

## Mathematic Practice Question For UPTET Exam

**Q1.** Anurag Thakur goes to a shop to buy an office table costing Rs. 26,160. The rate of sales tax is 9%. He tells the shopkeeper to reduce the price of the table to such an extent that he has to pay Rs. 26,160 inclusive of sales tax. Find the percentage reduction needed in the price of the table to just satisfy his requirement.

- (a) 8.33%
- (b) 8.26%
- (c) 9%
- (d) 8.5%

**Q2.** Satyam and Shivam are working with the DRDO to make bullet proof jackets, Satyam takes 6 hours to make 32 bullet proof jackets, While Shivam takes 5 hours to make 40 bullet proof jackets. How much time will they take if DRDO employed them together to make 110 bullet proof jackets?

- (a) 7 hrs, 30 min
- (b) 8 hrs
- (c) 8 hrs, 15 min
- (d) 8 hrs, 25 min

**Q3.** If P and Q are the HCF and LCM respectively of two algebraic expressions s and t, and  $P + Q = s + t$ , then the value of  $P^3 + Q^3$  is:

- (a)  $P^3 - Q^3$
- (b)  $P^3$
- (c)  $Q^3$
- (d)  $P^3 + Q^3$

**Q4.** A smart tv marked at Rs. 4000 is sold with two successive discounts of 20% and 10%. An additional discount of 5% is offered for cash payment. The selling price of the smart tv at cash payment is?

- (a) Rs. 2368
- (b) Rs. 2736
- (c) Rs. 2800
- (d) Rs. 2525

**Q5.** Ankur a money lender finds that due to COVID – 19 there is a fall in the annual rate of interest from 8% to  $7\frac{3}{4}\%$ , his yearly income diminishes by 123. His capital is:

- (a) Rs. 44800
- (b) Rs. 47600
- (c) Rs. 49200
- (d) Rs. 52000



**Q6.** If  $m^2 + 4m + 1 = 0$ , then find the value of  $(m + 4)^3 + 1/(m + 4)^3$ .

- (a) 76
- (b) 110
- (c) 140
- (d) 52

**Q7.** Ashoke bought a Flat in Vasundra Delhi, and a car for Rs. 10,00,000 and Rs. 14,00,000 respectively. If the value of flat increases by 12% per annum and the value of car depreciates by 15% p.a. then what will be his profit or loss after three years.

- (a) Rs. 135,297 (loss)
- (b) Rs. 135,297 (profit)
- (c) Rs. 155,297 (loss)
- (d) Rs. 133,277 (profit)

**Q8.** In two alloys P and Q, the ratio of gold to copper is 5:2 and 3:4 respectively. 14 kg of the alloy P and 42 kg of the alloy Q are mixed together to form a new alloy. What will be the ratio of gold and copper in the new alloy?

- (a) 3:1
- (b) 3:2
- (c) 1:1
- (d) 2:1

**Q9.** Two pipes P and Q fill a tank in 72 minutes and 96 minutes respectively. If both the pipes are opened simultaneously, after how much time should Q be closed so the tank is full in 54 minutes?

- (a) 20 min
- (b) 24 min
- (c) 28 min
- (d) 32 min

**Q10.** Arpan goyal generally wears his uncle Mukesh's blazer. Unfortunately, his uncle's son Ayush poked him one day that he was wearing a blazer of length more than his height by 15%. If the length of Mukesh's blazer is 240 cm then what should be the actual length of his blazer.

- (a) 207.69 cm
- (b) 208.69 cm
- (c) 208.67 cm
- (d) 208.64 cm

**Q11.** If  $2^{97} \div 4^{27} \times 8^{22} \div 2^{34} = k^{25}$ , then what is the value of k?

- (a) 17
- (b) 19
- (c) 6
- (d) 8

**Q12.** If  $\frac{xy-1}{y} = \frac{zy-1}{z} = \frac{xz-1}{x}$ , then find the value of  $(\frac{x}{z} + \frac{y}{x} + \frac{z}{y})$ ?

- (a) 0.5
- (b) 3.5
- (c) 3
- (d) 2.5

**Q13.** If  $4a^2 + \frac{1}{a^2} = 2$ , then the value of  $8a^3 + \frac{1}{a^3}$  is:

- (a) 5
- (b) 4
- (c) 2
- (d) 0

**Q14.** What is the simplest value of  $\frac{\sqrt[3]{0.001728} \times \sqrt{0.256}}{\sqrt{0.16} \times \sqrt[3]{0.000216}}$

- (a) 0.8
- (b) 0.7
- (c) 1
- (d) 0.55

**Q15.** In the given question, two equations numbered I and II are given. You have to solve both the equations and mark the appropriate answer

I.  $6m^2 + 51m + 105 = 0$

II.  $2n^2 + 25n + 78 = 0$

- (a)  $m > n$
- (b)  $m < n$
- (c)  $m \geq n$
- (d) Relation cannot be established

**Q16.** If  $\sqrt{[(1 - m^2) \times (1 - n^2)]} = \sqrt{3}/2$  and  $n = 0$ , then what is the value of  $\sqrt{[2m^2 + 2n^2 + 2mn]} + \sqrt{[2m^2 + 2n^2 - 2mn]}$ .

- (a) 3
- (b)  $\sqrt{2}$
- (c) 1
- (d) 2

**Q17.** If  $n = \frac{2-m}{1+m}$ , Then what is the value of  $\frac{1}{n+1} + \frac{2n+1}{n^2-1}$ ?

- (a)  $\frac{(1+m)(2-m)}{2m-1}$
- (b)  $\frac{(1-m)(2+m)}{m-1}$
- (c)  $\frac{(1+m)(2-m)}{1-2m}$
- (d)  $\frac{(1+m)(2-m)}{1-m}$

**Q18.** In the following question, two equations numbered I and II are given. You have to solve both the equations and give answer

I.  $12 \times 4/m^{4/7} - 3 \times 4/m^{4/7} = m^{10/7}$

II.  $n^3 + 783 = 999$

- (a) If  $m > n$
- (b) If  $m \geq n$
- (c) If  $m < n$
- (d) If  $m \leq n$

**Q19.** Which of the following is correct?

- (a)  $(6m + n)(m - 6n) = 6m^2 + 35mn - 6n^2$
- (b)  $(6m + n)(m - 6n) = 6m^2 - 35mn - 6n^2$
- (c)  $(6m + n)(m - 6n) = 6m^2 - 37mn - 6n^2$
- (d)  $(6m + n)(m - 6n) = 6m^2 + 37mn - 6n^2$

**Q20.** If  $\frac{a}{2a^2+5a+2} = \frac{1}{6}$ , then value of  $a + \frac{1}{a}$  is:

- (a) 3
- (b)  $-1/2$
- (c) -2
- (d)  $\frac{1}{2}$

**Q21.** If  $(p/m) + (q/n) = 3$  and  $(p/n) - (q/m) = 9$ , then what is the value of  $p/q$ ?

- (a)  $(n + 3m) / (m - 3n)$
- (b)  $(m + 3n) / (n - 3m)$
- (c)  $(1 + 3m) / (m + 3n)$
- (d)  $(m + 3n^2) / (n - 3m^2)$

**Q22.** In the following question, two equations numbered I and II are given. You have to solve both the equations and give answer

I.  $p^3 \times 13 = q^2 \times 247$

II.  $q^{1/3} \times 14 = 294 \div q^{2/3}$

- (a) If  $p > q$
- (b) If  $p \geq q$
- (c) If  $p < q$
- (d) If  $p \leq q$

**Q23.** If  $(p-3)^2 + (q-5)^2 + (r-4)^2 = 0$  then the value of  $\frac{p^2}{9} + \frac{q^2}{25} + \frac{r^2}{16}$  is

- (a) 3
- (b) 5
- (c) 7
- (d)  $1/3$

**Q24.** If  $p + q + r = 9$ ,  $pq + qr + rp = 26$ ,  $p^3 + q^3 = 91$ ,  $q^3 + r^3 = 72$  and  $r^3 + p^3 = 35$ , then what is the value of  $pqr$ ?

- (a) 47
- (b) 24
- (c) 37
- (d) 43

**Q25.** If second and fourth Saturdays and all the Sundays are taken as only holidays for an office, what would be the minimum number of possible working days of any month of any year?

- (a) 23
- (b) 22
- (c) 21
- (d) 20

**Q26.** The simple form of the following expanded form of numbers is

$$12.12 \times 10^4 + 14 \times 10^3 + 10 \times 10$$

- (a) 100,000
- (b) 121,156
- (c) 135,300
- (d) 140,300

**Q27.** If 4<sup>th</sup> July 2010 was Sunday, what day will be 5<sup>th</sup> July 2011?

- (a) Sunday
- (b) Monday
- (c) Tuesday
- (d) Wednesday

**Q28.** If the Valentine's Day in 2005 falls on Monday, then on which day will the Valentine's Day fall in 2010?

- (a) Saturday
- (b) Thursday
- (c) Wednesday
- (d) Sunday

**Q29.** If 10 Jan 2008 was Tuesday, which day was on 10 Jan 2009?

- (a) Wednesday
- (b) Thursday
- (c) Sunday
- (d) Monday

**Q30.** What approximate value will come in place of question mark (?) in the following question? (You are not expected to calculate the exact value)

$$[(7.99)^2 - (13.001)^2 + (4.01)^3]^2 = ?$$

- (a) -1800
- (b) 1450
- (c) -1680
- (d) 1681

**Q31.** If Sonia 's birthday is on Monday, 28<sup>th</sup> June. On What day of the week will be Pranay's Birthday in the same year, If Pankaj was born on 18<sup>th</sup> December?

- (a) Friday
- (b) Thursday
- (c) Saturday
- (d) Wednesday

**Q32.** What was the day of the week on 6 September 1998?

- (a) Monday
- (b) Tuesday
- (c) Friday
- (d) Sunday

**Q33.** How many odd days a leap century year has?

- (a) 3
- (b) 1
- (c) 2
- (d) 0

**Q34.** Radha, Geeta & Revathi went for a picnic. After a few days they forgot the date, day and month on which they went to picnic. Radha said that it was on Thursday, May 8 and Geeta said that it was Thursday May 10. Revathi said Friday Jun 8. Now one of them told all things wrongly, other one thing wrong and only none wrong. If April 1st is Tuesday, what is the right day, date and month?

- (a) May 10, Thursday
- (b) June 8, Friday
- (c) May 8, Thursday
- (d) Cannot be determined

**Q35.** If  $M = 8^3 * 5^4$  and  $N = 8^5 * 5^3$ , Then what is the value of  $M * N$ ?

- (a)  $2^{16} * 5^8$
- (b)  $8^{24} * 5^7$
- (c)  $4^{24} * 5^7$
- (d)  $2^{24} * 5^7$

**Q36.** What will come in the place of the question mark '?' in the following question?

$? = 14^{13} \times 14^7$

- (a)  $14^6$
- (b)  $14^{19}$
- (c)  $14^{20}$
- (d)  $14^{-6}$

**Q37.** If the seventh day of a month is 3 days earlier than Friday, what day will it be on the 19<sup>th</sup> day of the month?

