & (iii) we get,

$$D = 23 \text{ years.}$$

S198. Ans.(b)

Sol.

Let Shobha and Saurabh have Rs. 100x

Equivalent CI for two years at the rate of 10%

$$= 10 + 10 + \frac{10 \times 10}{100}$$

$$= 21\%$$

ATQ—

$$100x \times \frac{21}{100} = 100x \times \frac{2}{3} \times \frac{R \times 2}{100} + 100x \times \frac{1}{3} \times \frac{6.5 \times 2}{100}$$

$$21x = \frac{4x \times R}{3} + \frac{13x}{3}$$

$$63x = 4x \times R + 13x$$

$$4x \times R = 50x$$

$$R = \frac{50x}{4x}$$

$$R = 12.5\%$$

S199. Ans.(b)

Sol.

Let cost price of each pencil = 100

Then cost price of each pen = 200

Let 'x' is percentage of loss and profit

Now,

$$\text{Profit on selling 10 pencils} = 10 \times \left(\frac{100 \times x}{100} \right) = 10x$$

Profit on selling 10 pencils is equal to selling price of 3 pens

$$\Rightarrow \text{selling price of each pen} = \frac{10x}{3}$$

Now loss on selling 10 pens

$$10 \times \left(\frac{200 \times x}{100} \right) = 20x$$

Loss equal to the selling price of 4 pencils

Selling price of each pencil = 5x

$$\text{Required Ratio} = \frac{5x \times 3}{10x} = 3:2$$

S200. Ans.(c)

Sol.

Let speed be x km/hr and distance be D.

$$\frac{90}{\frac{3}{4}x} - \frac{90}{x} = \frac{1}{2}$$

$$\Rightarrow \frac{(4-3)}{3x} = \frac{1}{180}$$

$$\Rightarrow x = 60 \text{ km/hr}$$

Now,

$$\frac{3}{2} + \frac{D-60}{45} - \frac{D}{60} = \frac{7}{2}$$

$$\Rightarrow D + 30 = 630$$

$$\Rightarrow x = 600 \text{ km}$$

S201. Ans.(b)

Sol.

Speed of first train = 60 km/h

Total distance = 480 km

Time taken by first train to cover that distance without stoppage

$$= \frac{480}{60} = 8h$$

9 station \times 5 minute = Total stoppage time

= 45 minute

Train took total time to reach Lucknow

$$= 8 \text{ hr } 45 \text{ minute} = \frac{35}{4} \text{ hour}$$

2nd Train reach 30 min. before it start 2 hour late from Delhi

So,

Time taken by 2nd train = 8 h 45 min - 2h

- 30 min.

$$= 6 \text{ hour } 15 \text{ minute}$$

$$= 6\frac{1}{4} = \frac{25}{4} \text{ hour}$$

$$\text{Speed of 2nd Train} = \frac{480 \times 4}{25} = \frac{384}{5} \text{ km/h}$$

$$\text{Required Speed ratio of train} = \frac{60}{\frac{384}{5}} = 25:32$$

S202. Ans.(d)

Sol.

Let Purvi's investment = Rs. 100x

Charu investment = Rs. 80x

Rinki investment = Rs. 56

ATQ,

Ratio between profit Share of Purvi : Charu : Rinki

$$= (100x \times 8 + 100x \times \frac{4}{5} \times 4) : (80x \times 8 + 80x \times \frac{3}{5} \times 4) : (56x \times 8 + 56x \times \frac{5}{7} \times 4)$$

$$= 35 : 26 : 19$$

Let total profit = Y Rs.

ATQ,

$$\frac{26Y}{80} - \frac{19Y}{80} = 2800$$

$$Y = 32000$$

Total profit share of Charu and Purvi

$$= \frac{(35+26)}{80} \times 32000$$

$$= 24400 \text{ Rs.}$$

S203. Ans.(d)

Sol.

For vessel A -

$$\text{Petrol taken out} = \frac{7P}{12} \text{ liters}$$

$$\text{Kerosene oil taken out} = \frac{5P}{12} \text{ liters}$$

For vessel B-

$$\text{Kerosene oil taken out} = \frac{5Q}{13} \text{ liters}$$

In vessel C-

Kerosene oil =

$$\frac{5P}{12} + \frac{5Q}{13} = \frac{150 \times 40}{100}$$

$$\frac{65P+60Q}{156} = 60$$

$$13P + 12Q = 1872 \text{ ---(I)}$$

Petrol in vessel C

$$\frac{7P}{12} + \frac{8Q}{13} = \frac{150 \times 60}{100}$$

$$\frac{91P+96Q}{156} = 90$$

$$91P + 96Q = 14040 \text{ ---(II)}$$

From (I) and (II) _____

$$Q = 78$$

$$P = 72$$

$$\frac{P}{Q} = \frac{72}{78}$$

$$\frac{P}{Q} = \frac{12}{13}$$

$$= \frac{12}{13}$$

S204. Ans.(d)

Sol.

A got 40% of profit

B & C got 30% each

So, investment ratio of A, B and C is 4 : 3 : 3

Now,

They earn 10% profit

$$\Rightarrow \frac{10x \times 10}{100} = x$$

If they earn 15% profit

$$= \frac{10x \times 15}{100} = \frac{3}{2}x$$

A got 900 Rs. more

$$\Rightarrow \frac{3}{2}x \times \frac{40}{100} - \frac{x \times 40}{100} = 900$$

$$\Rightarrow x = 4500$$

Total investment = 45000

$$\text{B's investment} = \frac{45000 \times 3}{10} = 13500$$

S205. Ans.(d)

Sol.

