100 Arithmetic Practice Questions

Q1. Varun invested Rs. X at the rate of 8 % per annum for five years and obtained total simple interest of Rs. 5000. Had he invested the same amount at the same rate of interest for two years, then how much amount would he have obtained as compound interest (compound annually)?
(a) 2050 Rs.
(b) 2010 Rs.
(c) 2060 Rs.
(d) 2080 Rs.
(e) 2040 Rs.

Q2. A borrowed Rs. P from B at 20% p.a. on compound interest annually. If A paid total amount of Rs.34,560 to B for settle his debt after three years, then find value of P?
(a) 16,000
(b) 24,000
(c) 20,000
(d) 15,000
(e) 25,000

Q3. Difference of the interest received when a sum is invested at 15% p.a. at SI for two years and the interest received when that sum is invested at 20% p.a. for one year compounded half yearly is Rs 432, find the sum?
(a) Rs. 5400
(b) Rs. 5000
(c) Rs. 4500
(d) Rs. 4000
(e) Rs. 4800

Q4. A man invested an amount in two schemes in the ratio of 2 : 3 at the rate of 20% p.a. and 10% p.a. on compound interest respectively. If the man gets a total interest of Rs. 1208 after two years from both the schemes, the find amount invested by man?
(a) 6000 Rs.
(b) 4800 Rs.
(c) 5000 Rs.
(d) 4500 Rs.
(e) 4000 Rs.

Q5. If a man invests equal sum at the same rate of interest on simple interest for T and T+4 years and the respective ratio of interest gets by man is 1:2 respectively, then find 'T'?
(a) 6
(b) 2
(c) 5
(d) 3
(e) 4

Q6. Rs 6000 when invested at a certain rate at SI for 2 years, it fetches Rs 1200. If same sum is invested at same rate for a year compounded half – yearly then find compound interest.
(a) Rs 615
(b) Rs 600
(c) Rs 1200
(d) Rs 585
(e) Rs 1260

Q7. A sum becomes 1.6 times of itself in five years at simple rate of interest. Find rate of interest per annum?
(a) 10%
(b) 12.5%
(c) 15%
(d) 12%
(e) 8.5%

Q8. A sum is invested for 2 years with 20% rate on S.I. and the same sum invested for 2 years at 20% rate at C.I. If difference between interest earned in both scheme is Rs.160 then find the sum invested.
(a) Rs.2500
(b) Rs.1600
(c) Rs.1800
(d) Rs.2000
(e) Rs.4000

Q9. If a money gets tripled in $2\frac{1}{2}$ years on a certain rate of simple interest, then find the rate of interest?
(a) 35 %
(b) 50 %
(c) 40 %
(d) 60 %
(e) 80 %

Q10. Amit invested Rs. P in a scheme offering 20% p.a. at CI compounding annually for 2 years. If interest received by him is Rs. 7040, then find P.
(a) 24,000
(b) 10,000
(c) 12,000
(d) 20,000
(e) 16,000

Q11. A man invested Rs. X at the rate of 16 % p.a. on simple interest for 2.5 years. If the man received Rs. 1000 as interest, then find the value of X?
(a) 1500 Rs.
(b) 3000 Rs.
(c) 4000 Rs.
(d) 2500 Rs.
(e) 2000 Rs.

Q12. Deepak and Shivam invested Rs.10000 and Rs.20000 respectively in a business. If Shivam invested for 9 months and total profit at the end of the year is Rs.35000, then find profit share of Shivam.
(a) Rs.24000
(b) Rs.17500
(c) Rs.15000
(d) Rs.21000
(e) Rs.18000

Q13. P, Q, R together invested Rs. 100000 in a business. if P invested Rs. 8000 more than Q and Q invested Rs. 10000 more than R, then at the end of the year what will be share of P out of a total profit of Rs. 70,000?
(a) 30600 Rs.
(b) 28000 Rs.
(c) 27500 Rs.
(d) 29400 Rs.
(e) 30000 Rs.

Q14. P and Q invested Rs. 6000 and Rs. 7500 for 9 and 8 months respectively in a business. If 20% of total profit is given to P as salary for managing business and remaining profit is distributed in ratio of their profit share & profit share of Q is Rs. 2000, then find the total profit?
(a) Rs. 4250
(b) Rs. 5000
(c) Rs. 4800
(d) Rs. 4750
(e) Rs. 4500

Q15. P invested 25% more than Q and Q invested 20% less than R. If the time period of investment of all three is same and the sum of profit shares of P and Q is Rs. 4,050 then find the profit share of R.
(a) Rs. 2000
(b) Rs. 2150
(c) Rs. 2200
(d) Rs. 2250
(e) Rs. 2450

Q16. Amit and Manish invest in a business in the ratio 5 : 2 respectively. If after one year 2% of the total profit goes to charity and profit share of Amit's is Rs. 700 out of the rest of the profit, then find the total profit?
(a) 1000 Rs.
(b) 1200 Rs.
(c) 1050 Rs.
(d) 1150 Rs.
(e) 1100 Rs.

Q17. Ayush invested Rs.8,000 for 10 months and Shivam invested Rs.12,000 for 6 months. If total profit is Rs.47,500, then find the profit share of Shivam?

(a) Rs.22,500
(b) Rs.25,000
(c) Rs.17,500
(d) Rs.20,000
(e) None of the above.

Q18. Pinky and Santosh started a business with investments of Rs. 45000 and Rs. 55000 respectively. Pinky left the business after 9 months, after one-year Santosh gets Rs. 8800 as his profit. find out the total profit? (in Rs.)
(a) 14000
(b) 14200
(c) 14800
(d) 14500
(e) 14600

Q19. Aman and Bhanu invested in a business with capitals in the ratio of 2:3 respectively and ratio of time period of investment of Aman and Bhanu is 5:4 respectively. If profit share of Bhanu is Rs.6,000, then find total profit?
(a) Rs.12,000
(b) Rs.15,000
(c) Rs.11,000
(d) Rs.10,000
(e) Cannot be determined.

Q20. Deepak and Shivam entered in a business by investing Rs.50,000 and Rs. 70,000 respectively. After five months, Mohit joins the business with Rs. 60,000 and at the end of the year, Mohit gets Rs.2800 as his share of profit. Find the difference between profit share of Deepak and Shivam?
(a) Rs. 1600
(b) Rs. 1300
(c) Rs. 1200
(d) Rs. 1500
(e) Rs. 1800

Q21. Shivam and Mohan entered into business by making investment of Rs. 24000 and Rs. 36000 respectively. If Mohan left the business after X months and the get equal profit share at the end of one year, then find 'X' ?
(a) 6
(b) 7
(c) 8
(d) 9
(e) 5

Q22. Shivam & Ayush invested Rs. 8,000 & Rs. 5,000 respectively in a business. After 8 months, Ayush increased his investment by 20%. Find the profit-sharing ratio of Shivam and Ayush at the end of the year respectively?
(a) 4:3
(b) 2:1
(c) 5:4
(d) 3:2
(e) None of the above.

Q23. If we add 4 to the numerator of the fraction and increases denominator by 50% then both become equal. And when the numerator is increased by 5 and denominator is doubled then it becomes equal to the original fraction. What will be two times of that fraction?

(a) $\frac{4}{5}$
(b) $\frac{3}{2}$
(c) $\frac{8}{5}$
(d) $\frac{5}{2}$
(e) $\frac{5}{3}$

Q24. The ratio of daily wage of three workers P, Q & R in 'MANREGA' is 21 : 16 : 18 respectively. If any of workers work on Sunday, then gets Rs. 125 extras on that day. The ratio of wage of P, Q&R for a weekday and Sunday is 26 : 21 : 23, then find the difference between wage of P&R on a weekday & Sunday (in Rs.) ?

(a) 64
(b) 75
(c) 90
(d) 125
(e) 100

Q25. Varun and Kartik purchased the shares in ratio 7:9 for the cost of their basic salaries. The company gave each of them 50 shares as incentive, due to which the ratio changes to 9:11. If each share cost is Rs. 60. Find basic salary of Varun.

(a) Rs. 13500
(b) Rs. 16500
(c) Rs. 21000
(d) Rs. 10500
(e) Rs. 27000

Q26. In a company, the ratio of female technical to female non technical staff is 5:4. There are 64% males in the company. Females in technical are half of males in technical. What is the ratio of male technical staff to that males non technical staff?

(a) 2:1
(b) 3:5
(c) 5:3
(d) 5:4
(e)Cannot be determined

Q27. A two -digit number get reversed when $\left(\frac{1}{5}\right)$ *th* of it is added to it. Find the 40% of that no.