- (a) Sunday
- (b) Monday
- (c) Wednesday
- (d) Friday

**Q38.** If 21<sup>st</sup> August, 1998 was Tuesday, what was the day of the week on 16<sup>th</sup> August, 1994?

- (a) Friday
- (b) Tuesday
- (c) Saturday
- (d) Wednesday

**Q39.** Shah a sweet seller has a weighing machine that shows 20% more weight than the actual. At what percent more than the cost price should he sell sweets so as to make a profit of 35%?

- (a) 11.25%
- (b) 12.5%
- (c) 15%
- (d) 17.5%

**Q40.** What will come in the place of the question mark '?' in the following question?

$$(4 \times 4)^3 \div (512 \div 8)^4 \times (32 \times 8)^4 = (2 \times 2)^{?+4}$$

- (a) 13
- (b) 9
- (c) 6
- (d) 15

**Q41.** Ramesh bought earphones worth Rs.150. Out of the amount spent for buying earphones, Rs. 10 were spent on sales tax due to taxable purchases. If the tax rate was 10%, calculate the price of the tax-free earphones.

- (a) Rs. 100
- (b) Rs. 150
- (c) Rs. 10
- (d) Rs. 40

**Q42.** Pawandeep bought 8 Tables and 12 chairs for Rs. 52500. Few days later he sold them for Rs. 64500 making a profit of 25 per cent on the tables and 20 per cent on the chairs. What is the average cost of table and of each chair?

- (a) Rs. 3600, Rs. 1875
- (b) Rs. 3750, Rs. 1875
- (c) Rs. 3750, Rs. 1675
- (d) Rs. 3600, Rs. 1675

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**Q43.** A trader advertises for selling the cloth at 5% loss, but by using a false meter scale he actually gains 20%. What is the approximate length of the scale?

- (a) 0.75m
- (b) 0.8m
- (c) 0.6m
- (d) 0.5m

**Q44.** What will come in place of question mark (?) in the following question?

$$(2 \times \sqrt{392} - 21) + (\sqrt{8} - 7)^2 = (?)^2$$

- (a) 5
- (b) -5
- (c) 12
- (d) 6

**Q45.** The price of 2 jeans and 4 T-shirts is Rs. 16000. With the same money one can buy 1 jeans and 6 T-shirts. If one wants to buy 12 T-shirts, how much all shall one have to pay?

- (a) Rs. 24,000
- (b) Rs. 48,000
- (c) Rs. 12,000
- (d) Cannot be determined

**Q46.** A man sold two 'MF Husain' paintings at Rs.1725 each. On one, he gains 15% and on the other, he loses 25%. what is the gain or loss % on the whole transaction?

- (a) 16% gain
- (b)  $14\frac{1}{63}\%$
- (c) 15% loss
- (d)  $9\frac{4}{19}\%$  loss

**Q47.** Jubin starts a business with investment of Rs. 1200. Bimal and Chetan join the business with some investment after 3 months and 6 months respectively. If at the end of year profit is divided in ratio of 2:3:5, then how much money did Bimal invest?

- (a) 1800
- (b) 2400
- (c) 3600
- (d) 5400

**Q48.** Gaurav mixes brick powder in chilli powder in order to earn more profit. If he would have sold at a certain selling price without adulteration, he would have earned a profit of 20%. Due to adulteration, he earns a profit of 30%. How much brick powder does he mix in a kg of chilli powder? (in grams)

- (a) 70
- (b) 83
- (c) 90
- (d) 99



**Q49.** Abhishek a rice dealer has 100 kg of rice, part of which he sells at 7% profit and the rest at 17% profit. He gains 10% on the whole. How much is sold at 17%

- (a) 28 kg
- (b) 30 kg
- (c) 32 kg
- (d) 25 kg

**Q50.** Satyam bought a cricket bat with 30 per cent discount on the labelled price. He sold the bat with 12 per cent profit on the labelled price. What was his per cent profit on the price he bought?

- (a) 40
- (b) 50
- (c) 60
- (d) 85

**Q51.** The average expenditure of a man for the first 4 months of a year is Rs. 6000 and for the next eight months it is Rs. 4000. He saves Rs. 16000 during the year. His average monthly income is:

- (a) Rs. 7200
- (b) Rs. 6600
- (c) Rs. 6000
- (d) Rs. 5600

**Q52.** Lata's salary is 60% of Renu's salary which is 50% of Deepa's salary. What percentage of Deepa's salary is Lata's salary?

- (a) 30%
- (b) 40%
- (c) 20%
- (d) 24%

**Q53.** In a Delhi college, the number of students studying Science is 600 and the number of students studying Accountancy is  $\frac{1}{3}$  of studying Science. If the total number of students studying Science increased by 25% and the number of students studying Accountancy decreased by 10%, Find the ratio between them.

- (a) 10:21
- (b) 7:20
- (c) 25:6
- (d) 29:10

**Q54.** Find the amount that will become Rs 56,238 in three years at compound interest while the interest rate for the first year is 3%, for the second year is 4% and for the third year is 5% p.a.

- (a) Rs 40000
- (b) Rs 48000
- (c) Rs 50000
- (d) Rs 60000

**Q55.** If  $m^2 + 8 = 4m$  then find the value of  $m^4 - m^3 + 2m^2 + 10$

- (a) 34
- (b) 20
- (c) -38
- (d) -40

**Q56.** If  $A = 250 - 146 + 96 - 274 + 198$ ,  $B = 76 + 12 \times 1.1 - 5.6 \times 10$ , and  $C = 72 - 24 \div 8 \times 16 + 8$ , which of the following is true?

- (a)  $A > B > C$
- (b)  $A > C > B$
- (c)  $B > A > C$
- (d)  $C > B > A$

**Q57.** Instead of selling a T-shirt at 10% profit, Alakshendra sells it at 10% loss for Rs. 450, At what price he wanted to sell it to earn the profit?

- (a) Rs. 560
- (b) Rs. 550
- (c) Rs. 500
- (d) Rs. 350

**Q58.** A, B and C can do a piece of work in 8, 16., and 24 days respectively, they start working together but C leaves after working 2 days and B, 1 days before the completion of the work. Find in how many days the work was finished?

- (a)  $8\frac{1}{4}$
- (b) 12
- (c)  $5\frac{2}{9}$
- (d) 5

**Q59.** 5 digits number are formed using only 0, 1, 2, 3, 4 exactly once. Find the difference between the maximum and minimum number that can be formed.

- (a) 42256
- (b) 32187
- (c) 19876
- (d) 32976

**Q60.** Having the same capacity 9 taps fill up a water tank in 20 minutes. How many taps of the same capacity are required to fill up the same tank in 15 minutes?

- (a) 11
- (b) 12
- (c) 13
- (d) 14

**Q61.** The average runs scored by Dhoni and Virat are 55. If Rohit replaces Virat, the average becomes 53 and if Rohit replaces Dhoni, average becomes 58. If the average runs made by Bhuvneshwar and Jadeja are half of the average runs made by Dhoni, Virat and Rohit, the average runs made by all the five batsmen are:

- (a) 41.25
- (b) 44.26
- (c) 48.75
- (d) 39.22

**Q62.** The marks obtained by Priyanshu in Accountancy, English and Economics are respectively 89 out of 100, 102 out of 150 and 163 out of 200 respectively. What is the percentage scores obtained by him in all the three subjects?

- (a) 78.67
- (b) 76.83
- (c) 76.33
- (d) 78.33

**Q63.** Lakhbir and Sukhbir begin together writing out a magazine containing 8190 lines. Lakhbir starts with the first line, writing at the speed of 200 lines an hour; and Sukhbir starts with the last line, then writes 8189<sup>th</sup> line and so on, proceeding backward at the speed of 150 line an hour. How many lines will be written by Lakhbir in the magazine?

- (a) 4680
- (b) 4850
- (c) 5860
- (d) 6850

**Q64.** A man purchased 7 t-shirts at the rate of Rs. 800 each, combo pack of 8 t-shirts at Rs. 8000 and 5 sports t-shirts at the rate of Rs. 1200 each. What is the average cost of on 1 t-shirt?

- (a) 890
- (b) 856
- (c) 980
- (d) 875

**Q65.** Avinash a school teacher while calculating the average marks of 100 students of an examination, by mistake enters Akhil a student marks as 68, instead of 86 and obtained the average as 58; the actual average is:

- (a) 58.18
- (b) 57.82
- (c) 58.81
- (d) 57.28

**Q66.** The arithmetic mean of the scores of a group of students in a test was 64. The brightest 15% of them secured a mean score of 90 and the duller 20% secured a mean score of 28. The mean score of remaining 65% is:

- (a) 58.63
- (b) 66.09
- (c) 44.89
- (d) 69.07

**Q67.** There are 4 companies named – Amazon, Britannia, Chegg India and Wipro. Let the number of employees working in the companies is 20, 30, 25 and 15 respectively. Also, the average age of employees of companies – Amazon, Britannia, Chegg India and Wipro are 25 years, 22 years, 20 years and 27 years respectively. Find the average age of all the employees of all the four companies.

- (a) 31.22 years
- (b) 22.94 years
- (c) 28.23 years
- (d) 18.5 years

**Q68.** The average earning of Raghav for the initial three months of the calendar year 2005 is Rs. 1337. If his average earning for the second and third month is Rs. 1423 find his earning in the first month?

- (a) 2,846
- (b) 2,779
- (c) 3,000
- (d) 1165

**Q69.** Amit Mishra a software engineer worked 15 hours a day for the first 4 days, 14 hours a day for the next 3 days but did not work on the 8<sup>th</sup> day. Then on the average how much did he work in the first eight days?

- (a) 12 hours 40 minutes
- (b) 21 hours 45 minutes
- (c) 10 hours 45 minutes
- (d) 12 hours 45 minutes

**Q70.** If the average of (p, q), (q, r) and (r, s) is 5.8, 1.4 and 0.7 respectively. Find the value of (p - 2r - s).

- (a) 4.8
- (b) 1.22
- (c) 1.6
- (d) 7.4

**Q71.** Mr. Arpan owned 950-bit coins all of which he distributed amongst his three daughters Anita, Sunita and Manita. Anita gave 25-bit coins to her husband. Sunita donated 15-bit coins and Manita keeps 30-bit coins for payment. The new respective ratio of the coins left with them was 20 : 73 : 83 respectively. How many bit coins did Sunita receive from Mr Arpan?

- (a) 715
- (b) 185
- (c) 275
- (d) 380

**Q72.** Praveen is a penny-pincher teacher. He has to travel from East Delhi to South Delhi. To do so, he compared bus fare and metro fare of a place in South Delhi from East Delhi, which were Rs. 20 and Rs. 30 respectively when he travelled the last time. But now, metro fare has been increased by 20% and the bus fare has been increased by 10%. The ratio of new bus fare to new metro fare is:

- (a) 11:18
- (b) 8:11
- (c) 5:3
- (d) 3:5

**Q73.** The ratio of the number of students appearing for a UPTET exam in the year 2015 in the districts X, Y and Z was 4 : 5 : 6. Next year if the number of students in these districts increases by 30%, 20% and 30% respectively, the ratio in districts X and Z would be 2 : 3. What was the number of students who appeared for the UPTET exam in the district X in 2015?