Let usual speed of boat in still water = x

River speed = y

ATQ,

$$\frac{(x-y)250}{100} = (2x-y)$$

$$5x - 5y = 4x - 2y$$

$$x = 3y$$

Now,

$$\frac{60}{x-y} + \frac{60}{x+y} = 22.5$$

$$\frac{60}{2y} + \frac{60}{4y} = 22.5$$

$$y = 2 \text{ km/hr}$$

$$x = 6 \text{ km/hr}$$

$$\text{Required time} = \frac{80}{6+2} = 10 \text{ hr}$$

S206. Ans.(b)

Sol.

Hence

$$2W = 3M = 4C$$

$$\therefore (14W + 12M + 12C) = 14 + 8 + 6 = 28 \text{ Women}$$

$$\text{Total Unit of work} = 28 \times 24$$

$$\therefore 28 \times 24 = x \times 14$$

$$x = 48$$

Total no. of women required for additional labour

$$= 48 - 28 = 20 \text{ women}$$

S207. Ans.(a)

Sol.

$$SI = \frac{43,892 \times 30 \times 3}{100} = 43892 \left[\frac{9}{10} \right]$$

$$CI = 43892 \left[\left(1 + \frac{30}{100} \right)^3 - 1 \right] = 43892 \left(\frac{2197-1000}{1000} \right) = 43892 \left(\frac{1197}{1000} \right)$$

$$\therefore CI - SI = 43892 \left(\frac{297}{1000} \right)$$

$$\text{Desired\%} = \frac{43892 \left(\frac{297}{1000} \right)}{43892 \left(\frac{900}{1000} \right)} \times 100 = 33\%$$



S208. Ans.(b)

Sol.

$$\text{Total \% spend} = (50 + 25 + 12.5 + 5) = 92.5\%$$

$$\therefore 7.5\% = 900$$

$$1\% = \frac{900}{7.5}$$

$$100\% = \frac{900}{7.5} \times 100 = 12000 \text{ rupees}$$

S209. Ans.(c)

Sol.

$$\text{Cost price for retailer} = 30.09 \times \frac{4}{5} = 24.072$$

$$\text{Cost price for manufacturer} = 24.072 \times \frac{100}{120} \times \frac{100}{118}$$

$$= 24.072 \times \frac{5}{6} \times \frac{50}{59}$$

$$= 17$$

S210. Ans.(b)

Sol.

$$\text{Total selling price} = 7200 \times 10 = 72000$$

$$\text{Total no. of pencils manufactured} = 7200 \times \frac{10}{9} = 8000$$

$$\text{Total cost price of pencils} = 72000 \times \frac{100}{125} = 57600$$

$$\text{Cost of each pencils} = \frac{57600}{8000} = 7.2$$

S211. Ans.(d)

$$\text{Sol. } 307 \times 32 = 9824$$

$$307 \times 33 = 10131$$

$$\therefore \text{Required number}$$

$$= 10131 - 9999 = 132$$

S212. Ans.(c)

$$\text{Sol. } 2.8 + (5.2 \div 1.3 \times 2) - 6 \times 3 \div 8 + 2$$

$$\Rightarrow 2.8 + (4 \times 2) - 2.25 + 2$$

$$\Rightarrow 2.8 + 8 - 2.25 + 2$$

$$= 10.55$$

S213. Ans.(b)

$$\text{Sol. Sum of the ages of four brothers} = 15 \times 4 = 60$$

$$\text{Let the age of father} = k$$

$$\text{According to the question}$$

$$\frac{60 + k}{5} = 20$$

$$\Rightarrow k = 40$$

S214. Ans.(c)

$$\text{Sol. Mean proportional between 4.8 and 10.8}$$

$$= \sqrt{ab} = \sqrt{4.8 \times 10.8} = 7.2$$

$$\text{Third proportional to 0.4 and 2.4} = \frac{b^2}{a}$$

$$= \frac{2.4 \times 2.4}{0.4} = 1.44$$

$$\text{Required ratio} = 7.2 : 14.4$$

$$\Rightarrow 1 : 2$$

S215. Ans.(a)

$$\text{Sol. In 25 liters mixture, water}$$

$$= 70\% \text{ of } 25 = 17.5 \text{ liter and spirit} = 7.5$$

$$\text{After adding 5 liters of water,}$$

$$\text{Spirit \%} = \frac{7.5}{30} \times 100 = 25\%$$

S216. Ans.(b)

$$\text{Sol. According to the question}$$

$$(60 - 20)\% = 120$$

$$1\% = 3$$

$$(33\frac{1}{3} - 28)\% = 3 \times \frac{16}{3} = 16$$

S217. Ans.(b)

$$\text{Sol. Let the principal} = P$$

$$\text{According to the question}$$

$$100 = \frac{P \times 10 \times \frac{1}{2}}{100}$$

$$\Rightarrow P = \text{Rs. } 2000$$

S218. Ans.(a)

$$\text{Sol. Total work} = 18 \times 9 = 162 \text{ unit}$$

$$\text{Work done} = 18 \times 5 = 90 \text{ unit}$$

$$\text{Remaining work} = 162 - 90 = 72 \text{ unit}$$

$$\text{Required number of days} = \frac{72}{18 + 6} = 3 \text{ days}$$

S219. Ans.(d)

$$\text{Sol. Volume of cuboid} = \sqrt{a \times b \times c}$$

$$\text{Here a, b and c are the area of three faces}$$

$$= \sqrt{32 \times 24 \times 48} = 192 \text{ cm}^3$$

S220. Ans.(c)

$$\text{Sol. Given, } \triangle ABC \sim \triangle DEF \text{ and } DE = 9 \text{ cm}$$

$$\text{We know that,}$$

$$\frac{\text{perimeter } ABC}{\text{perimeter } DEF} = \frac{AB}{DE}$$

$$\Rightarrow \frac{64}{48} = \frac{AB}{9}$$

$$\Rightarrow AB = 12 \text{ cm}$$

S221. Ans.(a)

$$\text{Sol. Let the speed of boat in still water be } x \text{ kmph and the rate of stream be } y \text{ kmph.}$$

$$\therefore \text{Downstream rate}$$

$$= (x + y) \text{ kmph and upstream rate}$$

$$= (x - y) \text{ kmph.}$$

$$\text{Now,}$$

$$\frac{20}{x + y} = 1$$

$$\Rightarrow x + y = 20 \dots (i)$$

$$\text{And}$$

$$\frac{20}{x - y} = 2$$

$$\Rightarrow x - y = 10 \dots (ii)$$

$$\text{From (i) and (ii) we have}$$

$$x = 15 \text{ kmph.}$$

S222. Ans.(b)