(a) 32
(b)36
(c) 20
(d)28
(e)18

Q28. The ratio of first class fare to second class fare is 3:1. No. of tickets booked of first class to second class is in ratio 2:3. Total fare collected was Rs. 1800. Find fare collected from passengers of second class.
(a) Rs. 1200
(b) Rs. 600
(c) Rs. 900
(d) Rs. 750
(e) Rs. 450

Q29. A pizza is cut into two pieces in the ratio of 3 : 7 by weight .The bigger of the two pieces is further cut in the ratio of 4 : 7 by weight. Find the ratio of each of the three pieces.
(a) 11 : 14 : 7
(b) 33 : 28 : 49
(c) 35 : 49 : 40
(d) 14 : 19 : 23
(e)none of these

Q30. When digits of the two digits number are reversed, number obtained is 9 less than twice of the original number. Also the new number obtained is 175% of the original number. Find the sum of the digits of the number?
(a) 13
(b) 10
(c) 9
(d) 12
(e) 15

Q31. Ratio of ages of Omi & Pappu is 4:5. After 5 years their ages will be in ratio 21:25. Find difference of their ages. (in years)
(a) 3
(b) 4
(c) 5
(d) 2
(e) 6

Q32. In a family the ratio of expenses to the savings is 5 : 3. But his expenses is increased by 60% and income is increased by only 25% thus there is decrease of Rs. 3500 in the saving. Find the increased income of the family.
(a) Rs. 35000
(b) Rs. 28000
(c) Rs. 25000
(d) Rs. 18,500
(e) None of these

Q33. Arti has coins of the denomination of Rs. 1, 50 paise and 25 paise in the ratio of 12 : 10 : 7. The total worth of the coins she has is Rs. 75. Find the number of 25 paise coins.
(a) 28
(b) 36
(c) 42
(d) 32
(e) None of these

Q34. Rs. 2186 is distributed among A, B and C. If money given to them is decreased by Rs. 26, Rs. 28 and Rs. 32 respectively, then the ratio of their share become 9 : 13 : 8. What is the amount given to A ?
(a) Rs. 696
(b) Rs. 626
(c) Rs. 656
(d) Rs. 956
(e) None of these

Q35. Akash bought a bike for Rs. 50000. He sold it to Arun at a loss of 6%, Arun sold it to Mukesh at a profit of 11%, Find out the price paid by Mukesh for the Bike?
(a) 52350 Rs.
(b) 52170 Rs.
(c) 53000 Rs.
(d) 53500 Rs.
(e) 52400 Rs.

Q36. Ratio of cost price to marked price of an article is 8:11 and shopkeeper allowed 20% discount on marked price. If shopkeeper earned profit of Rs.40 on selling the article, then find amount of discount allowed on the article. (in Rs.)
(a) Rs.120
(b) Rs.110
(c) Rs.105
(d) Rs.125
(e) Rs.115

Q37. A man sells a chair at Rs.960 and earns a profit of 20%. If the man wants to sell it at a profit of 40%, then at what price he should sell the chair?
(a) 1120 Rs.
(b) 1020 Rs.
(c) 1280 Rs.
(d) 1200 Rs.
(e) None of these

Q38. Ram bought 54 bananas for Rs. 220, and he sold these bananas for Rs. 50 per dozen, find out his total profit? (in Rs.)
(a) 5 Rs
(b) 10 Rs
(c) 15 Rs
(d) 8 Rs
(e) 14 Rs

Q39. Cost price of 20 pencils is equal to selling price of 10 balls. If shopkeeper earned 25% profit on selling a ball, then find ratio of cost price of a ball to that of a pencil respectively?
(a) 3:2
(b) 5:3
(c) 8:5
(d) 6:5
(e) 2:1

Q40. An article is marked at a price which gives a profit of 25% and after allowing a discount, the profit becomes 12%. find the discount percentage?

(a) $7\frac{1}{7}\%$

(b) $10\frac{2}{5}\%$

(c) $8\frac{2}{5}\%$

(d) $8\frac{4}{5}\%$

(e) $7\frac{3}{7}\%$

Q41. The cost price of two articles A & B is in the ratio of 4:5 respectively. If A sold at 20% profit and B sold at 10% loss, then find the overall profit or loss percentage on selling both articles?

(a) $3\frac{1}{3}\%$

(b) 4%

(c) 5%

(d) $6\frac{2}{3}\%$

(e) 9%

Q42. A shopkeeper sells a bike at 40% profit after allowing 16% discount. If the profit earned is Rs.8,000 more than the discount allowed on the bike, then find the cost price of the bike?

(a) Rs. 80,000

(b) Rs. 50,000

(c) Rs. 60,000

(d) Rs. 90,000

(e) Rs. 40,000

Q43. A book is marked 80% above cost price and sold at 40% discount, if difference between discount given and profit earned is Rs.460.8, then find M.R.P. of book?

(a) Rs.720

(b) Rs.1200

(c) Rs.1296

(d) Rs. 777.6

(e) Rs.1660

Q44. A person marks his goods 40% above the cost price. He sold half of his goods at a discount of 20%, one-fourth of the goods at marked price and the remaining at cost price. Find profit percentage.

(a) 16%

(b) 24%

(c) 12%

(d) 32%

(e) 26%

Q45. Ratio of cost price to that of marked price is 3: 5 and ratio of loss to that of discount is 1:4 then find the discount % given?

(a) $48\frac{1}{3}\%$
(b) $53\frac{1}{3}\%$
(c) $58\frac{1}{3}\%$
(d) $63\frac{1}{3}\%$
(e) 60 %

Q46. Rahul bought an earphone & paid 10% less than its original price. If he sold it at 20% profit on the price he had bought, what profit percentage did Rahul earn on the original price?
(a) 10%
(b) 6%
(c) 5%
(d) 8%
(e) 12%

Q47. If a man increases his speed to 60 kmph from 45 kmph, then he will take 45 minutes lesser time in covering a certain distance 'D'. Find the time taken by man to cover 160% of 'D' with his original speed.
(a) 3 hours 50 minutes
(b) 4 hours 40 minutes
(c) 4 hours 24 minutes
(d) 4 hours 48 minutes
(e) 4 hours

Q48. Average speed of a car in covering a certain distance to and fro is $12\frac{8}{11}$ $kmph$. If ratio of time taken by them is 4 : 7 then find the time taken by the car to cover 145 km with greater speed.
(a) $8\frac{1}{7}h$
(b) $8\frac{2}{7}h$
(c) $8h$
(d) $6\frac{1}{7}h$
(e) $6\frac{6}{7}h$

Q49. Two trains A and B having length of 'X' meters and 'X+100' meters respectively. When both trains running in opposite direction, they cross each-other in $13\frac{1}{3}$ sec, while when both trains are running in same direction then faster train takes 120 sec to pass the slower train Completely. if the speed of faster train is 18 kmph more than that of slower trains, then find Speed of the faster train?
(a)84 kmph
(b)64 kmph
(c)96 kmph
(d)90 kmph
(e)72 kmph

Q50. A boat can row to a place 300 km away and come back to initial point in total (2T-2.5) hours. If the boat covers 60 km more in downstream than upstream in T hours and Speed of stream is 2 kmph, then find the time taken by boat to cover 180 km in upstream?

(a) 8 hours
(b) 10 hours
(c) 7.5 hours
(d) 9 hours
(e) 12 hours

Q51. A bus covered 96 km less in _____ hours than a car and ratio of speed of car to bus is 5 : 4. If speed of bus is 32 km/hr, then what will come in the place of blank?
(a) 12 hours
(b) 15 hours
(c) 8 hours
(d) 4 hours
(e) 6 hours

Q52. Length of train A is 25% more than length of train B and speed of train A is 90 km/hr. If train A crosses a pole in 12 seconds and train B crosses train A in 36 seconds while running in same direction, then find time taken by train B to cross a 400 meters long platform.
(a) 10 seconds
(b) 12 seconds
(c) 15 seconds
(d) 16 seconds
(e) 18 seconds

Q53. A train 'P' running at the speed of 72 km/hr crosses a platform which is half of its length in one minute. Find the time in which train 'P' crosses another train 'Q' whose length is two times of train 'P' and running at the speed of 108 km/hr in opposite direction?
(a) 48 sec.
(b) 54 sec.
(c) 60 sec.
(d) 64 sec.
(e) 40 sec.

Q54. Train – P crosses train – Q in 33 seconds while running in same direction and train – Q, running at 81 km/hr. crosses a 420 meters long platform in 40 seconds. If ratio of length of train – P to that of train – Q is 3:8, then find time taken by train – P to cross a pole?
(a) $9\frac{4}{17}$ seconds
(b) $4\frac{4}{17}$ seconds
(c) $6\frac{4}{17}$ seconds
(d) $8\frac{4}{17}$ seconds
(e) $2\frac{4}{17}$ seconds

Q55. A 'L' meters long train cross a pole in 'X' sec and a platform which is 240 meters long in 40 sec. If speed of train is 36 km/hr, then what will be value of 'X'?
(a) 20 sec
(b) 18 sec
(c) 16 sec
(d) 10 sec
(e) 12 sec

Q56. A boat covers 22.4 km in downstream in 48 minutes and the speed of the stream is 40% of the speed of the boat in still water. Find the ratio of time taken by boat to cover 54 km in upstream to the time taken by boat to cover 210 km in downstream respectively?