- (a) 7200
- (b) 6000
- (c) 7500
- (d) Data inadequate

**Q74.** The ratio of the numbers of male and female employees in a start-up having 320 employees is 9 : 11. What will be the new ratio if 8 female employees leave the work?

- (a) 91:81
- (b) 17:20
- (c) 6:7
- (d) 7:9

**Q75.** What is the value of x, if it is 4% of the fourth proportional to 5, 8 and 25?

- (a) 1.23
- (b) 1.42
- (c) 1.6
- (d) 0.92

**Q76.** A box of ice-creams containing 16 ice-creams was given to each of the children Atul, Vinod, Chintu and Deepak. When asked about the ratio of 'no. of ice-creams eaten' to the 'no. of ice-creams not eaten', they gave the following answer.

Atul :- 5 : 3

Vinod :- 1 : 1

Chintu :- 1 : 7

Deepak :- 3 : 4

one of them was lying. who? (Here, eaten means completely eaten)

- (a) Atul
- (b) Vinod
- (c) Chintu
- (d) Deepak

**Q77.** The students in three classes are in the ratio 4 : 6 : 9. If 12 students are increased in each class, the ratio changes to 7 : 9 : 12. Then the total number of students in the 2<sup>nd</sup> Class before the increase is:

- (a) 36
- (b) 24
- (c) 54
- (d) 30

**Q78.** The ratio of male and female players in an academy is 7:9 respectively. The average number of male and female players is 272. What is the difference between the number of male and female players in the academy?

- (a) 68
- (b) 86
- (c) 96
- (d) 98

**Q79.** Tushar covers a certain distance by Uber, Meru cabs and Carzonrent in ratio 4 : 3: 2. The ratio of fare is 1 : 2 : 4 per km. The total expenditure as a fare is Rs. 1440. Then, total expenditure as fare on Uber is:

- (a) Rs. 280
- (b) Rs. 300
- (c) Rs. 320
- (d) Rs. 340

**Q80.** If Vaibhav : Shivam = 3 : 2 and Shivam : Manish = 3 : 4 then Vaibhav : Manish is equal to:

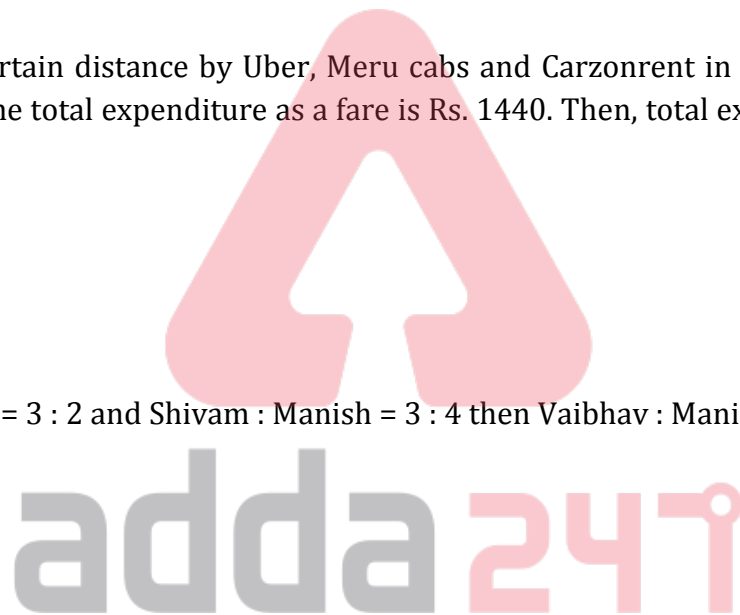
- (a) 2:3
- (b) 1:2
- (c) 4:5
- (d) 9:8

**Q81.** If 1860 is added in a number then number becomes  $444\frac{4}{9}\%$  of itself. Find the original number.

- (a) 270
- (b) 540
- (c) 1540
- (d) 1270

**Q82.** Rituraj has to secure a minimum 35% marks to pass an examination. If he gets 400 marks and fails by 20 marks, then the maximum marks in the examination are:

- (a) 1200
- (b) 900
- (c) 1560
- (d) 1300



**Q83.** Amanpreet gets a commission of 5% upto the sell of Rs. 20000 and above this he gets 4% commission on the sale. If after deducting his commission he deposits Rs. 62200 to the company, Find his total sale.

- (a) 62400
- (b) 63000
- (c) 32500
- (d) 65000

**Q84.** A sum of Rs. 825 is divided among Aman, Shivam and Kamal such that 'Aman' receives 50% more than 'Shivam' and 'Shivam' receives 30% less than 'Kamal'. What is the 'Aman's share in the amount?

- (a) Rs. 328
- (b) Rs. 347
- (c) Rs. 315
- (d) Rs. 304

**Q85.** According to a recent survey report issued by the Finance ministry, Government of India, 30% of the total FDI goes to Uttar Pradesh and 20% of this goes to rural areas. If the FDI in Uttar Pradesh, which goes to urban areas is \$144 million. If 20% of the total FDI goes to Bihar and 50% of this goes to rural areas then find the size of FDI in rural areas of Bihar?

- (a) \$ 30 million
- (b) \$ 9 million
- (c) \$ 60 million
- (d) \$ 40 million

**Q86.** The price of a smart candle on the occasion of Diwali is increased by 25%. By what percent the price should be decreased to restore its original price?

- (a) 18%
- (b) 20%
- (c) 22.5%
- (d) 25%

**Q87.** Price of a commodity is first increased by  $a\%$  and then decreased by  $a\%$ . If the new price is  $P/100$ , find the original price.

- (a)  $(a - 100) 100/P$
- (b)  $(a^2 - 100^2) 100/P$
- (c)  $(100 - a) 100/P$
- (d)  $100P/(100^2 - a^2)$

**Q88.** If  $50\%$  of  $(m - n) = 30\%$  of  $(m + n)$ , then what percent of  $m$  is  $n$ ?

- (a) 35%
- (b) 40%
- (c) 25%
- (d) 30%

**Q89.** Harsh Mittal goes to a shop to buy a hospital bed costing Rs. 26,160. The rate of sales tax is 9%. He tells the shopkeeper to reduce the price of the bed to such an extent that he has to pay Rs. 26,160 inclusive of sales tax. Find the percentage reduction needed in the price of the bed to just satisfy his requirement.

- (a) 8.33%
- (b) 8.26%
- (c) 9%
- (d) 8.5%

**Q90.** Akash is 50% more than Avil, Shubham is  $\frac{2}{3}$  of Akash and Shelly is 60% more than Shubham. If each of Akash, Avil, Shubham and Shelly increases by 19.5%, then what percentage of Avil is Shelly after increase?

- (a) 100%
- (b) 120%
- (c) 160%
- (d) 200%

**Q91.** Seema prepared 1620 litres of mango juice and filled in bottles of 180 ml each. Find how many bottles would be required?

- (a) 10000
- (b) 9000
- (c) 8000
- (d) 4000

**Q92.** Which of the following rational numbers does not lie between  $\frac{2}{3}$  and  $\frac{4}{5}$ ?

- (a)  $\frac{3}{4}$
- (b)  $\frac{5}{6}$
- (c)  $\frac{7}{9}$
- (d)  $\frac{5}{7}$

**Q93.** Convert 576 hours into days and hours?

- (a) 23 days 56 hours
- (b) 27 days 23 hours
- (c) 24 days
- (d) None of these

**Q94.** Value of  $-40^{\circ}\text{C}$  in Fahrenheit scale is:

- (a)  $-40^{\circ}\text{F}$
- (b)  $32^{\circ}\text{F}$
- (c)  $-32^{\circ}\text{F}$
- (d)  $40^{\circ}\text{C}$



**Q95.** Present ages of Reema and Shekhar are in the ratio of 4 : 5 respectively. Five years hence the ratio of their ages become 5 : 6 respectively. What is Reema's present age?

- (a) 21 years
- (b) 17 years
- (c) 15 years
- (d) 20 years

**Q96.** A tap drops at a rate of one drop/sec 600 drops make 100ml. The number of litres wasted in 300 days is:

- (a) 4375
- (b) 4300
- (c) 4320
- (d) 4230

**Q97.** Convert 75 days in weeks and days:

- (a) 10 weeks 5 days
- (b) 11 weeks 6 days
- (c) 9 weeks 3 days
- (d) 8 weeks 5 days

**Q98.** A clock buzzes 1 time at 1o' clock, 2 times at 2o' clock, 3 times at 3 o' clock and so on. What will be the total number of buzzes in a day?

- (a) 150
- (b) 156
- (c) 100
- (d) 200

**Q99.** How many metres are in 5 km?

- (a) 500 m
- (b) 50 m
- (c) 550 m
- (d) 5000 m

**Q100.** Riya's birthday falls on 4<sup>th</sup> February, 1990. Which day will fall on the day which is 47 days after her birthday if 4<sup>th</sup> February, 1990 is Sunday?

- (a) Saturday
- (b) Friday
- (c) Tuesday
- (d) Wednesday

**Q101.** Rakesh gives 10% of his money to his eldest son Kamal, 20% of the remaining to his youngest son Suresh, 15% of the remaining to an NGO for poor boys. Still, he has Rs. 1224. Find his total sum.

- (a) Rs. 1500
- (b) Rs. 2000
- (c) Rs. 3000
- (d) Rs. 2500

**Q102.** Two equal glasses filled with mixture of milk and water in the proportions of 2:1 and 1:1 respectively are emptied into a third glass. What is the proportion of milk and water in the third glass?

- (a) 3:7
- (b) 5:7
- (c) 4:7
- (d) 7:5

**Q103.** A dealer sells eggs at a cost price, but he mixes some rotten eggs and thereby gains 25%. The percentage of rotten eggs in the mixture is?

- (a) 25%
- (b) 8%
- (c) 22%
- (d) 20%

**Q104.** Rituraj Gaikwad in his 12<sup>th</sup> innings makes a score of 79 runs and thereby increase his average score by 1. What is his average after the 12<sup>th</sup> innings?

- (a) 71
- (b) 65
- (c) 67
- (d) 68

**Q105.** Sudhir and Sunil together can complete a work in 40 days. Sunil and Suraj can complete the same work in 48 days and Sudhir and Suraj can complete the same work in 60 days. In how many days can all the three complete the same work while working together?

- (a) 16
- (b) 24
- (c) 32
- (d) 38

**Q106.** In the given question, two equations numbered I and II are given. You have to solve both the equations and mark the appropriate answer.

I.  $x = \sqrt[3]{5832}$

II.  $y^2 = 324$

- (a)  $x > y$
- (b)  $x < y$
- (c)  $x \geq y$
- (d)  $x \leq y$

**Q107.** What should come in place of question mark '?' in the following question?

$0.36 \text{ of } 52.5 + ? \text{ of } 35 = 57.4$

- (a) 1.01
- (b) 1.09
- (c) 1.10
- (d) 1.16

**Q108.** The digit in the unit's place of  $\{(341)^{98} + (211)^{59} - (45)^{100} + (105)^{35} - 164 + 259\}$  is:

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

**Q109.** Anshika deposited Rs. 10,000 at 10% simple interest for 2 years. How much more money will Anshika have in her account at the end of two years, if it is compounded semi-annually at 20% rate?