Sol. $2^{x+3} = 32 = 2^5$

$\rightarrow x + 3 = 5$

$\rightarrow x = 2$

$\therefore 3^{x+1} \rightarrow 3^{2+1} \rightarrow 3^3 \rightarrow 27$

S223. Ans.(a)

Sol. $\frac{2 \sin \theta - \cos \theta}{\cos \theta + \sin \theta} = 1$

Dividing numerator and denominator by $\sin \theta$,

$\frac{2 - \cot \theta}{\cot \theta + 1} = 1$

$\rightarrow 2 - \cot \theta = \cot \theta + 1$

$\rightarrow 2 \cot \theta = 1$

$\rightarrow \cot \theta = 1/2$

S224. Ans.(b)

Sol. Let the length of rectangle = 48 m and breadth = 16m.

Perimeter of square = Perimeter of rectangle

$= 2(48 + 16)$

$\rightarrow 4 \times \text{Side} = 2 \times 64$

$\rightarrow \text{Side} = \frac{2 \times 64}{4} = 32 \text{ meters}$

$\therefore \text{Area of the square} = (32)^2 = 1024 \text{ m}^2$

S225. Ans.(d)

Sol.

$\text{Principal} = \frac{\text{S.I.} \times 100}{\text{Time} \times \text{Rate}}$

$= \frac{R \times 100}{2 \times R} = \text{Rs. } 50$

S226. Ans.(c)

Sol. Let the cost price be Rs. 100.

$\therefore \text{Marked price} = (100 + 15\% \text{ of } 100) = \text{Rs. } 115$

The goods are sold at the discount of 12%.

$\therefore \text{S.P.} = (115 - 12\% \text{ of } 115)$

$= (115 - 13.80) = \text{Rs. } 101.20$

$\text{Profit} = (101.20 - 100) = \text{Rs. } 1.20$

$\therefore \text{Profit \%} = \frac{1.20}{100} \times 100 = 1.2\%$

$= 1 \frac{2}{10} = 1 \frac{1}{5} \%$

S227. Ans.(c)

Sol. If the number be x , then

$x - 15 = \frac{4x}{5}$

$\Rightarrow 5x - 75 = 4x \Rightarrow x = 75$

$\therefore 40\% \text{ of } 75 = \frac{75 \times 40}{100} = 30$

S228. Ans.(d)

Sol. Time taken is inversely proportional to relevant speeds.

$\therefore \text{Required ratio} = \frac{1}{4} : \frac{1}{3} : \frac{1}{5}$

$= \frac{1}{4} \times 60 : \frac{1}{3} \times 60 : \frac{1}{5} \times 60$

$= 15 : 20 : 12$

S229. Ans.(a)

Sol. Weight of the new man

$= 55 + \frac{1}{3} \times 12 = 59 \text{ kg.}$

S230. Ans.(b)

Sol.

5	625
5	125
5	25
	5

$\therefore 625 = 5 \times 5 \times 5 \times 5 = 5^3 \times 5$

For the smallest cube number,

625 should be divided 5,

$625 \div 5 = 125 = 5^3$

S231. Ans.(a)

Sol. Let the number = $3k$

According to the question

$9k - k = 24$

$\Rightarrow k = 3$

$\text{Desired number} = 3k = 3 \times 3 = 9$

S232. Ans.(c)

Sol. $432 = 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 3$

$594 = 2 \times 3 \times 3 \times 3 \times 11$

$702 = 2 \times 3 \times 3 \times 3 \times 13$

Their HCF = $2 \times 3 \times 3 \times 3 = 54$

Cans for first variety of oil = $\frac{432}{54} \rightarrow 8$

Cans for 2nd variety of oil = $\frac{594}{54} \rightarrow 11$

Cans for 3rd variety of oil = $\frac{702}{54} \rightarrow 13$

S233. Ans.(d)

Sol.

$\frac{1}{2} \text{ of } \frac{8}{5} \div \{2\frac{1}{5} - (\frac{5}{16} + \frac{3}{5} \times 1\frac{7}{8} \div \frac{2}{3})\}$

$\Rightarrow \frac{4}{5} \div \{\frac{11}{5} - (\frac{5}{16} + \frac{3}{5} \times \frac{45}{16})\}$

$\Rightarrow \frac{4}{5} \div \{\frac{11}{5} - 2\}$

$= 4$

S234. Ans.(a)

Sol. Let the average of first three numbers = $4A$

\Rightarrow the 4th number = A

Sum of first three numbers = $4A \times 3 = 12A$

According to the question

$$\frac{12A+A}{4} = 52$$

$$\Rightarrow A = 16$$

Average of first three numbers = $4 \times 16 = 64$

S235. Ans.(d)

Sol. fourth proportional of 3, 4, 9 = $\frac{9 \times 4}{3} \rightarrow 12$

Mean proportional between 2 and 98

$$= \sqrt{2 \times 98} \rightarrow 14$$

Required ratio = 12: 14

$$= 6: 7$$

S236. Ans.(b)

Sol. $20\% = \frac{1}{5}$, $25\% = \frac{1}{4}$, and $60\% = \frac{3}{5}$

$$A : B : C : D : E$$

$$6 : 5$$

$$5 : 4$$

$$2 : 5$$

$$6 : 5$$

Balancing the ratio for C and D

A: B: C: D: E

$$18: 15: 12: 30: 25$$

Now,

$$\frac{30-18}{30} \times 100 = 40\%$$

Clearly A is 40% less than D.