(a) 5 : 3
(b) 3 : 5
(c) 3 : 4
(d) 2 : 3
(e) 1 : 3

Q57. A train running at the speed of 144 km/hr crosses a man who running at 24 km/hr. in the same direction in 9 sec. If the train crosses a tunnel in 25.5 sec, then find the length of the tunnel?

(a) 780 meters
(b) 720 meters
(c) 480 meters
(d) 640 meters
(e) 440 meters

Q58. Time taken by a boat to cover 96 km in downstream is 25% less than the time taken by the same boat to cover same distance in upstream. If boat covers 36 km in upstream in 1.5 hours, then find speed of boat in still water.

(a) 20 km/hr.
(b) 24 km/hr.
(c) 30 km/hr.
(d) 32 km/hr.
(e) 28 km/hr.

Q59. A spherical ball is melted to form 63 identical cylindrical vessels. If radius of each cylindrical vessel is $33\frac{1}{3}\%$ of radius of spherical ball and height of each cylindrical vessel is 3cm less than radius of each cylindrical vessel, then find radius of spherical ball.

(a) 21cm
(b) 14cm
(c) 35cm
(d) 49cm
(e) 42cm

Q60. A solid cylindrical toy is melted to form a solid spherical toy, due to which some part of cylindrical toy got wasted. Radius of spherical toy is half of radius of cylindrical toy and height of cylindrical toy is 10 cm. If volume of cylindrical toy is $42\frac{6}{7}\%$ more than volume of spherical toy, then find radius of cylindrical toy?

(a) 21cm
(b) 63cm
(c) 35cm
(d) 28cm
(e) 42cm

Q61. The area of rectangular field of length 90 m and breadth 80 m is equal to the area of a square plot. What will be the length of the diagonal of the square plot?
(a) 120 m
(b) 100 m
(c) 90 m
(d) 105 m
(e) 110 m

Q62. The height of a triangle is equal to the perimeter of a square whose diagonal is $9\sqrt{2}$ metre and the base of the same triangle is equal to the side of the another Square whose area is 784 m^2. What is the area of the triangle? (in m^2)
(a) 504
(b) 558
(c) 478
(d) 522
(e) 496

Q63. Length of a rectangle is 40% more than breadth of rectangle and length of rectangle is 8 m more than side of a square. If diagonal of the square is $20\sqrt{2}$ meters, then find out the difference between the area of rectangle and the area of square.
(a) 172 m^2
(b) 180 m^2
(c) 156 m^2
(d) 166 m^2
(e) 160 m^2

Q64. The ratio of magnitude of curved surface area to the volume of cylinder is 1 : 7 and the ratio of diameter of the base to the height of cylinder is 4 : 3. Find total surface area of cylinder (in cm^2)?
(a) 3100
(b) 3180
(c) 3000
(d) 3080
(e) 3040

Q65. A cube of total surface area 1536 cm^2 is melted and re-casted into 'n' number of small cubes each of 96 cm^2 total surface area. Find the value of 'n'.
(a) 56
(b) 60
(c) 64
(d) 72
(e) 80

Q66. Difference between circumference and diameter of a circle is 90 cm. What will be height of cylinder, whose radius is 7 cm more than that of circle and volume is 24640 cm^3?
(a) 12 cm
(b) 16 cm
(c) 24 cm
(d) 10 cm
(e) 8 cm

Q67. If ratio between total surface area of cylinder to its curved surface area is 4 : 3 then radius of cylinder is what percent less then height of cylinder?

(a) $33\frac{1}{3}\%$

(b) 50%

(c) $66\frac{2}{3}\%$

(d) 75%

(e) $83\frac{1}{3}\%$

Q68. Length of a rectangular land is twice the radius of a circle of circumference 132 cm. The land area got increased by 144 sq.cm, when a square land is attached along the breadth of the rectangle. Find area of rectangle in sq.cm.

(a) 1008

(b) 257

(c) 504

(d) 756

(e) 1512

Q69. Length, breadth and height of a box are 30cm, 40cm and 20cm respectively. Find the volume of the room if each side is increases by 20%.

(a) 41,400cm^3

(b) 41,472cm^3

(c) 51,472cm^3

(d) 40,472cm^3

(e) 45,472cm^3

Q70. If area of base of a cylinder is $\frac{77}{2}$ m^2 and height is twice of it's radius. Find curved surface area of cylinder?

(a) 121 m^2

(b) 77 m^2

(c) 308 m^2

(d) 154 m^2

(e) 208 m^2

Q71. A pipe can fill a tank in 36 minutes & minutes & other pipes can fill it in 48 minutes, but a third Pipe can empty it in 18 minutes. The first two pipes are kept open for 16 minutes in the beginning then the third Pipe is also opened. In what time is the cistern emptied?

(a) 120 min

(b) 80 min

(c) 96 min

(d) 112 min

(e) 144 min

Q72. Pipe – P alone can fill the tank in 30 hours and pipe – Q alone can empty the same tank in 48 hours. If pipe – P & Q are opened together in the tank, then find the time taken by both pipes to fill 65% of the tank?

(a) 52 hours
(b) 48 hours
(c) 45 hours
(d) 54 hours
(e) 57 hours

Q73. Pipe P alone can fill a tank in 36 hours and can fill 75% of the tank in 15 hours along with Q. Pipe R can fill whole the tank along with Q in 18 hours. Find the time taken by pipe P, Q and R to fill 2/3 of the tank together?
(a) 12 hrs
(b) 16 hrs
(c) 20 hrs
(d) 24 hrs
(e) 8 hrs

Q74. Two trains X & Y which are 'a' km apart from each other start moving towards each other at the speed of 60 km/hr & 80 km/hr respectively in such a way that in first hour X moves & Y does not move, in 2nd hour only Y moves & X does not move & this continues till they meet. Find value of 'a' if they meet after $6\frac{1}{2}$ hours.
(a) 480 km
(b) 460 km
(c) 420 km
(d) None of the above
(e) 400 km

Q75. Ram and Shyam are travelling from point A to B, which are 60 km apart. Travelling at a certain speed Ram takes one hour more than Shyam to reach point B. If Ram doubles his speed he will take 30 minutes less than Shyam to reach point B. At what speed Ram was travelling from point A to B ?
(a) 15 kmph
(b) 35 kmph
(c) 30 kmph
(d) 25 kmph
(e) 20 kmph

Q76. Find the difference between average of the largest & the smallest three-digit number formed by digits 1,3,7 and average of 'x' & 'y', where y is $14\frac{2}{7}\%$ more than x and difference between x & y is 60?
(a) 8
(b) 12
(c) 16
(d) 24
(e) 30

Q77. The average weight of ten students of class is 40 kg. If the lightest and heaviest student are not taken into account then average weight of remaining students is 41 kg. If the weight of heaviest student is 50 kg, find the weight of lightest student. (in Kg)
(a) 21
(b) 22
(c) 23
(d) 24
(e) 25

Q78. A vessel contains milk and water in the ratio 3 : 1. When 80l mixture is taken out and completely replaced by milk, then milk becomes 700% of the water in the vessel. Find original quantity of the vessel.
(a) 240 lit
(b) 280 lit
(c) 320 lit
(d) 200 lit
(e) 160 lit

Q79. Arun has 64 lit mixture of milk and water in which 75% is milk and Amit has another mixture of milk and water in the ratio of 5:3. Arun gave 20 lit of the mixture to Amit and after mixing it to his own mixture he found that difference between milk and water becomes 28 lit. Find the initial quantity of the mixture with Amit?
(a) 96 Liter
(b) 88 Liter
(c) 64 Liter
(d) 80 Liter
(e) 72 Liter

Q80. The ratio of spirit and water in two mixtures of 24 liters and 42 liters is 7 : 5 and 5 : 9 respectively. Both the mixtures are mixed together. Now the ratio of the spirit and water in the new mixture is
(a) 21 : 29
(b) 29 : 35
(c) 37 : 29
(d) 29 : 37
(e) 31 : 29

Q81. The ratio of the present age of A and B is 5 : 4 respectively and the sum of the present age of C and B is 52 years. If the ratio of age of A five years ago to the age of C two years hence is 5 : 6 respectively, then find the difference between the present age of B & C?
(a) 2 years
(b) 3 years
(c) 6 years
(d) 5 years
(e) 4 years

Q82. The sum of P's and Q's age six years ago was 44 years and P's age nine years ago was equal to Q's age three years ago. Find the age of P four years hence?
(a) 35 yrs
(b) 36 yrs
(c) 42 yrs
(d) 40 yrs
(e) 38 yrs

Q83. Ratio of Age of P & Q four years hence will be 3 : 5 respectively, while ratio of present age of R and Q is 5 : 6 respectively. If sum of age of P & R after six years will be 62 years, then find sum of present age of P & Q?