- (a) Rs. 100
- (b) Rs. 2500
- (c) Rs. 2641
- (d) Rs. 3771

**Q110.** Directions: What will come in place of the question mark (?) in the following questions?

$$? = \{(2.5)^3 + (1.5)^3\} / \{(2.5)^3 - (1.5)^3\}$$

- (a)  $3/5$
- (b)  $6233/2000$
- (c)  $6233/1000$
- (d)  $76/49$

**Q111.** Tinku runs 2 km in 4 min and Minku in 4 min 10 sec. How many meters start must Tinku give Minku so that the race may end in a dead heat?

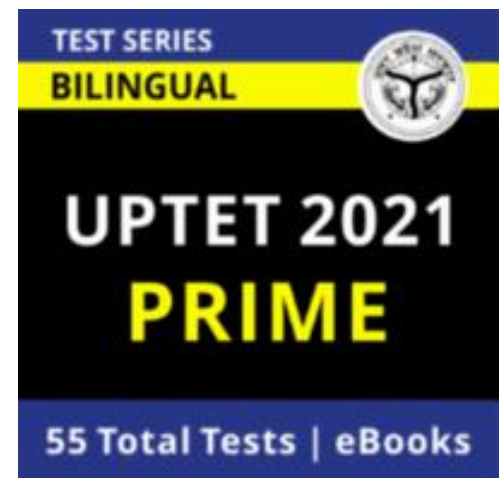
- (a) 80m
- (b) 72m
- (c) 85m
- (d) 77m

**Q112.** Two trains starting at the same time from two stations 800 km apart and going in opposite directions cross each other at a distance of 440 km from one of the stations. The ratio of their speeds is

- (a) 11 : 20
- (b) 20 : 9
- (c) 9 : 20
- (d) 11 : 9

**Q113.** If it takes 20 seconds for a train to cross a 60 meters long platform, and a man standing on platform observes that it took 16 seconds for train to cross him. Find the speed of train.

- (a) 36 kmph
- (b) 45 kmph
- (c) 50 kmph
- (d) 54 kmph



**Q114.** Two friends Raghav and Ansh go from home to temple and return to home. Raghav travels through a boat which has speed 20 kmph and river flows at 5 kmph while Ansh travels by a bullock cart which has speed 24 km/hr. Which one of two returns to home first?

- (a) Raghav
- (b) Ansh
- (c) Both at same time
- (d) None of these

**Q115.** Without stoppages, a train travels certain distance with an average speed of 160 km/h, and with stoppages, it covers the same distance with an average speed of 120 km/h. How many minutes per hour the train stops?

- (a) 15
- (b) 18
- (c) 10
- (d) 16

**Q116.** Two trains start from stations Anand Vihar and Preet Vihar and travel towards each other at speeds of 40 kmph and 90 kmph respectively. At the time of their meeting, the second train has travelled 100 km more than the first. The distance between Anand Vihar and Preet Vihar is:

- (a) 300 km
- (b) 350 km
- (c) 250 km
- (d) 260 km

**Q117.** Two cities Los Angeles and New York are 170 km apart, a train starts at 9 a.m. from Los Angeles towards New York at a speed of 40 km/hr, at 11 a.m. another train starts from New York towards Los Angeles at a speed of 50 km/hr. When will the two trains meet?

- (a) 1 PM
- (b) 12 Noon
- (c) 12:30 PM
- (d) 1:30 PM

**Q118.** A running train of 600 m long crosses an electric pole in 15 sec. The length of the platform is equal to the distance covered by the train in 30 sec. A person crosses the same platform in 5 minutes, then what is the speed of the person in meter/sec?

- (a) 3.4 m/s
- (b) 4 m/s
- (c) 4.6 m/s
- (d) 6 m/s

**Q119.** A steamer running downstream covers a distance of 30 km in 2 hours. While coming back the steamer takes 6 hours to cover the same distance. If the speed of the current is half of that of the steamer, then find the speed of the steamer in kmph.

- (a) 10 kmph
- (b) 12 kmph
- (c) 18 kmph
- (d) 20 kmph

**Q120.** Distance between two stations Azamgarh and Hyderabad is 680 km. A train cover the journey from Azamgarh to Hyderabad at 40 km per hour and returns back to Azamgarh with a uniform speed of 60 km per hour. Find the average speed of the train during the whole journey?

- (a) 50km/h
- (b) 48km/h
- (c) 38km/h
- (d) 58km/h

**Q121.** A boat goes 30 km in an hour in still water, and takes thrice the time to cover the same distance upstream. The speed of the current (in km / hr) is –

- (a) 20 km/hr
- (b) 24 km/hr
- (c) 26 Km/hr
- (d) 28 Km/hr

**Q122.** If the speed of a boat in stationary water is 56 km/h and speed of stream is 20 km/h. Distance covered by boat in the direction along the stream is 684 km and return back. Find the total time taken.

- (a) 20 hours
- (b) 28 hours
- (c) 15 hours
- (d) 26 hours

**Q123.** Sameer can row at 14 km/hour in still water. He finds that it takes twice the time to row upstream than the time to row downstream. The speed of the stream is:

- (a) 2.6 km/hour
- (b) 7 km/hour
- (c) 2.3 km/hour
- (d) 4 km/hour

**Q124.** A boat goes 20 kms an hour in still water, but takes twice as much time in going the same distance against the current. The speed of the current (in km/hr) is –

- (a) 4 km/hr
- (b) 8 km/hr
- (c) 6 km/hr
- (d) 10 km/hr

**Q125.** A boat goes downstream in one-third the time it takes to go upstream. Then the ratio between the speed of boat in still water and speed of the stream is:

- (a) 5:1
- (b) 3:2
- (c) 1:2
- (d) 2:1

**Q126.** The speed of a boat along the stream is 24 km/h and against the stream is 16 km/h. the time taken by the boat to sail 48 km in still water is:

- (a) 2 h
- (b) 3 h
- (c) 2.4 h
- (d) 1.2 h

**Q127.** A boat running at a speed of 68 km/h downstream covers a distance of 9.6 km in 8 minutes. The same boat while running upstream at same speed covers the same distance in 9 minutes. What is the speed of the current?

- (a) 4.8 km/h
- (b) 6 km/h
- (c) 4 km/h
- (d) 6.4 km/h

**Q128.** A boat is rowed downstream at 31 km/hr and upstream 17 km/hr. The speed of the stream is:

- (a) 7 km/hr
- (b) 5.75 km/hr
- (c) 13 km/hr
- (d) 14 km/hr

**Q129.** A steamer running downstream covers a distance of 60 km in 4 hours. While coming back the steamer takes 12 hours to cover the same distance. If the speed of the current is half of that of the steamer, then find the speed of the steamer in kmph.

- (a) 20 kmph.
- (b) 18 kmph.
- (c) 10 kmph.
- (d) 12 kmph.

**Q130.** In a fixed time, Bablu swims double the distance along the current that he swims against the current. If the speed of the current is 6 kmph, the speed of the Bablu in still water is:

- (a) 12 kmph
- (b) 18 kmph
- (c) 20 kmph
- (d) 24 kmph

**Q131.** Tinku runs 2 km in 4 min and Minku in 4 min 10 sec. How many meters start must Tinku give Minku so that the race may end in a dead heat?

- (a) 80m
- (b) 72m
- (c) 85m
- (d) 77m

**Q132.** Two trains starting at the same time from two stations 800 km apart and going in opposite directions cross each other at a distance of 440 km from one of the stations. The ratio of their speeds is

- (a) 11 : 20
- (b) 20 : 9
- (c) 9 : 20
- (d) 11 : 9

**Q133.** If it takes 20 seconds for a train to cross a 60 meters long platform, and a man standing on platform observes that it took 16 seconds for train to cross him. Find the speed of train.

- (a) 36 kmph
- (b) 45 kmph
- (c) 50 kmph
- (d) 54 kmph

**Q134.** Two friends Raghav and Ansh go from home to temple and return to home. Raghav travels through a boat which has speed 20 kmph and river flows at 5 kmph while Ansh travels by a bullock cart which has speed 24 km/hr. Which one of two returns to home first?

- (a) Raghav
- (b) Ansh
- (c) Both at same time
- (d) None of these

**Q135.** Without stoppages, a train travels certain distance with an average speed of 160 km/h, and with stoppages, it covers the same distance with an average speed of 120 km/h. How many minutes per hour the train stops?

- (a) 15
- (b) 18
- (c) 10
- (d) 16

**Q136.** Two trains start from stations Anand Vihar and Preet Vihar and travel towards each other at speeds of 40 kmph and 90 kmph respectively. At the time of their meeting, the second train has travelled 100 km more than the first. The distance between Anand Vihar and Preet Vihar is:

- (a) 300 km
- (b) 350 km
- (c) 250 km
- (d) 260 km

**Q137.** Two cities Los Angeles and New York are 170 km apart, a train starts at 9 a.m. from Los Angeles towards New York at a speed of 40 km/hr, at 11 a.m. another train starts from New York towards Los Angeles at a speed of 50 km/hr. When will the two trains meet?

- (a) 1 PM
- (b) 12 Noon
- (c) 12:30 PM
- (d) 1:30 PM

**Q138.** A running train of 600 m long crosses an electric pole in 15 sec. The length of the platform is equal to the distance covered by the train in 30 sec. A person crosses the same platform in 5 minutes, then what is the speed of the person in meter/sec?

- (a) 3.4 m/s
- (b) 4 m/s
- (c) 4.6 m/s
- (d) 6 m/s

**Q139.** A steamer running downstream covers a distance of 30 km in 2 hours. While coming back the steamer takes 6 hours to cover the same distance. If the speed of the current is half of that of the steamer, then find the speed of the steamer in kmph.

- (a) 10 kmph
- (b) 12 kmph
- (c) 18 kmph
- (d) 20 kmph

**Q140.** Distance between two stations Azamgarh and Hyderabad is 680 km. A train cover the journey from Azamgarh to Hyderabad at 40 km per hour and returns back to Azamgarh with a uniform speed of 60 km per hour. Find the average speed of the train during the whole journey?

- (a) 50km/h
- (b) 48km/h
- (c) 38km/h
- (d) 58km/h

**Q141.** A boat goes 30 km in an hour in still water, and takes thrice the time to cover the same distance upstream. The speed of the current (in km / hr) is –

- (a) 20 km/hr
- (b) 24 km/hr
- (c) 26 Km/hr
- (d) 28 Km/hr

**Q142.** If the speed of a boat in stationary water is 56 km/h and speed of stream is 20 km/h. Distance covered by boat in the direction along the stream is 684 km and return back. Find the total time taken.

- (a) 20 hours
- (b) 28 hours
- (c) 15 hours
- (d) 26 hours

**Q143.** Sameer can row at 14 km/hour in still water. He finds that it takes twice the time to row upstream than the time to row downstream. The speed of the stream is:

- (a) 2.6 km/hour
- (b) 7 km/hour
- (c) 2.3 km/hour
- (d) 4 km/hour



**Q144.** A boat goes 20 kms an hour in still water, but takes twice as much time in going the same distance against the current. The speed of the current (in km/hr) is –

- (a) 4 km/hr
- (b) 8 km/hr
- (c) 6 km/hr
- (d) 10 km/hr

**Q145.** A boat goes downstream in one-third the time it takes to go upstream. Then the ratio between the speed of boat in still water and speed of the stream is:

- (a) 5:1
- (b) 3:2
- (c) 1:2
- (d) 2:1

**Q146.** The speed of a boat along the stream is 24 km/h and against the stream is 16 km/h. the time taken by the boat to sail 48 km in still water is:

- (a) 2 h
- (b) 3 h
- (c) 2.4 h
- (d) 1.2 h

**Q147.** A boat running at a speed of 68 km/h downstream covers a distance of 9.6 km in 8 minutes. The same boat while running upstream at same speed covers the same distance in 9 minutes. What is the speed of the current?