S237. Ans.(a)

Sol. Total CP = $1200 + 1600 = \text{Rs. } 2800$

$$25\% = 1/4$$

Let the total CP = 4 unit

\Rightarrow Total SP = 5 unit

According to the question

$$4 \text{ unit} = 2800$$

$$1 \text{ unit} = 700$$

$$5 \text{ unit} = 5 \times 700 = \text{Rs. } 3500$$

$$\text{SP of 2nd article} = 3500 - 1380 = \text{Rs. } 2120$$

%age Profit earned on 2nd article

$$= \frac{2120 - 1600}{1600} \times 100 = 32.5\%$$

S238. Ans.(c)

Sol. Original : New

Speed 4 : 3

Time 3 : 4

According to the question

$$(4 - 3) \text{ unit} = 18 \text{ minutes}$$

$$\text{Original Time (3 unit)} = 3 \times 18 = 54$$

S239. Ans.(b)

Sol.

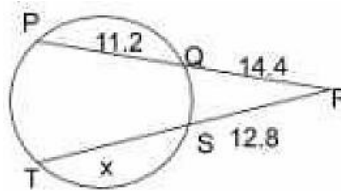
Area of Rhombus

$$= \frac{1}{2} \times d_1 \times d_2$$

$$= \frac{1}{2} \times 12 \times 4 = 24$$

S240. Ans.(d)

Sol.



$$QR \times PR = SR \times RT$$

$$14.4 \times 25.6 = 12.8 \times (12.8 + x)$$

$$x = 16 \text{ cm}$$

S241. Ans.(d)

Sol. Let the length of the train be x

According to the question,

$$\frac{x + 122}{17} = \frac{x + 210}{25}$$

$$\rightarrow 25x + 3050 = 17x + 3570$$

$$\rightarrow 25x - 17x = 3570 - 3050$$

$$\rightarrow 8x = 520$$

$$\rightarrow x = 65 \text{ meters}$$

$$\therefore \text{Speed of the train} = \frac{65 + 122}{17}$$

$$= 11 \text{ meter/second or } = 39.6 \text{ kmph}$$

S242. Ans.(b)

Sol. Number of days in April and

$$\text{May} = 30 + 31 = 61$$

$$\therefore \text{Requirement of rice for 7 days} = 56 \text{ kg.}$$

$$\therefore \text{Requirement of rice for 61 days}$$

$$= \left(\frac{56}{7} \times 61\right) \text{ kg} = 488 \text{ kg}$$

S243. Ans.(c)

Sol.

$$A = P \left(1 + \frac{R}{100}\right)^T$$

$$\Rightarrow 6000 = 3000 \left(1 + \frac{R}{100}\right)^2$$

$$\Rightarrow 2 = \left(1 + \frac{R}{100}\right)^2$$

On squaring,

$$4 = \left(1 + \frac{R}{100}\right)^4$$

i.e. Amount

$$= \text{Rs. } (4 \times 3000)$$

$$= \text{Rs. } 12000$$

$$\therefore \text{C.I.} = \text{Rs. } (12000 - 3000)$$

$$= \text{Rs. } 9000$$

S244. Ans.(a)

Sol. $\therefore (40 - 20)\% = \text{Rs.} 1$
 $\therefore 120\% = \frac{1}{20} * 120 = \text{Rs.} 6$

S245. Ans.(b)

Sol. If the number of trees in the garden be x , then

$\rightarrow x * \frac{60}{100} * \frac{25}{100} * \frac{20}{100} = 1500$

$\rightarrow x * \frac{3}{5} * \frac{1}{4} * \frac{1}{5} = 1500$

$\rightarrow x = \frac{1500 * 5 * 4 * 5}{3}$

$\rightarrow x = 50000$

S246. Ans.(c)

Sol. Rate of working = $\frac{1}{\text{Time taken}}$

\therefore Ratio of days taken by A and B = $\frac{1}{2} : \frac{1}{3} \rightarrow 3 : 2$

S247. Ans.(a)

Sol. B's weight = (A + B)'s weight + (B + C)'s weight - (A + B + C)'s weight
 $= (40 \times 2 + 2 \times 43 - 45 \times 3) \text{ kg.}$
 $= (80 + 86 - 135) \text{ kg.}$
 $= 31 \text{ kg.}$

S248. Ans.(d)

Sol. $(x - 3)^2 + (y - 4)^2 + (z - 5)^2 = 0$

$\rightarrow x - 3 = 0 \rightarrow x = 3$

$\rightarrow y - 4 = 0 \rightarrow y = 4$

$\rightarrow z - 5 = 0 \rightarrow z = 5$

$\therefore x + y + z = 3 + 4 + 5 \rightarrow 12$

S249. Ans.(c)

Sol. Sum of angles of a triangle = 180°

$\therefore x + 5 + 2x - 3 + 3x + 4 = 180^\circ$

$\rightarrow 6x + 6 = 180^\circ$

$\rightarrow 6x = 180 - 6 = 174^\circ$

$\rightarrow x = 29^\circ$

S250. Ans.(b)

Sol. Let the length of rectangle = 48 m. and breadth = 16m.