(a) 64 years
(b) 48 years
(c) 52 years
(d) 56 years
(e) 72 years

Q84. A jar contains 50 ml mixture of two liquid A & B in which liquid A is 34 ml more than liquid B. If 'x' ml mixture taken out from the jar and (x + 6.7) ml liquid B added, then the ratio of liquid A to that of liquid B in new mixture becomes 5 : 4. Find 'x'.
(a) 20 ml
(b) Can't determined
(c) 25 ml
(d) 12.5 ml
(e) 6.25 ml

Q85. Sum of two numbers is equal to sum of square of 11 and cube of 9. Larger number is 25 less than square of 25. Find the sum of twice of 30% of the smaller number and half of the larger number?
(a) 445
(b) 425
(c) 415
(d) 435
(e) 450

Q86. The value of X is the product of 3 and 4 and a person 'A' can complete the work in X days and 'B' takes Y days to complete that work. If Y is the product of 3 and 4^2, then find the number of days taken by C whose efficiency is double the average of A and B together to complete that work.
(a) 9.6 *days*
(b) 8.6 *days*
(c) 7.6 *days*
(d) 10.6 *days*
(e) 11.6 *days*

Q87. The total cost of painting the four walls with ceiling is Rs. 5800. If the cost of painting is Rs. 20/meter^2 and length and height of the room are 10 meters and 8 meters respectively, then find the breadth of the room.
(a) 4 meters
(b) 3 meters
(c) 6 meters
(d) 5 meters
(e) 8 meters

Q88. The present age of A is 35 years and the ratio of age of A five years hence to the age of B five years ago is m: n. If the difference between the age of A and B is five years, then find the value of m: n.
(a) 8: 5
(b) 7: 8
(c) 8: 7
(d) 5: 8
(e) Both (a) and (c)

Q89. A shopkeeper offers two discount schemes A and B. In schemes A, he offers two T-shirt are free on buying five T-shirts while in scheme B, he offers 15% discount on buying five T- shirts. Which scheme is best for the buyer and shopkeeper respectively.
(a) A, B
(b) Can't be determined
(c) Both of the schemes are same
(d) B, A
(e) None of these

Q90. A police man saw a thief when he was 100 meters away from the him. Policeman started running behind the thief with the average speed of 1800 meter/min. and thief started running with x meter/sec when he noticed that the policeman was just 50 meters behind and policeman caught the thief in total of $\frac{20}{3}$ *sec*. Find the value of x.
(a) 25
(b) 24
(c) 16
(d) 18
(e) 20

Q91. A man can row 25 km downstream and 10 km upstream in 7.5 hours and the ratio of speed of boat in still water to speed of current is roots of $x^2-5x+6=0$ respectively. Find the time taken by the boat to cover 24 km in still water. (Speed of boat in still water is greater than speed of current)
(a) 6 hours
(b) 5 hours
(c) 4 hours
(d) 3 hours
(e) 2.5 hours

Q92. In vessel A, the quantity of milk is 18 liters which is 120% of quantity of water. In vessel B, quantity of milk is 24 liters which is 80% of quantity of water. If mixture of both vessel A and B is mixed into vessel C which contains x liters of pure milk, then quantity of milk in C becomes 18 liters more than water. Find x.
(a) 18
(b) 21
(c) 15
(d) 24
(e) 27

Q93. A and B started a business with Rs.5000 and Rs.4000 respectively. After 6 months C joined them with the investment of Rs. 9000. If at the end of a year the difference between average profit of A & C and B & C is Rs.400, then find the total profit earned by A, B and C together?
(a) 10800
(b) 12400
(c) 11200
(d) 12800
(e) None of the above

Q94. The efficiency of B is 50% more than the A and 25% less than C. If the number of days taken by B alone to complete the work is 'n', where 'n' is the square of smallest prime number, then find the number of days taken by A, B & C together to complete the whole work. (In days)

(a) $\frac{1}{2}$
(b) $\frac{3}{2}$
(c) $\frac{5}{4}$
(d) $\frac{4}{3}$
(e) $\frac{4}{5}$

Q95. A person sells an article at a 10% profit and another article at a 20% loss. If 'n' is the difference between the selling prices of both articles, while the cost prices of both articles are the same the overall loss is Rs. 34. Find '2n'.

(a) 108
(b) 204
(c) 216
(d) 102
(e) 220

Q96. The average marks of a class of 35 students in an exam is 43 marks. However, the correct marks of three students are 36, n & 45, which were wrongly marked as 42, 28 & 50 marks respectively. If 44 is the correct average, then find n^2?

(a) 5476
(b) 4356
(c) 4624
(d) 4900
(e) 5184

Q97. Train A crosses a platform and a pole in 24 sec and 16 sec respectively, while the ratio of length of train A to train B is 4:3. If speed of train B is 36 km/hr which is 50% less than train A, then find the time taken by train B to cross the same platform. (In seconds)

(a) 50
(b) 35
(c) 40
(d) 25
(e) 20

Q98. Pipe A alone and pipe B alone fill a tank in 40 min and 48 min respectively. Both the pipes are opened together but after 'n 'minute(s) pipe B was closed. If the tank was fully filled in half an hour, then find 'n' is what percent of time taken by pipe B alone to fill the tank.

(a) 20%
(b) $33\frac{1}{3}\%$
(c) 25%
(d) 12.5%
(e) 8.33%

Q99. Mohit invested of Rs.4000 in a scheme 'A' at the rate of 15% p.a. for 2 years at simple interest. He invested of Rs. (X+Y) in a scheme 'B' offering compound interest at the rate of 10% p.a. for 2 years and the interest received from scheme 'B' is Rs. 630. If Rs. X is the interest received from scheme 'A', then find the value of 'Y'.

(a) 1800
(b) 1200
(c) 1500
(d) 900
(e) 1100

Q100. The length of a rectangle is twice the side of a square, whose area is 64 cm^2. If breadth of rectangle is 25% more than the length of the rectangle, then find the side of the square is what percentage of the area of the rectangle.

(a) 2.5%
(b) 7.5%
(c) 6.75%
(d) 4.25%
(e) 5.5%

Solutions

S1. Ans.(d)
Sol.
$X = \frac{5000\times100}{8\times5} = 12500$ Rs.

Required compound interest $= 12500\left[\left(1+\frac{8}{100}\right)^2 - 1\right] = 2080$ Rs.

S2. Ans.(c)
Sol. ATQ,

$P \times \left(1+\frac{20}{100}\right)^3 = 34560$

$P = 34560 \times \frac{100}{120} \times \frac{100}{120} \times \frac{100}{120}$

$P = 20{,}000$ Rs.

S3. Ans.(e)
Sol. Let the amount be Rs x
ATQ
$x\times30100 - x\times21100 = 432$
$x = Rs\ 4800$

S4. Ans.(e)
Sol. Let amount invested by man = 10x Rs.

Equivalent CI for two years at the rate of 20% p.a. = $20 + 20 + \frac{20\times20}{100} = 44\%$

Equivalent CI for two years at the rate of 20% p.a. = $10 + 10 + \frac{10\times10}{100} = 21\%$

ATQ

$10x \times \frac{2}{5} \times \frac{44}{100} + 10x \times \frac{3}{5} \times \frac{21}{100} = 1208$

$\frac{176x}{100} + \frac{126x}{100} = 1208$

x = 400 Rs.

Required amount = 4000 Rs.

S5. Ans.(e)

Sol. Let sum invested by man = Rs. X

And, rate of interest = r%

ATQ-

$\frac{X \times r \times T}{X \times r \times (T+4)} = \frac{1}{2}$

$\frac{T}{(T+4)} = \frac{1}{2}$

T = 4

S6. Ans.(a)

Sol. let rate of interest be R%

ATQ, $1200 = \frac{6000 \times R \times 2}{100}$

R = 10%

Since compounding is done half-yearly, rate of interest = 5%

Effective rate of interest = $5 + 5 + \frac{5 \times 5}{100} = 10.25\%$

Required interest = $\frac{6000 \times 10.25 \times 1}{100}$ = Rs 615

S7. Ans.(d)

Sol. Let that sum be Rs 'p' and rate of interest be 'r'% per annum

Amount= Rs 1.6p

SI= Rs 0.6p

ATQ

$0.6p = \frac{p \times r \times 5}{100}$

$r = 12\%$

S8. Ans.(e)

Sol. Let sum = $100x$

So, Interest after 2 years on S.I. = $40x$

Over all rate % of 20% p.a. at C.I for 2 years = $20 + 20 + \frac{20 \times 20}{100}$

= 44%

Interest earned after 2 years on C.I. = $44x$

Now

$44x - 40x = 160$

$x = 40$

$100x$ = Rs.4000

S9. Ans.(e)

Sol. Let us assume the rate of interest be R% p.a. and capital be Rs. x

ATQ, (3x-x) = $x \times R \times 2.5 \times \frac{1}{100}$

R = 80%

S10. Ans.(e)

Sol. Equivalent rate of interest of 20% p.a. at CI for 2 years = $\left(20 + 20 + \frac{20\times20}{100}\right)\%$

= 44%

ATQ,

$\frac{P\times44}{100} = 7040$

$P = 16{,}000$ Rs.