- (a) 4.8 km/h
- (b) 6 km/h
- (c) 4 km/h
- (d) 6.4 km/h

**Q148.** A boat is rowed downstream at 31 km/hr and upstream 17 km/hr. The speed of the stream is:

- (a) 7 km/hr
- (b) 5.75 km/hr
- (c) 13 km/hr
- (d) 14 km/hr

**Q149.** A steamer running downstream covers a distance of 60 km in 4 hours. While coming back the steamer takes 12 hours to cover the same distance. If the speed of the current is half of that of the steamer, then find the speed of the steamer in kmph.

- (a) 20 kmph.
- (b) 18 kmph.
- (c) 10 kmph.
- (d) 12 kmph.

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**Q150.** In a fixed time, Bablu swims double the distance along the current that he swims against the current. If the speed of the current is 6 kmph, the speed of the Bablu in still water is:

- (a) 12 kmph
- (b) 18 kmph
- (c) 20 kmph
- (d) 24 kmph

**Q151.** Ruby took a non-stop flight to visit her sister Savita's house. The 750-mile trip took three hours and 45 minutes. Because of the bad weather, the return trip took four hours and 45 minutes. What was her average speed for the round trip?

- (a) 176.47 mile per hour
- (b) 167.47 mile per hour
- (c) 156 mile per hour
- (d) 180 mile per hour

**Q152.** A cricket player covers 30 km at 10 kmph, 36 km at 18 kmph and 24 km of the remaining distance at 6 kmph to reach a stadium for match. What is the total time taken to travel?

- (a) 7 Hours
- (b) 8 Hours
- (c) 9 Hours
- (d) 10 Hours

**Q153.** Ashoke is travelling in his car from city Meerut to Delhi and back. In the journey from Meerut to Delhi he is travelling with constant speed of 40 km/hr. While travelling back his speed was 45 km/hr. He took 3 hrs in the whole journey. What was his average speed?

- (a) 36 km/hr
- (b) 42.4 km/hr
- (c) 10 km/hr
- (d) 15 km/hr

**Q154.** Two trains, each 200 m long, moving in opposite directions, cross each other in 24 sec. If one is moving twice as fast as the other, then the speed of the faster train is \_\_\_\_.

- (a) 30 kmph
- (b) 20 kmph
- (c) 24 kmph
- (d) 40 kmph

**Q155.** Two stations Bundelkhand and Paryagraj are 110 km apart on a straight line. One train starts from Bundelkhand at 7 a.m. and travels towards Paryagraj at 20 kmph. Another train starts from Paryagraj at 8 a.m. and travels towards Bundelkhand at a speed of 25 kmph. At what time will they meet?

- (a) 9 am
- (b) 10 am
- (c) 10.30 am
- (d) 11 am

**Q156.** Naushad travel at a speed of 50 km/h. If he has increased his speed by 30 km/h, he would have covered 180 km more in the same time. Find the actual distance travelled.

- (a) 240 km
- (b) 120 km
- (c) 150 km
- (d) 360 km

**Q157.** Two trains start from stations Saharanpur and Ghaziabad and travel towards each other at a speed of 60 kmph and 80 kmph respectively. At the time of their meeting, the second train had travelled 180 km more than the first. The distance between Saharanpur and Ghaziabad is:

- (a) 1260 km
- (b) 1620 km
- (c) 1660 km
- (d) 600 km

**Q158.** A 240m long train crosses a 560m long tunnel in 40 seconds. Find the time taken by train to cross a pole standing on a platform of length 1000m.

- (a) 5 sec
- (b) 7 sec
- (c) 6.5 sec
- (d) 6 sec

**Q159.** Anmol takes 10 hours to go to Noida and come back, by walking both ways at constant speed He could have gained 2 hours by riding both the ways at a constant speed, The distance covered in the whole journey is 18 miles. Find the average speed for the whole journey if he goes by walking and comes back by riding.

- (a) 5 mph
- (b) 4 mph
- (c) 3 mph
- (d) 2 mph

**Q160.** Dinesh travelled a distance of 1200 km in 16 hours. He travelled partly by car at a speed of 40 km/h, and partly by train at a speed of 80 km/h. What is the distance travelled by car?

- (a) 96 km
- (b) 80 km
- (c) 120 km
- (d) 100 km

**Q161.** Present ages of Kavita and Savita are in the ratio of 4 : 5 respectively. Ten years hence the ratio of their ages become 5 : 6 respectively. What is Kavita's present age?

- (a) 42 years
- (b) 34 years
- (c) 30 years
- (d) 40 years

**Q162.** If M's age is twice the average age of M, N and O. M's age is half the average of M, N and O and if N is 5 years old, then find the average age of M, N and O:

- (a) 13 years
- (b) 10 years
- (c) 8 years
- (d) 11 years

**Q163.** Gautam was twice as old as Abhishek 10 years ago. How old is Abhishek today, if Gautam will be 40 years old 10 years hence?

- (a) 20 years
- (b) 12 years
- (c) 18 years
- (d) 15 years

**Q164.** Shivam is 3 times as old as his son Vinay. After 10 years, the sum of their ages will be 76 years. The respective ages of the Shivam and the Vinay are:

- (a) 33 years, 17 years
- (b) 47 years, 13 years
- (c) 42 years, 14 years
- (d) 42 years, 15 years

**Q165.** The sum of the ages of Kishore and his son Raj Kishore is 45 years. Five years ago, the product of their ages was four times the Kishore's age at that time. The present ages of the Kishore and Raj Kishore are:

- (a) 39, 6
- (b) 37, 14
- (c) 36, 9
- (d) 41, 12

**Q166.** Present age of Palak is 8 years less than Meenakshi's present age. If 3 years ago Meenakshi's age was  $y$ , which of the following represents Palak's present age?

- (a)  $y + 3$
- (b)  $y - 3 + 8$
- (c)  $y - 5$
- (d)  $y + 3 + 8$

**Q167.** If 6 years are subtracted from the present age of Rishabh and the remainder is divided by 18, then the present age of his grandson Vicky is obtained. If Vicky is 2 years younger to Manik whose age is 5 years, then what is the age of Rishabh?

- (a) 58 years
- (b) 60 years
- (c) 67 years
- (d) 48 years

**Q168.** Ratio of Sunita's and Manita's age is 3 : 5 respectively. Ratio of Manita's and Saloni's age is 2 : 3 respectively. If Sunita is two-fifth of Saloni's age, what is Sunita's age?

- (a) 12 years
- (b) 15 years
- (c) Can't be determined
- (d) 24 years

**Q169.** Rakshit got married 9 years ago. Today his age is  $1\frac{1}{3}$  times of his age at the time of marriage. At present his daughter's age is one-sixth of his age. What was his daughter's age two years ago?

- (a) 5 years
- (b) 3 years
- (c) 4 years
- (d) 12 years

**Q170.** A father's age is one more than 5 times of his son's age. After 3 years, the father's age would be 2 less than four times the son's age. Find the present age of the father.

- (a) 30 years
- (b) 40 years
- (c) 31 years
- (d) 29 years

**Q171.** Find the value of m, for which the system of equations  $mx + 3y = 26$  and  $21x + (m + 2)y = 71 + m$  has infinitely many solutions.

- (a)  $m = 9$
- (b)  $m = 7$
- (c)  $m = 6$
- (d)  $m = 0$

**Q172.** If two cows and three horses cost Rs. 8,000 and three cows and two horses cost Rs. 7000, how much does a cow cost?

- (a) Rs. 3000
- (b) Rs. 2000
- (c) Rs. 1000
- (d) Rs. 2000

**Q173.** The eighteen times a number is added to the square of that number, gives (-a) and the quadratic equation has only one repeated solution, then, what is the value of a ?

- (a) 100
- (b) 81
- (c) 71
- (d) 61

**Q174.** Find the value of a and b if  $a + b = 6$  and  $4a + 7b = 36$ ?

- (a) 2, 4
- (b) 4, 2
- (c) 1, 1
- (d) 0, 0

**Q175.** The equations  $3a - 4b = 5$  and  $12a - 16b = 20$  have:

- (a) no common solution
- (b) exactly one common solution
- (c) exactly two common solutions
- (d) more than two common solutions

**Q176.** If  $m^2 + 5m - 6k$ , is exactly divisible by  $(m - 3)$ , then the value of k is:

- (a) 1
- (b) 2
- (c) 3
- (d) 4

**Q177.** If  $n^2 = n + 7$ , then what is the value of  $n^3$ ?

- (a)  $8n + 7$
- (b)  $n + 14$
- (c)  $n + 2$
- (d)  $4n + 7$

**Q178.** If  $a + b + c = 12$  (where a, b, c are real numbers), then the minimum value of  $a^2 + b^2 + c^2$  is:

- (a) 96
- (b) 100
- (c) 98
- (d) 48

**Q179.** Rakshit went to a market and bought one copy of a Mathematics book and two pencils for Rs.65. Shashank went to the same market and bought another copy of the same book and ten pencils of the same brand for Rs.69. The price of each pencil was

- (a) Rs. 0.50
- (b) Rs. 1
- (c) Rs. 0.75
- (d) Rs. 2

**Q180.** Simplify:  $2x(3x + 4) - 5(x^2 + 2) + 7x$

- (a)  $x^2 - 15x + 10$
- (b)  $x^2 - x - 10$
- (c)  $x^2 + 15x - 10$
- (d)  $2x^2 + x - 10$

**Q181.** The speed of a man for the first 4 hours is 210 km/h and for the next 6 hours his speed is 270 km/h, find the ratio of average of speeds to the average speed.

- (a) 10/11
- (b) 21/20
- (c) 30/31
- (d) 40/41

**Q182.** A monkey climbs a pole of height 60 metres. In the first minute, he climbs 30 metres but in the second minute slips down 24 metres. The process continues till he reaches on the top of the pole. Time required to reach on the top of the pole is:

- (a) 20 minutes
- (b) 21 minutes
- (c) 24 minutes
- (d) None of these

**Q183.** A certain number of men can finish a piece of work in 100 days. If, however, there were 8 men less, it would take 40 more days for the work to be finished. How many men were there originally?