Perimeter of square = Perimeter of rectangle = $2(48 + 16)$

$\rightarrow 4 \times \text{Side} = 2 \times 64$

$\rightarrow \text{Side} = \frac{128}{4} = 32 \text{ meters}$

\therefore Area of the square = $(32)^2$
 $= 1024 \text{ metre}^2$

S251. Ans.(b)

Sol. A: B = 6: 5, B: C = 10: 9

A: B: C = 12: 10: 9

According to the question

$(12 + 10 + 9) \text{ units} \rightarrow 1240$

9 units = $\frac{1240}{31} * 9$

$\rightarrow \text{Rs.} 360$

S252. Ans.(d)

Sol. Average age

$= \frac{10 * 12.5 + 20 * 13.1}{10 + 20}$

$= \frac{125 + 262}{30} = 12.9 \text{ years}$

S253. Ans.(a)

Sol. $\frac{(75.8)^2 - (35.8)^2}{40}$

$\rightarrow \frac{(75.8 + 35.8)(75.8 - 35.8)}{40}$

$\rightarrow \frac{111.6 + 40}{40} = 111.6$

S254. Ans.(b)

Sol. Multiples of 11 whose square root are whole number

First = $11 \times 11 = 121$

Second = $11 \times 11 \times 4 = 484$

S255. Ans.(c)

Sol. Number of hens = x

\therefore Number of cows = $48 - x$

$\therefore 2x + (48 - x) \times 4 = 35 \times 4$

$\rightarrow 2x + 192 - 4x = 140$

$\rightarrow 2x = 192 - 140 = 52$

$\rightarrow x = 26$

Hence there are 26 hens.

S256. Ans.(d)

Sol. $\frac{1}{3}$ of 1206 = 402

\therefore Required percent

$= \frac{402}{134} * 100 = 300\%$

S257. Ans.(c)

Sol. Difference = $\frac{PR^2}{(100)^2}$

$\rightarrow 4 = \frac{P * 10 * 10}{10000}$

$\rightarrow P = \text{Rs.} 400$

S258. Ans.(a)

Sol. Let A worked for x days.

According to question,

$\rightarrow \frac{x}{28} + \frac{(x + 17)}{35} = 1$

$\rightarrow \frac{5x + 4(x + 17)}{140} = 1$

$\rightarrow 5x + 4x + 68 = 140$

$\rightarrow 9x = 140 - 68 = 72$

$\rightarrow x = 8$

\therefore A worked for 8 days

S259. Ans.(c)

Sol. Distance covered by car = $42 \times 10 = 420 \text{ km.}$

New time = 7 hours

\therefore Required speed = $\frac{420}{7} = 60 \text{ kmph.}$

\therefore Required increase

$= (60 - 42) \text{ kmph}$

$= 18 \text{ kmph}$

S260. Ans.(b)

Sol. Let length be $3x$ and breadth be $2x$
 \therefore Perimeter = $2(\text{length} + \text{breadth})$
 $= 2(3x + 2x) = 10x$
 According to question,
 $10x = 80\text{m}$
 $x = 8\text{m}$
 \therefore Breadth = $2x = 2 \times 8 = 16\text{m}$

S261. Ans.(d)

Sol. Area of Sector = $\frac{\theta}{360} \times \pi r^2$
 $\rightarrow \frac{150}{360} \times \frac{22}{7} \times 21^2 \rightarrow 577.5\text{ cm}^2$

S262. Ans.(b)

Sol. In $\triangle ABC$
 $\angle BOC = 90^\circ + \frac{\angle A}{2}$ (by incentre property)
 $122^\circ = 90^\circ + \frac{\angle A}{2}$
 $32^\circ = \frac{\angle A}{2}$
 $\angle A = 64^\circ$

S263. Ans.(d)

Sol. Let the speed of stream be a .
 Given, Upstream: Downstream
 Time = 4 : 1
 Speed = 1 : 4
 So, $\frac{6-a}{6+a} = \frac{1}{4}$
 $\Rightarrow a = 3.6\text{ km/h}$

S264. Ans.(b)

Sol. Distance between A and B = 800 km
 Time taken to cover this distance = $\frac{800}{60+40} = 8\text{ hours}$
 Distance covered by train X in 8 hours
 $= 8 \times 40 = 320\text{ km}$

S265. Ans.(a)

Sol. Total work = $18 \times 9 = 162\text{ unit}$
 Work done = $18 \times 5 = 90\text{ unit}$
 Remaining work = $162 - 90 = 72\text{ unit}$
 Required number of days = $\frac{72}{18+6} = 3$

S266. Ans.(c)

Sol. Let the principal = 1 unit, so si earned = 1 unit.
 Let the time period = t
 According to question
 $1 = \frac{1 \times 8 \times t}{100}$
 $t = 12.5\text{ years}$

S267. Ans.(a)

Sol. $10\% = 1/10$
 Let the original marked price = 10 unit
 \Rightarrow New price = $10 + 1 = 11\text{ unit}$
 Desired %age of discount = $\frac{11-1}{11} \times 100$
 $= 9\frac{1}{11}\%$

S268. Ans.(c)

Sol. Let the salary of the person = x
 According to the question
 $x \times \frac{90}{100} \times \frac{80}{100} = 4680$
 $\Rightarrow x = 6500$

S269. Ans.(c)

Sol. Let the numbers are 6 unit and 5 unit.
 According to the question
 $(6 + 5)\text{ unit} = 77$
 $\Rightarrow (6 - 5)\text{ unit} = 7$

S270. Ans.(b)

Sol. Average of 'n' odd numbers is always 'n'.