S11. Ans.(d)

Sol.

ATQ –

$X \times \frac{16\times2.5}{100} = 1000$

$X = \frac{100000}{40}$

X = 2500 Rs.

S12. Ans.(d)

Sol. Profit sharing ratio of Deepak & Shivam = (10000 × 12): (20000 × 9)

= 2 : 3

Required amount = $35000 \times \frac{3}{5}$

= Rs.21000

S13. Ans.(d)

Sol. Let the R's investment be X

So, Q's investment = X+10000

P's investment = X+18000

ATQ,

3X +28000 = 100000

X = 24000 = R's investment

Q's investment = 34000

P's investment = 42000

P's share = $\frac{42000}{100000} \times 70000 = 29400$ Rs.

S14. Ans.(d)

Sol. Ratio of profit share of P and Q

= 6000 × 9: 7500 × 8

= 9: 10

Total profit = $\frac{2000}{10} \times 19 \times \frac{100}{80}$ = Rs. 4750

S15. Ans.(d)

Sol. Let the investment of Q = 100x

Investment of P = 125x

Investment of R = 125x

Ratio of profit, as time period is same for all

P		Q		R
125x		100x		125x
5	:	4	:	5

ATQ,

9 unit = Rs. 4050

5 unit = 450 × 5 = Rs. 2250

S16. Ans.(a)

Sol. Let the total profit be Rs.100x.

So, Rs.2x profit will be spend in charity and rest Rs.98x profit will be distributed between Amit and Manish.

ATQ, Amit's profit = $\frac{5}{5+2} \times 98x = 700$

x = 10 Rs.

So, total profit = 100x = 1000 Rs.

S17. Ans.(a)

Sol. Profit sharing ratio of Ayush and Shivam = (8,000 × 10): (12,000 × 6)

= 10:9

Required amount = $\frac{9}{19} \times 47500$

= Rs.22,500

S18. Ans.(b)

Sol. Ratio of profit-sharing of Pinky and Santosh = (45000x9) : (55000x12)

= 27:44

ATQ, Santosh profit = Rs.8800

So, Total profit = $\frac{27+44}{44} \times 8800 =$ Rs. 14200

S19. Ans.(c)

Sol. Let Aman and Bhanu invested Rs.2a & Rs.3a respectively.

And, let time period of investment of Aman and Bhanu be 5b months & 4b months respectively.

Profit sharing ratio of Aman and Bhanu = $(2a \times 5b)$: $(3a \times 4b)$

= 5: 6

ATQ,

Total profit = 6,000 × $\frac{11}{6}$ = Rs.11,000

S20. Ans.(a)

Sol. Profit sharing ratio of Deepak, Shivam and Mohit

= 50000 × 12 :70000 × 12 : 60000 × 7

= 10 : 14 : 7

Let total profit be Rs. x

$\Rightarrow \frac{7}{31} \times x = 2800$

$\Rightarrow x =$ Rs. 12400

So, difference of profit share of Deepak and Shivam = $\frac{14-10}{31} \times 12400 =$ Rs. 1600

S21. Ans.(c)

Sol. ATQ, $\frac{24000 \times 12}{36000 \times X} = \frac{1}{1}$

X = 8

S22. Ans.(d)
Sol. Profit-sharing ratio of Shivam and Ayush = $(8{,}000 \times 12)$: $\big((5{,}000 \times 8) + (6{,}000 \times 4)\big)$
= 96,000: (40,000 + 24,000)
= 3:2

S23. Ans.(e)
Sol. Let the numerator and denominator of a fraction be x and y respectively
ATQ
$x + 4 = 1.5y$ ……..(i)
And $\frac{x+5}{2y} = \frac{x}{y}$
x=5
and y=6
Original fraction=$\frac{5}{6}$
Required fraction=$\frac{5}{6} \times 2 = \frac{5}{3}$

S24. Ans.(b)
Sol. Let daily wage of P, Q&R be Rs. 21w, Rs. 16w & Rs. 18w respectively
And, Wages of P, Q&R for a weekday & Sunday be Rs. (21w + 125), Rs. (16w + 125) & Rs. (18w + 125) respectively
ATQ –
$\frac{(21w + 125)}{(16w + 125)} = \frac{26}{21}$
441w + 2625 = 416w + 3250
25w = 625
w = 25
Wage of P on a Weekday & Sunday = $21 \times 25 + 125 = Rs.650$
Wage of R on a Weekday & Sunday = $18 \times 25 + 125 = Rs.575$
Required difference = $650 - 575 = Rs.75$

S25. Ans.(d)
Sol.

7 9
9 11 > 2 ratio = 50 shares

1 ratio = 25 shares
Actual shares of Varun = $7 \times 25 = 175\ shares$
Kartik = $9 \times 25 = 225\ shares$
Basic salary of Varun = $175 \times 60 = Rs.10500$

S26. Ans.(c)
Sol. let total employees in the company be 100x
Males = $\frac{64}{100} \times 100x = 64x$
Females = 100x – 64x = 36x
ATQ, $\frac{females\ in\ technical}{females\ in\ non\ technical} = \frac{5}{4}$
Females in technical = $\frac{5}{9} \times 36x = 20x$

Males in technical = $20x \times 2 = 40x$
Males in non technical = $64x - 40x = 24x$
Required ratio = $\frac{40x}{24x} = 5:3$

S27. Ans.(e)
Sol. Let the two -digit no. be $(10a + b)$, where a is tens digit and b is unit digit.
ATQ
$(10a + b) + 0.2(10a + b) = (10b + a)$
$11a = 8.8b$
$(\frac{a}{b} = \frac{4}{5})$
Since the no. is two- digit number. So the only possible no. is 45 and reverse of it is 54.
So 40% of no.=18

S28. Ans.(b)
Sol. let first class & second class fare be Rs. 3a & Rs. a respectively
Tickets booked of first & second class be 2b & 3b respectively
Total fare
First class = $3a \times 2b = 6ab$
Second class = $a \times 3b = 3ab$
Fare collected from second class = $\frac{3ab}{9ab} \times 1800 = Rs.600$

S29. Ans.(b)
sol. Required ratio $= 3 : \frac{7\times4}{11} : \frac{7\times7}{11}$
$\Rightarrow 33 : 28 : 49$

S30. Ans.(c)
Sol. Let the unit digit and tens digit of the number be y and x respectively.
Original number=(10x+y)
ATQ
1.75(10x+y) =10y+x
x: y=1:2
let the unit and tens digits be 1a and 2a respectively
Now, (21a) +9=2(12a)
a=3
unit digit=6
and tens digit=3
sum of both the digits=9

S31. Ans.(b)
Sol. let present age of Omi & Pappu be 4x & 5x years
$\frac{4x+5}{5x+5} = \frac{21}{25}$
$100x + 125 = 105x + 105$
$x = 4$
Required difference = $5x - 4x = 4\ years$

S32. Ans.(a);

Sol. Given, $\frac{Expense}{Saving} = \frac{5}{3}$

Let Income = 8 units

Increased income = $8 \times \frac{5}{4}$ 10 units

Expense is increased by 60%

Increased expense = $5 \times \frac{8}{5} = 8$ unit

New saving = 10 – 8 = 2 units

Difference between saving = 3 – 2 = 1 unit

1 unit = Rs. 3500

10 units = Rs. 35000

S33. Ans.(a);

Sol. Let the numbers of Rs. 1, 50 paise & 25 paise coins are 12x, 10x and 7x.

According to question

$12x + \frac{10x}{2} + 7\left(\frac{x}{4}\right) = 75$

$12x + 5x + \frac{7x}{4} = 75$

$17x + \frac{7x}{4} = 75$

$\frac{75x}{4} = 75$

x=4

Number of 25 paise coins = 7 × 4 = 28 coins

S34. Ans.(c);

Sol. Let their share after decrease in money = 9x, 13x and 8x

(9x + 26) + (13x + 28) + (8x + 32) = 2186

30x = 2186 – 26 – 28 – 32

x = 70

Amount given to A = 9 × 70 + 26

= 630 + 26 = Rs. 656

S35. Ans.(b)

Sol. Required Price = $50000 \times \frac{94}{100} \times \frac{111}{100}$ = 52170 Rs.

S36. Ans.(b)

Sol. Let cost price and marked price of the article be Rs.80x and Rs.110x respectively.

So, selling price of the article = $110x \times \frac{(100-20)}{100}$ = Rs.88x

ATQ,

$88x - 80x = 40$

$x = 5$ Rs.

Required amount = $110x - 88x$

= 22x

= Rs.110

S37. Ans.(a)

Sol. Let the cost price of the chair = 5x Rs.

So, the selling price of chair = $5x \times \frac{120}{100} = 6x$ Rs.

ATQ,

6x = 960

x = 160 Rs.