- (a) 36
- (b) 28
- (c) 30
- (d) 32

**Q184.** Direction: What should come in place of the question mark(?) in the following question?

$$7 * 0.7 * 0.07 * 0.007 * 70 = ?$$

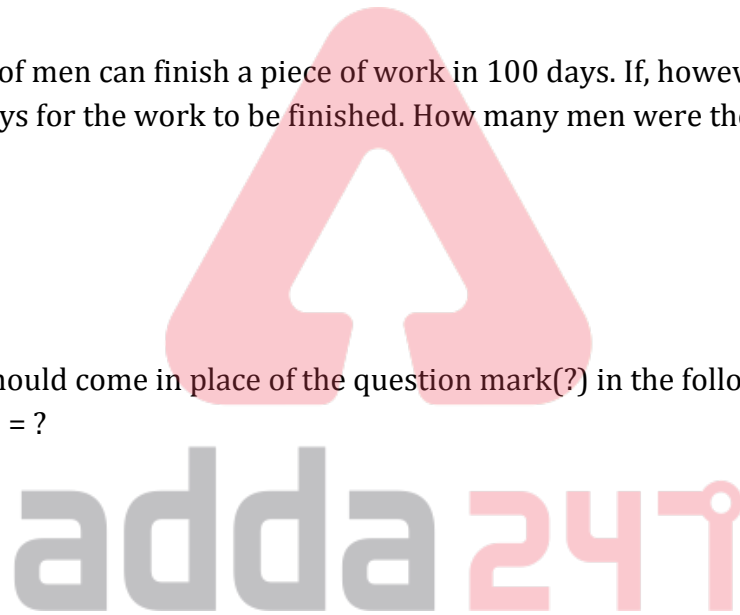
- (a) 0.15807
- (b) 0.16708
- (c) 0.07776
- (d) 0.16807

**Q185.** Avnish is 16 years younger than Yash, While Gaurav is 10 years older than Avnish. The ratio of the age of Avnish 6 years hence and age of Gaurav 14 years ago is 4:3. Find the present age of Yash.

- (a) 54 years
- (b) 62 years
- (c) 50 years
- (d) 44 years

**Q186.** The ratio of length and breadth of a rectangle is 5:2 and the perimeter is 420 cm. What is the area of the rectangle?

- (a) 8000 cm<sup>2</sup>
- (b) 9000 cm<sup>2</sup>
- (c) 10000 cm<sup>2</sup>
- (d) 12000 cm<sup>2</sup>



**Q187.** Piyush and Kamal get profit in the ratio 21 : 22 with investments in the ratio 7 : 11. Find the time period of investment by Piyush if Kamal invested for 6 years.

- (a) 9 years
- (b) 36 years
- (c) 11 years
- (d) 4 years

**Q188.** An article listed at Rs. 800 is sold at successive discounts of 25% and 15%. The buyer desires to sell it off at a profit of 20% after allowing 10% discount. What would be his list price?

- (a) Rs. 620
- (b) Rs.600
- (c) Rs.640
- (d) Rs.680

**Q189.** An Express train covers a distance of 3584 km in 2 days 8 hours. If it covers 1440 km on the first day and 1608 km on the second day, by how much does the average speed of the train on the remaining part of the journey differ from that for the entire journey?

- (a) 5km/hr
- (b) 4km/hr
- (c) 3km/hr
- (d) 7km/hr

**Q190.** The number of boys and girls in a Delhi college of Engineering are in the ratio 5 : 3. 20% of the boys denied to go for a picnic while 60 girls are ready to go for the picnic. If total 188 students are ready to go for the picnic, then what is the total number of girls in the college?

- (a) 96
- (b) 99
- (c) 102
- (d) 78

**Q191.** Triangle XYZ is an equilateral triangle and P is a point on YZ such that  $ZP = 3YP$  and XM is perpendicular drawn from X on YZ, then which of the following option is correct?

- (a)  $4XP^2 = 13YM^2$
- (b)  $2XP^2 = 13YM^2$
- (c)  $5XP^2 = 13YM^2$
- (d)  $7XP^2 = 13YM^2$

**Q192.** If in a triangle MNO,  $MN = MO$ ,  $\angle M = x + 15^\circ$ ,  $\angle O = 2x + 25^\circ$  then value of  $\angle N$  is:

- (a)  $60^\circ$
- (b)  $36^\circ$
- (c)  $71^\circ$
- (d)  $108^\circ$



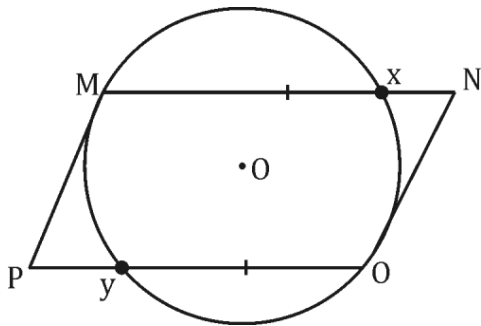
**Q193.** In triangle XYZ,  $\angle X$ ,  $\angle Y$  and  $\angle Z$  are in arithmetic progression in any order while the ratio of  $\angle Y : \angle Z = 6:7$ . If I is the incentre and the external bisector of  $\angle Y$  and  $\angle Z$  meet at M, then what is the difference between  $\angle XIY$  and  $\angle YMZ$ ? Assume all the three angles of triangle XYZ are integer.

- (a)  $60^\circ$
- (b)  $80^\circ$
- (c)  $50^\circ$
- (d)  $75^\circ$

**Q194.** If the arcs of same length in two circles subtend angles of  $120^\circ$  and  $150^\circ$  at their centres, the ratio of their radii is:

- (a) 3:4
- (b) 4:5
- (c) 5:4
- (d) 3:5

**Q195.** In the given figure 'O' is the centre of the circle. If  $MX = 4$  cm,  $XN = 2$  cm, also  $MX = YO$  and  $NO = MP$ , then  $PY = ?$



- (a) 1 cm
- (b) 2 cm
- (c) 4 cm
- (d) 6 cm

**Q196.**  $\angle P$ ,  $\angle Q$ ,  $\angle R$  are three angles of a triangle. If  $\angle P - \angle Q = 18^\circ$ ,  $\angle Q - \angle R = 30^\circ$ , then  $\angle P$ ,  $\angle Q$  and  $\angle R$  are:

- (a)  $80^\circ, 60^\circ, 44^\circ$
- (b)  $70^\circ, 60^\circ, 30^\circ$
- (c)  $82^\circ, 64^\circ, 34^\circ$
- (d)  $80^\circ, 64^\circ, 45^\circ$

**Q197.** PQRS is a parallelogram PQ is divided at X and RS at Y so that  $PX : XQ = 3 : 2$  and  $RY : YS = 4 : 1$  if XY meets PR at Z then  $PZ =$

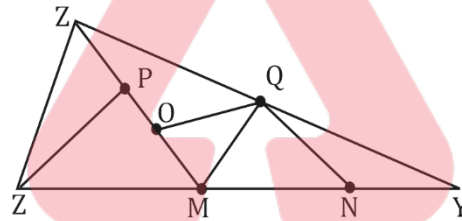
- (a)  $\frac{2}{7} PR$
- (b)  $\frac{3}{7} PR$
- (c)  $\frac{4}{7} PR$
- (d)  $\frac{5}{7} PR$

- Q198.** In a rectangle,
- (a) Diagonals bisect opposite angles
  - (b) Consecutive sides are congruent
  - (c) All sides are congruent
  - (d) Diagonals form two congruent triangles

- Q199.** In a  $\Delta PQR$ ,  $QR$  is extended up to  $S$ ;  $\angle PRS = 150^\circ$ ,  $\angle Q = \frac{1}{4} \angle P$ . Then  $\angle Q$  is:
- (a)  $30^\circ$
  - (b)  $120^\circ$
  - (c)  $40^\circ$
  - (d)  $60^\circ$

- Q200.**  $O$  is the circumcentre of  $\Delta XYZ$ . If  $XO = 8$  cm, then the length of  $YO$  is:
- (a) 12 cm
  - (b) 3 cm
  - (c) 6 cm
  - (d) 8 cm

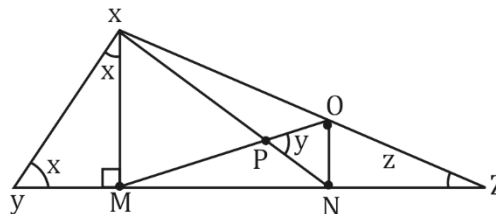
- Q201.** In the figure (not drawn to scale) given below,  $N$  is a point on  $XY$  such that  $XM : MY = 4 : 3$ .  $MQ$  is parallel to  $XZ$  and  $QN$  is parallel to  $ZM$ . In triangle  $XPZ$ ,  $\angle XPZ = 90^\circ$  what is ratio of  $XM : MN$ ?



- (a) 3:7
- (b) 4:3
- (c) 7:3
- (d) 8:3

- Q202.** The ratio of the area of a square to that of the square drawn on its diagonal is:
- (a) 2:1
  - (b) 1:2
  - (c) 1:4
  - (d) 1:1

- Q203.** In triangle  $XYZ$  (not drawn to scale).  $XM = XO = OZ$  and  $PM = PO$ . Find  $x + y + z$ .

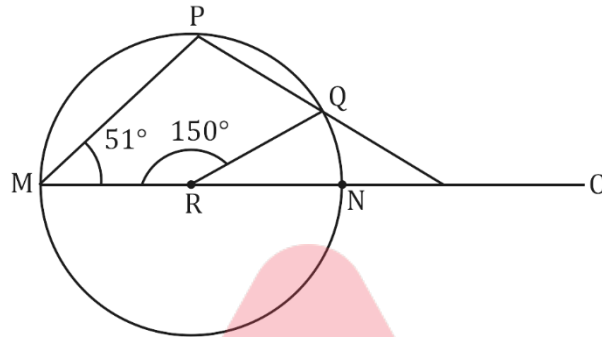


- (a)  $210^\circ$
- (b)  $165^\circ$
- (c)  $135^\circ$
- (d)  $175^\circ$

**Q204.** If an angle 'm' of a parallelogram is  $24^\circ$  more than its adjacent angle, then the value of 'm' is:

- (a)  $110^\circ$
- (b)  $103^\circ$
- (c)  $102^\circ$
- (d) None of these

**Q205.** In the following figure, MN be diameter of a circle whose centre is R. If  $\angle MRQ = 150^\circ$ ,  $\angle PMR = 51^\circ$ , then the measure of  $\angle ONQ$  is:



- (a)  $115^\circ$
- (b)  $105^\circ$
- (c)  $110^\circ$
- (d)  $120^\circ$

**Q206.** Two straight line MN and OP intersect one another at the point K. If  $\angle MKO + \angle OKN + \angle NKP = 260^\circ$ , then  $\angle PKM$  is:

- (a)  $110^\circ$
- (b)  $120^\circ$
- (c)  $100^\circ$
- (d)  $150^\circ$

**Q207.** MNOP is a rectangle such that, diagonal MO and NP bisect at L. If  $\angle POM = 60^\circ$ , then what is the  $\angle MLN$ ?

- (a)  $50^\circ$
- (b)  $120^\circ$
- (c)  $70^\circ$
- (d)  $60^\circ$

**Q208.** Sum of all the interior angles of a regular polygon is  $6840^\circ$ , find the number of sides of the polygon?