S271. Ans.(c)

Sol. Time taken by B and C = x days (let)
 \therefore Time taken by A = $3x$ days
 \therefore Part of work done by A, B and C in 1 day
 $= \frac{1}{x} + \frac{1}{3x} = \frac{1}{24}$
 $\rightarrow \frac{4}{3x} = \frac{1}{24}$
 $\rightarrow x = 32\text{ days}$
 \therefore Time taken by A = $32 \times 3 = 96\text{ days}$

S272. Ans.(c)

Sol. (A + B)'s 1 day's work
 $= \frac{1}{25} + \frac{1}{30} = \frac{11}{150}$
 \therefore (A + B)'s 5 day's work = $\frac{11 \times 5}{150} = \frac{11}{30}$
 \therefore Remaining work = $1 - \frac{11}{30} = \frac{19}{30}$

S273. Ans.(d)

Sol. (A + B)'s 1 day's work
 $= \frac{1}{11} + \frac{1}{20} = \frac{31}{220}$
 (A + C)'s 1 day's work
 $= \frac{1}{11} + \frac{1}{55} = \frac{6}{55}$
 Work done in first 2 days
 $= \frac{31}{220} + \frac{6}{55} = \frac{1}{4}$
 25% work is done in 2 days, so 100% work done in 8 days.

S274. Ans.(c)

Sol. Let the work be completed in x days.
 According to the question,
 $\rightarrow \frac{x-5}{10} + \frac{x-3}{12} + \frac{x}{15} = 1$
 $\rightarrow \frac{6x-30+5x-15+4x}{60} = 1$
 $\rightarrow 15x - 45 = 60$
 $\rightarrow 15x = 105$
 $\rightarrow x = 7\text{ days}$

S275. Ans.(a)

Sol. ATQ, total work = $40 \times 40 = 1600$ unit

Now, on each 10 days 5 men left the work,

So, work done in 1st 10 days = $10 \times 40 = 400$ unit

So, work done in 2nd 10 days = $10 \times 35 = 350$ unit

So, work done in 3rd 10 days = $10 \times 30 = 300$ unit

So, work done in 4th 10 days = $10 \times 25 = 250$ unit

So, work done in 5th 10 days = $10 \times 20 = 200$ unit

S27o, work done in 50 days = 1500 units

Left 100 units would be done by 15 men in = $\frac{100}{15} = 6\frac{2}{3}$ days

S27o, total work of 1600 units would be done in = $50 + 6\frac{2}{3} = 56\frac{2}{3}$ days

S276. Ans.(b)

Sol. Work done by 12 men in 8 days' \equiv Work done by 16 women in 12 days.

$\rightarrow 12 \times 8 \text{ men} \equiv 16 \times 12 \text{ women}$

$\rightarrow 1 \text{ man} \equiv 2 \text{ women}$

Now, work done by 12 men in 1 day = $\frac{1}{8}$

1 man's 1 day's work = $\frac{1}{8 \times 12} = \frac{1}{96}$

$\therefore 16 \text{ men's } 3 \text{ day's work} = \frac{16 \times 3}{96} = \frac{1}{2}$

Remaining work = $1 - \frac{1}{2} = \frac{1}{2}$

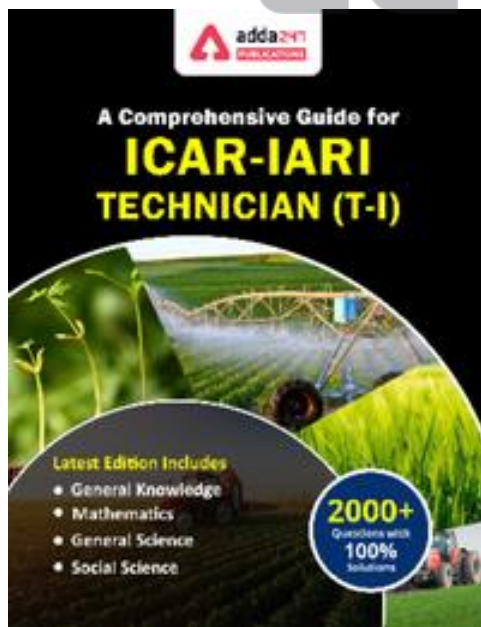
Now, $\frac{1}{2}$ work is done by 6 men and 4 women.

$\therefore 6 \text{ men} + 4 \text{ women} = (6 + 2) \text{ men} = 8 \text{ men}$

$$\therefore \frac{M_1 D_1}{W_1} = \frac{M_2 D_2}{W_2}$$

$$\rightarrow \frac{12 \times 8}{1} = \frac{8 \times D_2}{\frac{1}{2}}$$

$$\rightarrow D_2 = \frac{12 \times 8}{2 \times 8} = 6 \text{ days}$$



S277. Ans.(a)

Sol. Let the number of working men be x.

$$\rightarrow M_1 D_1 = M_2 D_2$$

$$\rightarrow x \times 60 = (x + 6) \times 40$$

$$\rightarrow 3x = 2x + 12$$

$$\rightarrow 3x - 2x = 12$$

$$\rightarrow x = 12$$

S278. Ans.(c)

Sol. This type of ques. Can be solved as $\rightarrow \frac{\text{Days}}{\text{And Or}}$

$$\rightarrow \frac{88}{\frac{1}{1} + \frac{1}{2} + \frac{1}{3}} == \rightarrow \frac{88}{\frac{6+3+2}{6}}$$

$$\rightarrow \frac{88 \times 6}{11} = 48 \text{ days}$$

S279. Ans.(d)

Sol. Let the time taken by B in doing the work alone = x days

According to the question,

Time taken by A = $2 \times \frac{3x}{4} = \frac{3x}{2}$ days

$$\rightarrow \frac{1}{x} + \frac{1}{\frac{3x}{2}} = \frac{1}{18}$$

$$\rightarrow \frac{1}{x} + \frac{2}{3x} = \frac{1}{18}$$

$$\rightarrow x = 30 \text{ days}$$

S280. Ans.(c)

Sol. Remaining work = $1 - \frac{5}{8} = \frac{3}{8}$

Remaining time = 4 days

$$\therefore \frac{M_1 D_1}{W_1} = \frac{M_2 D_2}{W_2}$$

$$\rightarrow \frac{20 \times 12}{\frac{5}{8}} = \frac{M_2 \times 4}{\frac{3}{8}}$$

$$\rightarrow \frac{20 \times 12}{5} = \frac{M_2 \times 4}{3}$$

$$\rightarrow M_2 = 36$$

Number of additional workers

$$= 36 - 20 = 16$$

S281. Ans.(b)

Sol.