So, the cost price of chair = $5 \times 160 = 800\ Rs.$

The selling price of the chair at 40% profit = $800 \times \frac{140}{100}$ = 1120 Rs.

S38. Ans.(a)

Sol. Total CP of 54 bananas = 220 Rs.

Total SP of 54 bananas = $\frac{54}{12} \times 50$ = 225 Rs.

Total Profit = 225-220 = 5 Rs.

S39. Ans.(c)

Sol. Let cost price of a ball be Rs. 4a

So, selling price of a ball = $4a \times \frac{125}{100}$

= Rs.5a

ATQ,

Cost price of a pencil = $\frac{10 \times 5a}{20}$

= Rs. 2.5a

Required ratio = $\frac{4a}{2.5a}$

= 8:5

S40. Ans.(b)

Sol. Let cost price = Rs. $100x$

Marked price = Rs. $125x$

Let discount percentage =D %

ATQ,

$125x \times (\frac{100-D}{100}) = 112x$

$\frac{100-D}{100} = \frac{112}{125}$

So, D=$\frac{52}{5}$ % = $10\frac{2}{5}$%

S41. Ans.(a)

Sol. Let the cost price of A & B be 400x and 500x respectively.

So, total cost price = 900x

Total selling price = $400x \times \frac{120}{100} + 500x \times \frac{90}{100}$

= 930x

Overall profit = 930x – 900x = 30x

Overall profit percentage = $\frac{30x}{900x} \times 100 = 3\frac{1}{3}\%$

S42. Ans.(c)

Sol. Let marked price of the bike be Rs.100x

So, selling price of the bike = $100x \times \frac{84}{100}$ = Rs.84x

And, cost price of the article = $84x \times \frac{100}{140}$ = Rs.60x

ATQ,

$(84x - 60x) - (100x - 84x) = 8{,}000$

$24x - 16x = 8{,}000$

$x = 1{,}000$

Hence, cost price of the bike = Rs.60,000

S43. Ans.(c)

Sol. let cost price of book = Rs. 100a

M.R.P. of book = $100a \times \frac{180}{100} = Rs.180a$

Selling price of book = $180a \times \frac{60}{100} = Rs.108a$

ATQ

$(180a - 108a) - (108a - 100a) = 460.8$

$72a - 8a = 460.8$

$64a = 460.8$

$a = \frac{460.8}{64}$

$a = 7.2$

So, $180a = Rs.1296$

S44. Ans.(a)

Sol. let cost price of an article be Rs x and total article are 4 units.

So, marked price = $Rs\ 1.4x$

And, total cost price = $Rs\ 4x$

ATQ

Total selling price = $2 \times 1.4x \times \frac{80}{100} + 1 \times 1.4x + 1 \times x = 2.24x + 1.4x + x$

$= Rs\ 4.64x$

So, required profit % = $\frac{4.64x - 4x}{4x} \times 100$

$= 16\%$

S45. Ans.(b)

Sol. Let the cost price and marked price be Rs 3x and Rs 5x respectively

And let the loss and discount be Rs y and Rs 4y respectively

ATQ

$3x - y = 5x - 4y$

$3y = 2x$

Marked price=$Rs\ \frac{15}{2}y$

Required discount %=$\frac{4y}{\frac{15}{2}y} \times 100 = 53\frac{1}{3}\%$

S46. Ans.(d)

Sol. Let original price be Rs 100

∴ Rahul paid = Rs 90

S.P. = $90 \times \frac{120}{100} = 108$

∴ Profit percent he earned on original price

= $\frac{108 - 100}{100} \times 100 = 8\%$

S47. Ans.(d)

Sol. Let time taken by man to cover 'D' km with his original speed be 't' hours.

ATQ,

$60 \times \left(t - \frac{3}{4}\right) = 45 \times t$

$\Rightarrow 4t - 3 = 3t$

$\Rightarrow t = 3$ hours

So, D = 45 × 3

= 135 km

Required time = $\frac{135 \times \frac{160}{100}}{45}$

= 4 hours 48 minutes

S48. Ans.(b)

Sol. Let speed of car in covering distance to and forth be 7x km/h and 4x km/h

Since, speed is inversely proportional to time.

Average speed = $\frac{2 \times 4x \times 7x}{4x+7x}$

$\frac{140}{11} = \frac{2 \times 4x \times 7x}{4x+7x}$

$x = 2.5$

Required time = $\frac{145}{35/2} = 8\frac{2}{7}h$

S49. Ans.(d)

Sol. Let Speed of both trains are S and S+18 kmph.

ATQ, when both the train are going in same direction.

$\frac{X + X + 100}{18 \times \frac{5}{18}} = 120$

X=250.

And, when both the trains are going opposite direction.

$\frac{250 + 250 + 100}{(S + S + 18) \times \frac{5}{18}} = 13\frac{1}{3}$

2S+18=162

S = 72 kmph

Speed of faster train = 72+18 =90 kmph.

S50. Ans.(d)

Sol. Let speed of boat in still water be u kmph.

ATQ,

$(u + 2) \times T - (u - 2) \times T = 60$

4T =60

T=15 hours

$\frac{300}{u+2} + \frac{300}{u-2} = 27.5$

$11u^2 - 240u - 44 = 0$

$(u - 22)(11u + 2) = 0$

u=22 kmph.

Required time = $\frac{180}{22-2} = 9\ hours$

S51. Ans.(a)

Sol. Let us assume that 'T' will come in the place of blank

Speed of car $= 32 \times \frac{5}{4} = 40$ km/hr

ATQ—

40T – 32T = 96

8T = 96

T = 12 hours

S52. Ans.(d)

Sol. Let the length of train B be 100x meters.

So, length of train A = 125x meters

ATQ –

$\frac{125x}{12} = 90 \times \frac{5}{18}$

$x = 2.4$

So, length of train B = 240 meters

And, length of train A = 300 meters

Now, the speed of train B = $\frac{240+300}{36} + 90 \times \frac{5}{18}$

= 40 m/sec

Required time = $\frac{240+400}{40}$

= 16 seconds

S53. Ans.(a)

Sol. Let length of train P = 2L meters

So, Length of platform = L meters

ATQ –

$72 \times \frac{5}{18} = \frac{3L}{60}$

3L = 1200

L = 400 meters

So, length of train 'Q' = $800 \times 2 = 1600$ meters

Required time = $\frac{800+1600}{(72+108)\times\frac{5}{18}} = 48$ sec

S54. Ans.(b)

Sol. Let length of train – P & Q be 3l meters and 8l meters respectively.

ATQ,

$\frac{8l+420}{40} = 81 \times \frac{5}{18}$

$l = 60$

Now, let speed of train – P be p m/sec.

Now, $\frac{11\times60}{33} = p - 81 \times \frac{5}{18}$

$p = 42.5$

Required time = $\frac{3\times60}{42.5}$

= $4\frac{4}{17}$ seconds

S55. Ans.(c)

Sol. Speed of train in m/s = $36 \times \frac{5}{18} = 10$ m/s

ATQ –

$10 = \frac{L}{X}$

Or, L = 10X---------- (i)

Also,

$10 = \frac{240 + L}{40}$

L = 160 m

From eq(1),

$X = \frac{L}{10} = \frac{160}{10} = 16$ sec

S56. Ans.(b)

Sol. Ratio of speed of boat in still water to speed of stream = 100% : 40% = 5 : 2

Let the speed of boat in still water and speed of stream be 5s km/hr and 2s km/hr respectively

Downstream speed of boat = $22.4 \times \frac{60}{48} = 28$ km/hr

ATQ –

(5s + 2s) = 28

s = 4 km/hr

So, Upstream speed of boat = $(5\times 4 - 2 \times 4) = 12$ km/hr

Required ratio = $\frac{\frac{54}{12}}{\frac{210}{28}} = 3 : 5$

Q57. Ans.(b)

Sol. Let the length of the train be L meters

ATQ –

$(144 - 24) \times \frac{5}{18} = \frac{L}{9}$

L = 300 meters

Let the length of the tunnel be 't' meters

So, $144 \times \frac{5}{18} = \frac{300+t}{25.5}$

1020 = 300 + t

t = 720 meters

S58. Ans.(e)

Sol. Let speed of boat in still water and speed of stream be x km/hr. and y km/hr. respectively.

ATQ,

$\frac{96}{x+y} = \frac{75}{100} \times \frac{96}{x-y}$

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

$x = 7y$ ...(i)

Now, $\frac{36}{x-y} = 1.5$ ...(ii)

Put value of x from eq(i) to eq(ii):

$\frac{36}{6y} = 1.5$

$y = 4$ km/hr

So, speed of boat in still water = x = 7y = 28 km/hr.

S59. Ans.(a)

Sol. Let radius & height of each cylindrical vessel be 'r cm' & 'h cm' respectively.