- (a) 38
- (b) 35
- (c) 37
- (d) 40

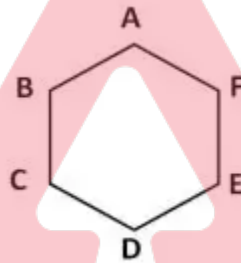
**Q209.** The adjacent sides of a parallelogram are 30 cm and 27 cm in length. If the distance between the shorter sides is 15 cm, then the distance between the longer sides is:

- (a) 12 cm
- (b) 15 cm
- (c) 14.75 cm
- (d) 13.5 cm

**Q210.** In a Rhombus ABCD, measure of angle CAB is  $70^\circ$ , what is the measure of angle ABC?

- (a)  $30^\circ$
- (b)  $45^\circ$
- (c)  $40^\circ$
- (d)  $35^\circ$

**Q211.** The hexagon ABCDEF is regular. That means all its sides are of the same length and all its interior angles are of the same size. Each side of the hexagon is 2m. What is the area of the rectangle BCEF?



- (a) 4 sq.m
- (b)  $4\sqrt{3}$  sq.m
- (c) 8 sq.m
- (d)  $4 + 4\sqrt{3}$  sq.m

**Q212.** The circumference of the front wheel of a cart is 60 ft long and that of the back wheel is 72 ft long. What is the distance travelled by the cart, when the front wheel has done five more revolutions than the rear wheel?

- (a) 40 ft
- (b) 50 ft
- (c) 1500 ft
- (d) 1800 ft

**Q213.** The length and breadth of a rectangular field are 240 m and 160 m respectively. Inside the field, a park of 24 m width is made around the field. The area of the park is:

- (a)  $9432 m^2$
- (b)  $29376 m^2$
- (c)  $16896 m^2$
- (d)  $12896 m^2$

**Q214.** If the perimeter of a square and a rectangle are the same, then the areas A and B (respectively) enclosed by them would satisfy the inequality:

- (a)  $A > B$
- (b)  $A \geq B$
- (c)  $A < B$
- (d)  $A \leq B$

**Q215.** NX and OY are two altitudes of a triangle MNO. If  $MN = 16$  cm,  $MO = 12$  cm and  $OY = 6$  cm, then the length of NX is:

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

**Q216.** If  $y$  units are added to the length of the radius of a circle, what is the number of units by which the circumference of the circle is increased?

- (a)  $y$
- (b) 2
- (c)  $2\pi$
- (d)  $2\pi y$

**Q217.** A circular road is constructed outside a square field. The perimeter of the square field is 200 ft. If the width of the road is  $7\sqrt{2}$  ft. and cost of construction is Rs. 100 per sq. ft. Find the lowest possible cost to construct 50% of the total road.

- (a) Rs.70,400
- (b) Rs.1,25,400
- (c) Rs.1,40,800
- (d) Rs.2,35,400

**Q218.** The area of a rectangular field is  $104000 \text{ m}^2$ . This rectangular area has been drawn on a map to the scale 1 cm to 100 m. The length is shown as 6.5 cm on the map. The breadth of the rectangular field is:

- (a) 210 m
- (b) 150 m
- (c) 160 m
- (d) 123 m

**Q219.** Four horses are tethered at four corners of a square plot of 84 m so that they just cannot reach one another. The area left ungrazed is:

- (a)  $1512 \text{ m}^2$
- (b)  $1752 \text{ m}^2$
- (c)  $3144 \text{ m}^2$
- (d) None of these



**Q220.** What is the radius of circular field whose area is equal to the sum of the areas of three smaller circular fields of radii 16 m, 18 m and 24 m respectively?

- (a) 34 m
- (b) 40 m
- (c) 42 m
- (d) 58 m

**Q221.** A person divides 41% of his property among his three sons Summit, Pranay and Mayank in the ratio of 11:13:17. If the sum of the shares of Summit and Pranay is Rs. 288000. Find the remaining property of the person.

- (a) Rs. 12,00,000
- (b) Rs. 4,92,000
- (c) Rs. 7,08,000
- (d) Rs. 3,92,000

**Q222.** The money with two persons Kartik and Himanshu are in the ratio of 3:4. Kartik can spend money in 5 days and Himanshu can spend money in 6 days. Both spend money with their constant rate. After how many days will their money be in the ratio of 9:20?

- (a) 3 days
- (b) 4 days
- (c) 2 days
- (d) 1 day

**Q223.** The dimensions of a hall are  $600 * 320 * 480$  cm. How many persons can sit in the hall if each person requires 800 cube cm of air?

- (a) 147,000
- (b) 156,600
- (c) 158,400
- (d) 115,200

**Q224.** A sum of money is invested at 40% p.a. compound interest, compounded half-yearly. If the amount at the end of one and half years is Rs. 864,000 then find the sum?

- (a) Rs. 440000
- (b) Rs. 560000
- (c) Rs. 600000
- (d) Rs. 500000

**Q225.** Raju finishes a work in 3 days, Shalu finishes the same in 4 days and Kapil in 5 days. They take turns to finish the work. Raju works on the first day, Shalu on the second and Kapil on the third day and then again Raju and so on. On which day will the work get completed?

- (a) 3
- (b) 4
- (c) 2
- (d) 5

**Q226.** In the capital of India there is famous zoo Pragati Maidan. The number of people who visits the zoo on Sundays is 500 whereas the number of people who visits the zoo on the other days of week is 200 only. If a month has 30 days and starts with Saturday then what is the average number of visitors per day in that month?

- (a) 240
- (b) 260
- (c) 230
- (d) 250

**Q227.** Varun spends 40% of the amount he received from his father on hostel expenses, 20% on books and stationery, and 50% of the remaining amount on transport. He saves Rs. 1200 which is half the remaining amount after spending on hostel expenses, books and stationery and transport. How much money did he get from his father?

- (a) Rs. 6000
- (b) Rs. 12,000
- (c) Rs. 9000
- (d) None of these

**Q228.** Ratio of weight of Aman and Amit is  $\frac{7}{2}$ . If the weight of Aman were 2 kg less, the ratio would have been  $\frac{7}{6}$ . What is the present weight of 'Aman'?

- (a) 3
- (b) 4
- (c) 5
- (d) 1

**Q229.** In the given question, two equations numbered I and II are given. You have to solve both the equations and mark the appropriate answer

**I.**  $m^2 - 16m = 0$

**II.**  $n^2 + 27n = 0$

- (a)  $m < n$
- (b)  $m > n$
- (c)  $m \leq n$
- (d)  $m \geq n$

**Q230.** A man is travelling in his car from IFCO chowk to GTB Nagar and back. In the journey from IFCO Chowk to GTB Nagar he is travelling with constant speed of 40 km/hr. While travelling back his speed was 45 km/hr. He took 3 hrs in the whole journey. What was his average speed?

- (a) 36 km/hr
- (b) 42.4 km/hr
- (c) 10 km/hr
- (d) 15 km/hr

**Q231.** What should come in place of both m in the equation  $\frac{m}{\sqrt{512}} = \frac{\sqrt{648}}{m}$  ?

- (a) 28
- (b) 29
- (c) 24
- (d) 23

**Q232.**  $\sqrt{0.0324 * ?} = 1.8$  Find the value of?

- (a) 10
- (b) 100
- (c) 1000
- (d) None of these

**Q233.** On weekend the employees of adda 247 decided to go for playing billiards for this they collected a sum of ₹ 11,236. Each employee gives as many rupees as the number of employees decided to go. The number of employees decided to go for playing billiards in the company is:

- (a) 98
- (b) 106
- (c) 102
- (d) 94

**Q234.** What least number must be added to 50,600 so that it becomes a perfect square?

- (a) 23
- (b) 24
- (c) 25
- (d) 27

**Q235.** If a perfect square of a number contains 88 digits, then how many digits will it have?

- (a) 42
- (b) 40
- (c) 44
- (d) 52

**Q236.** If  $p = 0.2078$ , then the value of  $\sqrt{4p^2 - 4p + 1} + 3p$  is:

- (a) 0.1039
- (b) 1.2078
- (c) 1.1039
- (d) 2.1039

**Q237.** The least positive integer that should be added from  $8011 \times 8012$  so that the difference is a perfect square is

- (a) 8011
- (b) 8012
- (c) 8013
- (d) 8000



**Q238.** Find the value of  $\sqrt{76459 * 76473 + 49} = ?$

- (a) 87566
- (b) 87567
- (c) 87568
- (d) 87569

**Q239.** Let q be the least number which when added from 10384 gives a perfect square number. What is the least number by which q should be multiplied to get a perfect square?

- (a) 3
- (b) 6
- (c) 5
- (d) 2

**Q240.** A group of family members decided to go to Auli trip for this they collect as many paise from each member of the family as is the number of members in the family. If the total collection amounts to Rs. 237.16, the number of the member in the group is:

- (a) 74
- (b) 134
- (c) 154
- (d) 174

**Q241.** For two observations, the sum is S and product is P. What is the harmonic mean of these two observations?

- (a)  $\frac{2S}{P}$
- (b)  $\frac{S}{(2P)}$
- (c)  $\frac{2P}{S}$
- (d)  $\frac{P}{(2S)}$

**Q242.** Find the median, mode and mean of 9,5,8,9,9,7,8,9,8?

- (a) 9,9,9
- (b) 9,8,9
- (c) 8,9,8
- (d) 8,9,9

**Q243.** If the arithmetic mean of first n natural numbers is 200, then n is:

- (a) 392
- (b) 394
- (c) 396
- (d) 399

**Q244.** Given below is the data of the musicians of a HR Studio. Find the median.

5,8,7,3,4,6,2,9,1

- (a) 2
- (b) 6
- (c) 7
- (d) 5

**Q245.** There are 9 cricketers in an academy. The ages of the cricketers are as follows:

6, 52, 87, 13, 45, 81, 35, 12, 29

Find the sum of mean and median.

- (a) 52
- (b) 87
- (c) 75
- (d) 89

**Q246.** Find the median of the following values:

30,20,15,10,25,35,18,21,28,40,36

- (a) 25
- (b) 21
- (c) 20
- (d) 15

**Q247.** Find the mode of the data 8,9,12,9,8,13,9,13,8,12,15,9.

- (a) 8
- (b) 9
- (c) 13
- (d) 12

**Q248.** The most suitable average for qualitative measurement is:

- (a) Arithmetic mean
- (b) Median
- (c) Mode
- (d) Geometric mean

**Q249.** The mean of the median, mode and range of the observations is 6,6,9,14,8,9,9,8.

- (a) 8.5
- (b) 8.8
- (c) 10.3
- (d) 10.5

**Q250.** Which average is affected most by the presence of extreme items?

- (a) Median
- (b) Mode
- (c) Arithmetic Mean
- (d) Geometric Mean

**Q251.** If  $m^2 = n + o$ ,  $n^2 = o + m$  and  $o^2 = m + n$ . Find the value of  $\frac{1}{1+m} + \frac{1}{1+n} + \frac{1}{1+o}$

- (a) 2
- (b) 3
- (c) 4
- (d) 1

**Q252.** If  $pq + qr + rp = pqr$  then,

Find  $\frac{q+r}{qr(p-1)} + \frac{r+p}{rp(q-1)} + \frac{p+q}{qp(r-1)}$  ?