	Milk	Water	
Mixture I	14	13	$\times 13$
	182	169	
Mixture II	13	15	$\times 14$
	182	210	

Quantity of Water added = $210x - 169x = 41x$

$$41x = 82 \text{ litre}$$

$$x = 2 \text{ litre}$$

$$\text{Initial quantity of Milk} = 182 \times 2 + 54 \times \frac{14}{27}$$

$$= 364 + 28$$

$$= 392 \text{ litre.}$$

S282. Ans.(a)

Sol.

	Water	Spirit	
Vessel I	3	9] × 13
	39	117	
Vessel II	7	6] × 12
	84	72	
	123	189	

Required ratio = 41 : 63

S283. Ans.(b)

Sol.

ATQ,

$$\frac{x}{10} + \frac{y}{4} = 46$$

$$\Rightarrow 2x + 5y = 920$$

$$\text{Also } x + y = 250$$

On solving, $x = 110$, $y = 140$

S284. Ans.(a)

Sol.

$$\text{Initially, } \frac{\text{Water}}{\text{Mixture}} = \frac{5}{9}$$

$$\text{Final, } \frac{\text{Water}}{\text{Mixture}} = \frac{3}{5}$$

$$\text{Final} - \text{Initial} = \frac{3}{5} - \frac{5}{9} = \frac{2}{45}$$

S285. Ans.(c)

Sol.

Let total person be $12x$

No. of males = $6x$

No. of Females = $6x$

Males who dance = $\frac{2}{3} \times 6x = 4x$

No. Of people who dance = $6x$

$$\text{Required ratio} = \frac{2x}{4x} = 1 : 2$$

S286. Ans.(b)

Sol.

A : B + C

2 3

\Rightarrow Total investment = 5 units

A's investment = 2 units.

A's 4% profit = 420

1% profit = 105

100% profit = 10500 = A's Investment

So, 2 unit \rightarrow Rs 10500

3 unit \rightarrow Rs 15750

S287. Ans.(b)

Sol.

Profit ratios P : Q : R

$$= 8 : 3 : 3$$

Investment \times time = Profit

$$\frac{P \times 6}{R \times 6} = \frac{8}{3}$$

$$\frac{P \times 6}{2400 \times 6} = \frac{8}{3}$$

$$P = \text{Rs } 6400$$

Also,

$$\frac{Q \times 5}{2400 \times 6} = \frac{3}{3}$$

$$Q = 2880$$

$$P + Q = 6400 + 2880 = 9280$$

S288. Ans.(d)

Sol.

Let total work = $16x$

No. of days to do total work = 20 days

$$\text{Done Work} = 12x \times \frac{3}{4} = 9x$$

$$\text{Remaining Work} = 16x - 9x = 7x$$

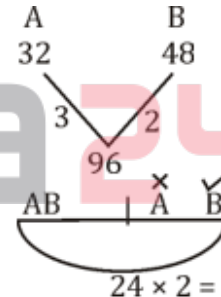
$$\frac{M_1 D_1}{W_1} = \frac{M_2 D_2}{W_2}$$

$$\frac{36 \times 20}{16x} = \frac{30 \times D_2}{7x}$$

$$D_2 = \frac{21}{2} = 10 \frac{1}{2} \text{ days}$$

S289. Ans.(b)

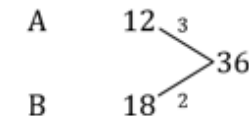
Sol.



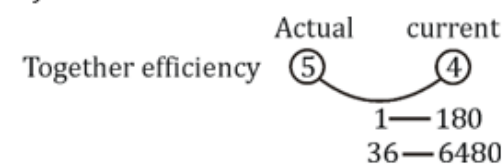
$$\text{Remaining work} = 96 - 48 = \frac{48}{3} = 16 \text{ days.}$$

S290. Ans.(c)

Sol.

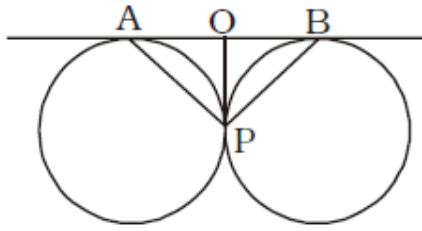


$$\frac{36}{9} = 4$$



S291. Ans.(b)

Sol.



$$OA = OP$$

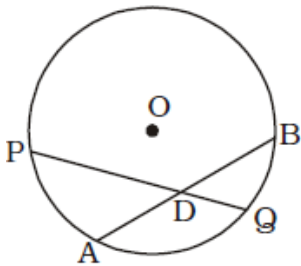
$$\rightarrow \angle PAB = \angle OPA = 35^\circ$$

$$\rightarrow \therefore \angle AOP = 110^\circ \Rightarrow \angle POB = 70^\circ$$

$$\rightarrow \therefore \angle ABP = \frac{180^\circ - 70^\circ}{2} = \frac{110^\circ}{2} = 55^\circ$$

S292. Ans.(d)

Sol.