So, radius of spherical ball = 3r cm

ATQ,

r – h = 3

r = 3 + h ...(i)

And,

Volume of spherical ball = 63 × volume of cylindrical vessel

$\frac{4}{3}\pi(3r)^3 = 63 \times \pi \times r^2 \times h$

$\Rightarrow 4r = 7h$ ...(ii)

On solving (i) & (ii), we get:

h = 4, r = 7

So, required radius = 3r

= 21 cm

S60. Ans.(e)

Sol. Let radius of cylindrical toy be 2r cm.

So, radius of spherical toy = r cm

Now, volume of cylindrical toy = $\pi(2r)^2 \times 10$

= $40\pi r^2$ cm^3

And, volume of spherical toy = $\frac{4}{3} \times \pi \times r^3$

= $\frac{4\pi r^3}{3}$ cm^3

ATQ,

$\frac{40\pi r^2 - \frac{4\pi r^3}{3}}{\frac{4\pi r^3}{3}} = \frac{3}{7}$

$\frac{30-r}{r} = \frac{3}{7}$

$r = 21$

Hence, radius of cylindrical toy=2r = 42cm

S61. Ans.(a)

Sol. Area of rectangular field = area of square

90 × 80 = a^2

a = $60\sqrt{2}$ m

Diagonal of square = $\sqrt{2}$a = 120 m

S62. Ans.(a)

Sol. Side of square

$= \frac{Diagonal}{\sqrt{2}} = \frac{9\sqrt{2}}{\sqrt{2}}$

= 9 metre

∴ height of triangle = 4 × 9 = 36 metre

Again, side of second square

$= \sqrt{784} = 28$ metre

∴ base of triangle =28 metre

∴ Area of triangle

$= \frac{1}{2} \times Base \times height$

$= \frac{1}{2} \times 28 \times 36 = 504\ sq.metre.$

S63. Ans.(e)

Sol. Side of square = $\frac{20\sqrt{2}}{\sqrt{2}}$ = 20m

So, length of rectangle = 28m

And, breadth of rectangle = $28 \times \frac{100}{140}$ = 20m

Area of square = $(20)^2$ = 400 m^2

And, area of rectangle = 28×20 = 560 m^2

Required difference = $560 - 400$ = 160 m^2

S64. Ans.(d)

Sol.

$2\pi rh : \pi r^2 h = 1 : 7$

$2 : r = 1 : 7$

$\Rightarrow r = 14$ cm

$\Rightarrow$ diameter : Height $\Rightarrow 2r : h = 4 : 3$

$\Rightarrow h = 21$ cm

Total surface area of cylinder $= 2 \times \frac{22}{7} \times 14\ (14 + 21)$

$= 88 \times 35$

$= 3080\ cm^2$

S65. Ans.(c)

Sol. Surface area of cube = $6(side)^2$

Side of bigger cube = a = $\sqrt{\frac{1536}{6}}$ = 16cm

Side of smaller cube = $\sqrt{\frac{96}{6}}$ = 4cm

n= $\frac{volume\ of\ bigger\ cube}{volume\ of\ one\ smaller\ cube}$

=$\frac{16\times16\times16}{4\times4\times4}$=64

S66. Ans.(d)

Sol.

ATQ –

$2\pi r - 2r = 90$

r = 21 cm

Radius of cylinder = 21 + 7 = 28 cm

Given, $\pi r^2 h$ = 24640

$\frac{22}{7} \times 28 \times 28 \times h = 24640$

h = $\frac{24640 \times 7}{22 \times 28 \times 28}$

h = 10 cm

S67. Ans.(c)

Sol. Let radius of cylinder = r

And height of cylinder = h
Total surface area of cylinder = $2\pi r(r+h)$
Curved surface area of cylinder = $2\pi r$h
ATQ,
$\frac{2\pi r(r+h)}{2\pi rh} = \frac{4}{3}$
⇒ 3r+3h = 4h
⇒ 3r = h
Required % = $\frac{h-r}{h} \times 100 = \frac{3r-r}{3r} \times 100 = \frac{200}{3}\% = 66\frac{2}{3}\%$

S68. Ans.(c)
Sol. let radius be r cm
$132 = 2 \times \frac{22}{7} r \Longrightarrow r = 21\ cm \Rightarrow l = 42\ cm$
Let length, breadth of rectangle be l, b cm respectively
Square is attached along breadth of rectangle, edge of square = b cm
Increase in area = area of square
$b^2 = 144 \Rightarrow b = 12\ cm$
Area of rectangle = $lb = 42 \times 12 = 504\ cm^2$

S69. Ans.(b)
Sol. Volume of a cuboid = $length \times breadth \times height$
After increment in the length of the sides, new sides of the box would be
$30 \times \frac{120}{100} = 36cm, 40 \times \frac{120}{100} = 48cm, 20 \times \frac{120}{100} = 24cm$ respectively.
$\therefore New\ volume\ of\ box = length \times breadth \times height$
= 36 × 48 × 24 = 41,472cm^3

S70. Ans.(d)
Sol. Area of Base = πr^2
$\pi r^2 = \frac{77}{2}$
$r^2 = \frac{77}{2} \times \frac{7}{22}$
$r = \frac{7}{2}\ m$
Height = $2 \times \frac{7}{2}$ = 7 m
Curved surface area = 2πrh
$\Rightarrow 2\pi rh = 2 \times \frac{22}{7} \times \frac{7}{2} \times 7$ = 154 m^2

S71. Ans.(d)
Sol. Let Capacity of tank be 144 litre.
So, efficiency of Ist Pipe = 4 litre / min
Efficiency of IInd Pipe = 3 litre /min
Efficiency of IIIrd pipe = 8 litre /min
ATQ,
First tank will be filled by pipe Ist & IInd and then emptied when pipe Ist, IInd & IIIrd together are opened
So, (4 + 3) × 16 = (8 – 4 – 3) t
t = $\frac{112}{1}$ = 112 min.

S72. Ans.(a)

Sol. Let the total capacity of tank be 240 liters (LCM of 30 & 48)

So, efficiency of pipe – P = $\frac{240}{30}$ = 8 liters/hour

And, efficiency of pipe – Q = $\frac{240}{48}$ = 5 liters/hour

Required time = $\frac{\frac{65}{100}\times 240}{8-5}$ = 52 hours

S73. Ans.(e)

Sol. Time taken by P to fill the complete tank = 36 hr

Time taken by P and Q to fill the complete tank = 15*100/75 = 20 hr

Time taken by R and Q to fill the complete tank = 18 hr

Let the capacity of the tank = L.C.M of 36, 20 and 18 = 180

Now, efficiency of P = 180/36 = 5

Efficiency of P + Q = 180/20 = 9 ;

So, the efficiency of Q = 9-5 = 4 ;

Efficiency of R + Q = 180/18 = 10 ;

So, the efficiency of R = 10-4 = 6 ;

Time taken by P,Q and R of fill 2/3 of tank (180*2/3= 120)

= 120 / (5+4+6)= 8 hr

S74. Ans.(d)

Sol. Since total time is 6 hours 30 min

Therefore, train X will travel for 3 hours 30 min

Train Y will travel for 3 hours

Therefore,

$a = 60 \times \frac{7}{2} + 80 \times 3$

= 210 + 240 = 450 km

S75. Ans.(e)

Sol. AB = 60 km

Ram's speed $= x$ kmph

Syham's speed $= y$ kmph $\frac{60}{x} - \frac{60}{y} = 1$ .....(i)

$\frac{60}{y} - \frac{60}{2x} = \frac{1}{2}$ .....(ii)

From (i) and (ii)

$x = 20$ kmph

S76. Ans.(c)

Sol. The smallest three-digit number formed by digits 1,3 and 7 = 137

And the largest three-digit number formed by the three digits 1,3, and 7 =731

Average = (137+731)/2=868/2=434

Let x = 7a

So, y = 7a × $(1 + \frac{100}{7} \times \frac{1}{100})$ = 8a

ATQ –

8a – 7a = 60

a = 60

Average of 'x' and 'y' = $\frac{420+480}{2}$ = 450
Required difference = $450 - 434 = 16$

S77. Ans.(b)
Sol. ATQ,
Total weight = (40 × 10) kg = 400 kg
When weight of heaviest and lightest student not taken into account then total weight
= (41 × 8) = 328 kg
So, weight of heaviest student + weight of lightest student = (400 – 328) = 72 kg
⇒ 50 + weight of lightest student = 72
weight of lightest student=22 Kg

S78. Ans.(e)
Sol. Let initial quantity of milk and water in the vessel be 30x lit and 10x lit respectively.
Quantity of milk taken out from the vessel = $80 \times \frac{3}{4}$ = 60 lit
Quantity of water taken out from the vessel = $80 \times \frac{1}{4}$ = 20 lit
ATQ,
$\frac{(30x-60)+80}{10x-20} = \frac{700}{100}$
$\Rightarrow x = 4$
Hence, required original quantity of the vessel = $30x + 10x$ = 160 lit

S79. Ans.(e)
Ans. Let quantity of milk and water with Arun be 3x liter and x liter respectively
And quantity of milk and water with Amit be 5y liter and 3y liter respectively
ATQ
$5y + \frac{3}{4} \times 20 - (3y + \frac{1}{4} \times 20) = 28$
y = 9
quantity of the mixture with Amit=72 liters

S80. Ans.(d)
Sol. Ratio of the spirit and water in the resultant mixture
$\frac{24\times\frac{7}{12}+42\times\frac{5}{14}}{24\times\frac{5}{12}+42\times\frac{9}{14}} = \frac{14+15}{10+27} = \frac{29}{37}$

S81. Ans.(e)
Sol. let present age of A & B be 5a & 4a years respectively
C's present age = (52 – 4a) years
ATQ, $\frac{5a-5}{52-4a+2} = \frac{5}{6}$
6a – 6 = 54 – 4a
a = 6
Required difference = (52 – 4a) – 4a = 28 – 24 = 4 years

S82. Ans.(a)
Sol. Let the present age of P be 'a' yrs
and present age of Q be 'b' yrs.