$$AD \times DB = PD \times DQ$$

$$\rightarrow 4 \times 6 = PD \times 3$$

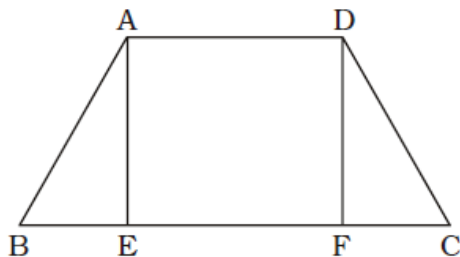
$$\rightarrow PD = \frac{4 \times 6}{3} = 8 \text{ cm.}$$

$$\therefore PQ = PD + DQ$$

$$= (8 + 3) \text{ cm.} = 11 \text{ cm.}$$

S293. Ans.(c)

Sol.



$$AE \perp BC; DF \perp BC$$

$$\therefore \angle DCB = 45^\circ$$

In $\triangle CDF$,

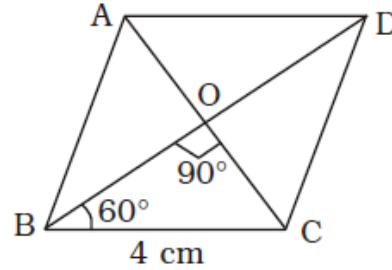
$$\text{S29in}45^\circ = \frac{DF}{DC}$$

$$\rightarrow \frac{1}{\sqrt{2}} = \frac{DF}{10}$$

$$\rightarrow DF = \frac{10}{\sqrt{2}} = 5\sqrt{2} \text{ cm}$$

S294. Ans.(d)

Sol.



From $\triangle BOC$,

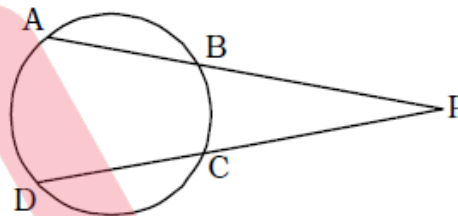
$$\cos 60^\circ = \frac{BO}{BC}$$

$$\rightarrow BO = \frac{1}{2} \times 4 = 2 \text{ cm}$$

$$\therefore BD = 2 \times 2 = 4 \text{ cm}$$

S295. Ans.(a)

Sol.



Clearly,

$$AP \times BP = PD \times PC$$

$$\rightarrow 8 \times 6 = PD \times 4$$

$$\rightarrow PD = \frac{8 \times 6}{4} = 12 \text{ cm.}$$

S296. Ans.(b)

Sol. Sum of the interior angles of a regular polygon of n sides

$$= (2n - 4) \times 90^\circ$$

$$\rightarrow (2n - 4) \times 90^\circ = 1080^\circ$$

$$\rightarrow 2n - 4 = 12$$

$$\rightarrow 2n = 12 + 4 = 16$$

$$\rightarrow n = 8$$

S297. Ans.(d)

Sol. In $\triangle ADE$ and $\triangle ABC$,

$$\angle ABC = \angle ADE$$

$$\angle A = \angle A$$

$$\therefore \triangle ABC \sim \triangle ADE$$

$$\rightarrow \therefore \frac{AB}{AD} = \frac{BC}{DE} = \frac{AC}{AE}$$

$$\rightarrow \therefore \frac{AE + EB}{AD} = \frac{AC}{AE}$$

$$\rightarrow \frac{3 + 2}{2} = \frac{AC}{3}$$

$$\rightarrow \frac{5}{2} = \frac{AC}{3}$$

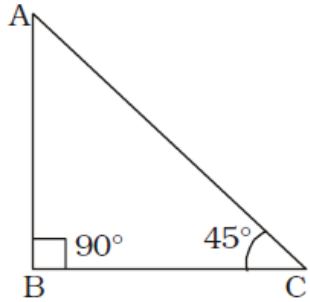
$$\rightarrow AC = 7.5$$

$$\rightarrow \therefore DC = AC - AD$$

$$DC = 7.5 - 2 = 5.5 \text{ cm}$$

S298. Ans.(b)

Sol.



According to the question,

$AB = 8 \text{ cm.}$

$\angle ABC = 90^\circ$

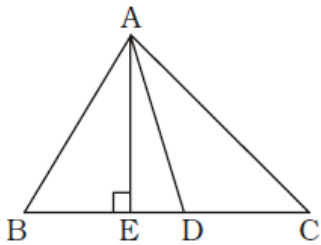
$$\rightarrow \therefore \sin 45^\circ = \frac{AB}{AC}$$

$$\rightarrow \frac{1}{\sqrt{2}} = \frac{8}{AC}$$

$$\rightarrow AC = 8\sqrt{2} \text{ cm}$$

S299. Ans.(c)

Sol.



$$\angle B + \angle C = 65^\circ + 35^\circ = 100^\circ$$

$$\rightarrow \angle A = 180^\circ - 100^\circ = 80^\circ$$

$$\rightarrow \angle BAD = 40^\circ$$

$$\text{In } \triangle ABE, \angle AEB = 90^\circ$$

$$\rightarrow \angle BAE = 180^\circ - 90^\circ - 65^\circ = 25^\circ$$

$$\rightarrow \angle EAD = \angle BAD - \angle BAE$$

$$= 40^\circ - 25^\circ = 15^\circ$$

S300. Ans.(d)

Sol. In $\triangle ABC$,

$$\angle BAC + \angle ABC + \angle ACB = 180^\circ$$

$$\rightarrow \angle BAC + 69^\circ + 31^\circ = 180^\circ$$

$$\rightarrow \angle BAC = 180^\circ - 100^\circ = 80^\circ$$

Since angles in the same segment are equal.

$$\rightarrow \therefore \angle BDC = 80^\circ$$



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