ATQ,
a + b = 44 + 6+6
a + b = 56 ...(i)
a – 9 = b – 3
a – b = 6 ...(ii)
solving (i) & (ii)
a = 31 years
∴ age of P, four year hence = 31 + 4 = 35 years.

S83. Ans.(d)
Let age of P & Q four years hence will be 3x and 5x respectively
Six-year later age of P = (3x + 2) years
Age of R after six years = $(5x - 4) \times \frac{5}{6} + 6$
ATQ –
$(3x + 2) + (5x - 4) \times \frac{5}{6} + 6 = 62$
x = 8 years
Required sum = (3x – 4) + (5x – 4) = 20 + 36 = 56 years

S84. Ans.(d)
Sol. Let liquid A & liquid B in jar initially be 'a' and 'b' respectively
a + b = 50 ---- (i)
a – b = 34------ (ii)
From (i) & (ii) we get
a = 42 & b = 8
Ratio of liquid A & liquid B in jar initially = 21 : 4
ATQ –
$\frac{42-x\times\frac{21}{25}}{8-x\times\frac{4}{25}+(x+6.7)} = \frac{5}{4}$
x = 12.5 ml

S85. Ans.(e)
Sol. Let the larger numbers be x and smaller be y.
$x + y = 11^2 + 9^3$
⇒ x + y = 850 ... (i)
$x = 25^2 - 25 = 600$
⇒ y = 250 (from i)
Required sum = $\frac{30 \times 250 \times 2}{100}$ + 300 = 450

S86. Ans.(a)
Sol. Number of line filled = $\frac{4}{5} \times 60 = 48$
Number of words in each line = $\frac{25}{100} \times 48 = 12$
Total words can come on a page = $12 \times 60 = 720$
Required words = 720 – (12×48) = 720 – 576 = 144

S87. Ans.(d)

Sol. Cost price of the article for the dealer = Rs. 500

Cost price of the article for the shopkeeper = $\frac{105}{100} \times 500 = Rs.525$

Total profit made by the shopkeeper = $\frac{40}{100} \times 525 = Rs.210$

Amount given to charity = $210 \times \frac{10}{100} = Rs.21$

Required amount = 210 – 21= 189

S88. Ans.(e)

Sol. Let the number of 50 paise, Rs. 5 and 25 paise coins be 6x, 3x and 2x respectively

ATQ,

50 × 6x + 500 × 3x + 25 × 2x = 3700

300x + 1500x + 50x = 3700

1850x = 3700

x = 2

Required amount = 50 × 12x +500 × 3x + x×25 = 50×24 + 3000 + 50 = 1200 + 3000 + 50 = 4250 paise = Rs. 42.5

S89. Ans.(d)

Sol. Let the principle be Rs. 100A

Cumulative interest for one year when compounded half yearly at 20%=

$\left(10 + 10 + 10 \times \frac{10}{100}\right)\% = 21\%$

ATQ,

$(100A \times \frac{30}{100} + 100A \times \frac{21}{100}) - 100A \times \frac{25 \times 2}{100} = 50$

30A + 21A – 50A = 50

A = 50

So, X = 100A = Rs. 5000

S90. Ans.(a)

Sol. Let the speed of boat in still water be x km/hr. and the speed of stream be y km/hr.

ATQ,

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

x + y = 40 .....(i)

x + y – x + y = 20

2y = 20

y = 10

Put in (i)

x = 40 – 10

x = 30 km/hr.

Reduced speed = $\frac{70}{100} \times 30$ = 21 km/hr.

Required time = $\frac{155}{21+10} = \frac{155}{31} = 5\ hours$

S91. Ans.(c)

Sol.

$x^2 - 5x + 6 = 0$

$x^2 - 3x - 2x + 6 = 0$

$x(x-3)-2(x-3)=0$
$(x-3)(x-2)=0$
$x=3,2$
Let speed of boat in still water and speed of current be '3y' km/hr and '2y' km/hr respectively.
ATQ,
$\frac{25}{3y+2y}+\frac{10}{3y-2y}=7.5$
$\frac{15}{y}=\frac{75}{10}$
$y=2$
Required time= $\frac{24}{3\times2}=4$ hours

S92. Ans.(b)
Sol. Quantity of water in mixture A $=18\times\frac{100}{120}=15\ liters$

Quantity of water in mixture B $=24\times\frac{100}{80}=30\ liters$
ATQ, in vessel C = (18+24 + x) – (15+30) = 18
- 3 + x = 18
x = 21

S93. Ans.(a)
Sol. Profit sharing ratio of A, B and C
$=(5000\times12):(4000\times12):(9000\times6)$
=10:8:9= 10x: 8x:9x
ATQ,
$\frac{10x+9x}{2}-\frac{8x+9x}{2}=400$
$x=400$
Required profit= $(10+8+9)\times400$ =Rs. 10800

S94. Ans.(d)
Sol. Number of days taken by B= 4 days ....(square of smallest prime number)
Number of days taken by A= $4\times\frac{150}{100}=6$ days
Number of days taken by C= $4\times\frac{75}{100}=3$ days
Let total work be 12 units (L.C.M. of 6.4,3)
Efficiency of A= $\frac{12}{6}=2$ units/day
Efficiency of B= $\frac{12}{4}=3$ units/day
Efficiency of C= $\frac{12}{3}=4$ units/day
Required time= $\frac{12}{2+3+4}=\frac{12}{9}=\frac{4}{3}$ days

S95. Ans.(b)
Sol. Let the cost price of each article be Rs. 100x
Selling price of article which sold at 10% profit= $100x\times\frac{110}{100}=Rs.110x$
Selling price of article which sold at 20% loss= $100x\times\frac{80}{100}=Rs.80x$

ATQ,
$(100x + 100x) - (110x + 80x) = 34$
$200x - 190x = 34$
$x = 3.4$
$n = (110 - 80) \times 3.4 = 102$
Required value= $2 \times 102 = 204$

S96. Ans.(a)
Sol. Total marks =$35 \times 43 = 1505$
ATQ,
$35 \times 44 = 1505 + (36 + n + 45) - (42 + 28 + 50)$
$1540 = 1505 + 81 + n - 120$
$n = 74$
Required value= 74^2=5476

S97. Ans.(c)
Sol. Speed of train B = $36 \times \frac{5}{18} = 10\ m/sec$
Speed of train A = $10 \times 2 = 20\ m/sec$
Length of train A= $20 \times 16 = 320\ m$
Length of train B= $320 \times \frac{3}{4} = 240\ m$
Let length of the platform be l meters
ATQ,
$\frac{320 + l}{20} = 24$
$480 - 320 = l$
$160 = l$
Required time= $\frac{160+240}{10} = 40\ sec$

S98. Ans.(c)
Sol. Let the capacity of tank be 240 units. (LCM of 40 and 48)
Efficiency of A= $\frac{240}{40} = 6$ units/min
Efficiency of B= $\frac{240}{48} = 5$ units/min
ATQ,
$6 \times 30 + 5 \times n = 240$
$5n = 240 - 180$
$5n = 60$
$n = 12$
Required percent= $\frac{12}{48} \times 100 = 25\%$

S99. Ans.(a)
Sol. Interest received from scheme A = $\frac{4000 \times 15 \times 2}{100}$ = Rs.1200
Equivalent CI for two years at the rate of 10% = $(10 + 10 + \frac{10 \times 10}{100})\% = 21\%$
ATQ,
$(1200 + Y) \times \frac{21}{100} = 630$
$Y + 1200 = 3000$
$Y = 1800$

S100. Ans.(a)

Sol. Let the length and breadth of the rectangle be l cm and b cm respectively.

Side of square= $\sqrt{64} = 8\ cm$

$l = 2 \times 8 = 16\ cm$

b= $16 \times \frac{125}{100} = 20\ cm$

Area of the rectangle= $20 \times 16 = 320\ cm^2$

Required percent= $\frac{8}{320} \times 100 = 2.5\%$