- (a) 0
- (b) 1
- (c) 2
- (d) 3

**Q253.** Select the option in which the numbers are related in the same way as are the numbers in the given set.

13 : 65 : 104

- (a) 11 : 55 : 77
- (b) 15 : 75 : 120
- (c) 13 : 65 : 103
- (d) 20 : 100 : 180

**Q254.** Which one of the following shapes has rotational symmetry at every  $1/6^{\text{th}}$  turn?

- (a) Square
- (b) Rectangle
- (c) Regular Hexagon
- (d) Equilateral Triangle

**Q255.** Which of the following triangles has no line of symmetry?

- (a) An equilateral triangle
- (b) An isosceles triangle
- (c) A Scalene triangle
- (d) All of the above

**Q256.** M = Number of lines of symmetry of a square, N = No. of lines of symmetry of a rectangle. Which of the following is true?

- (a)  $M < N$
- (b)  $M = N$
- (c)  $N > M$
- (d)  $M > N$

**Q257.** What is the other name for a line of symmetry of a circle?

- (a) An arc
- (b) A sector
- (c) A diameter
- (d) A radius

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**Q258.** In a triangle XYZ,  $XY = XZ$  and XM is perpendicular to YZ and ZN is perpendicular to XY. About which of the following is the triangle symmetrical?

- (a) XM
- (b) YN
- (c) ZX
- (d) XZ

**Q259.** If  $\frac{j-bc}{b+c} + \frac{j-ca}{c+a} + \frac{j-ab}{a+b} = (a + b + c)$ . Find the value of j?

- (a) ab
- (b) bc + ca
- (c) ab + bc
- (d) ab + bc + ca

**Q260.** Select the option in which the numbers are related in the same way as are the numbers in the given set.

- (291, 305, 333)
- (a) (250, 264, 284)
  - (b) (290, 317, 345)
  - (c) (387, 401, 417)
  - (d) (410, 424, 452)

**Q261.** Which one of the following will be the correct ascending order?

- (a) 50.005, 500.05, 50.050, 050.50, 5.055
- (b) 5.055, 50.05, 50.005, 050.50, 500.05
- (c) 5.055, 50.005, 50.050, 050.50, 500.05
- (d) 5.055, 050.50, 50.050, 50.005, 500.05

**Q262.** Find the value of  $\frac{(2.637 + 2.363)^2 - [(2.637)^2 - (2.363)^2]}{2}$  ?

- (a) 15
- (b) 18
- (c) 21
- (d) 24

**Q263.** What is the value of  $\frac{0.236 \times 0.236 \times 0.236 + 0.089 \times 0.089 \times 0.089}{0.236 \times 0.236 - 0.236 \times 0.089 + 0.089 \times 0.089}$  ?

- (a) 0.80
- (b) 0.85
- (c) 0.068
- (d) 0.325

**Q264.** What should come at the place of '?' in the following question?

$$[3.5 * (2.3 + 4.9 - 1.8) \div 0.6] \div 7 * 0.02 = ?^2 + 0.05$$

- (a) 0.1
- (b) 0.2
- (c) 2
- (d) 0.3

**Q265.** What approximate value should come in the place of question mark (?) in the following question?

$$46.98 + 83.98 - ? * 2.99 = 31.98$$

- (a) 27
- (b) 33
- (c) 22
- (d) 18

**Q266.** What will come in place of question mark (?) in the following question?

$$1.123 + 11.23 + 112.3 = ?$$

- (a) 123.453
- (b) 132.343
- (c) 124.653
- (d) 134.643

**Q267.** Which value is closest to  $[(10.336 \times 8906 \times 6.388) / (135.998 \times 8448.034)]$

- (a) 0.41
- (b) 0.004
- (c) 4
- (d) 0.46

**Q268.** Directions: What will come in place of the question mark (?) in the following questions?

$$? = \{(2.5)^3 + (1.5)^3\} / \{(2.5)^3 - (1.5)^3\}$$

- (a)  $3/5$
- (b)  $6233/2000$
- (c)  $76/49$
- (d)  $55/49$

**Q269.** Which of the following number is largest among all?

$$0.8, 0.\bar{8}, 0.0\bar{8}, 0.\overline{08}$$

- (a)  $0.\overline{08}$
- (b)  $0.0\bar{8}$
- (c)  $0.\bar{8}$
- (d) 0.8

**Q270.** What is the fractional value of  $0.0\overline{19} = ?$

- (a)  $19/990$
- (b)  $19/100$
- (c)  $19/1000$
- (d)  $19/660$

**Q271.** If  $P = (6/14) \div (6/5) * (4/6) + (1/5) * (3/2)$  and  $Q = (4/10) * (5/6) \div (2/6) + (3/5) * (4/6) \div (3/5)$ , then what is the value of  $P/Q$ ?

- (a)  $414/1120$
- (b)  $339/1120$
- (c)  $113/350$
- (d)  $138/350$

**Q272.** What is the simplest value of  $\frac{\sqrt[3]{0.005832} \times \sqrt{0.196}}{\sqrt{0.64} \times \sqrt[3]{0.000512}}$ ?

- (a) 0.23
- (b) 0.76
- (c) 1
- (d) 0.39

**Q273.** What will come in place of Question mark (?) in the following question?

$$0.000099 \div 0.33 = ?$$

- (a) 0.003
- (b) .03
- (c) .0003
- (d) .30

**Q274.** What will come in place of the question mark in the following question?

$$(30,690 \div 90) + (29184 \div 114) - (30660 \div 84) = ?$$

- (a) 259
- (b) 152
- (c) 202
- (d) 232

**Q275.** Simplify: -

$$44.2424 + 16.001 - 20.2202 =$$

- (a) 40.0015
- (b) 40.021
- (c) 40.0232
- (d) 40.1015

**Q276.** Which of the following statement(s) is/are TRUE?

**I.**  $8\sqrt{3} > 12\sqrt{2}$

**II.**  $16\sqrt{2} > 8\sqrt{8}$

- (a) Only I
- (b) Only II
- (c) Neither I nor II
- (d) Both I and II

**Q277.** The value of  $(-8) * (-7) * (-6) * (-5) * (-4) * (-3) * (-2) * 0 + 0 * (2) * (4) * (5) * (6) * (7) * (8) * (9)$  is

- (a) 5040
- (b) -5040
- (c) 10080
- (d) 0

**Q278.** What will come in place of question mark (?) in the following question?

$$\frac{2}{16} \text{ of } \frac{4}{6} \text{ of } \frac{6}{10} \text{ of } 6860 = ?$$

- (a) 353
- (b) 234
- (c) 343
- (d) 362

**Q279.** If  $X = 250 - 146 + 96 - 274 + 198$ ,  $Y = 76 + 12 \times 1.1 - 5.6 \times 10$ , and  $Z = 72 - 24 \div 8 \times 16 + 8$ , which of the following is true?

- (a)  $X > Y > Z$
- (b)  $X > Z > Y$
- (c)  $Y > X > Z$
- (d)  $Z > Y > X$

**Q280.** What will come in the place of the question mark '?' in the following question?

$$(12 \text{ of } 144 \div 24 - 8) + (676 \div 52 \times 20) - (192 \times 28 \div 24) = ?$$

- (a) 80
- (b) 84
- (c) 96
- (d) 100

**Q281.** In an assessment test a student's mark was wrongly entered as 216 instead of 196. Due to this mistake, the average marks of the class got increased by  $\frac{1}{5}$ . Total number of students in the class is equal to:

- (a) 20
- (b) 60
- (c) 100
- (d) 140

**Q282.** If the 7-digit number  $134x58y$  is divisible by 72, then the value of  $(2x + y)$  is:

- (a) 7
- (b) 8
- (c) 9
- (d) 6

**Q283.** The average of 11 observations is 120. If the average of first six observations is 118 and that of last six observations is 124, then the value of sixth observation, is:

- (a) 126
- (b) 128
- (c) 132
- (d) 136

**Q284.** The ratio of two number are 3 : 4 and their L.C.M. is 168, then which number is greater number of the following?

- (a) 42
- (b) 48
- (c) 56
- (d) 168

**Q285.** If the length of each side of a square is increased by 15%, then the increase percent in its area is:

- (a) 15%
- (b) 22.5%
- (c) 56.25%
- (d) 32.25%

**Q286.** The circumference of the base of a cylindrical vessel is 264 cm and its height is 50 cm, how many liters of water can it hold?

- (a) 336.4 litres
- (b) 346.5 litres
- (c) 277.2 litres
- (d) None of these

**Q287.** If the income of Anurag is 20% less than income of Bobby, then how much income of Bobby is more than income of Anurag?

- (a) 20%
- (b) 25%
- (c) 30%
- (d) 35%

**Q288.** Komal alone can complete a work in 300 days. Shelly is 50% more efficient than Komal. Time taken by Shelly to do the same work.

- (a) 100 days
- (b) 200 days
- (c) 150 days
- (d) 250 days

**Q289.** Simplify  $\{(18) - (-16) + (48 \div 26 - 14)\}$ ?

- (a) 10
- (b) -16
- (c) -10
- (d) None of these

**Q290.** Simplify:  $(0.0081)^{0.14} \times (0.0081)^{0.11}$

- (a) 0.3
- (b) 3
- (c) 0.9
- (d) 0.09



**Q291.** The average age of seven female wrestlers sitting in a row facing south is 24 years. If the average age of first three female wrestlers is 20 years and the average age of last three female wrestlers is 28 years, what is the age of the wrestler who is sitting in middle of the row?

- (a) 28 years
- (b) 29 years
- (c) 24 years
- (d) 31 years

**Q292.** Krishna decided to donate 16% of his monthly salary to Flood relief fund. On the day of donation, he changed his mind and donated Rs. 7,705 which was 67% of what he had decided earlier. How much is Krishna's monthly salary?

- (a) Rs. 80,756
- (b) Rs. 71,875
- (c) Rs. 56,700
- (d) Rs. 45,696

**Q293.** The third proportional to 3 and 15 is a multiple of:

- (a) 2
- (b) 3
- (c) 7
- (d) 6

**Q294.** Two friends Kartik and Manish go from home to temple and return to home. Kartik travels through a boat which has speed 20 kmph and river flows at 5 kmph while Manish travels by a bullock cart which has speed 24 km/hr. Which one of two returns to home first?

- (a) Kartik
- (b) Manish
- (c) Both at same time
- (d) None of these

**Q295.** The product of two numbers is 3600 and their HCF is 30. The numbers are

- (a) (60, 60)
- (b) (30, 120)
- (c) (40, 90)
- (d) (30, 60)

**Q296.** Abhishek can do  $\frac{1}{3}$  of a piece of work in 5 days, Vineet do  $\frac{3}{5}$  of the same work in 15 days and Chirag can do  $\frac{6}{7}$  of that work in 18 days. In how many days three of them working together will complete the work?

- (a)  $\frac{131}{21}$
- (b)  $\frac{175}{27}$
- (c)  $\frac{128}{27}$
- (d)  $\frac{129}{28}$

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**Q297.** Direction: In the following questions, two equations numbered are given in variables x and y. You have to solve both the equations and find out the relationship between x and y. Then give answer accordingly.

**I.**  $m^2 - 2m - \sqrt{5}m + 2\sqrt{5} = 0$

**II.**  $n^2 - \sqrt{3}n - \sqrt{2}n + \sqrt{6} = 0$

- (a) If  $m > n$
- (b) If  $m < n$
- (c) If  $m \geq n$
- (d) If  $m \leq n$

**Q298.** Akash invested a certain amount of money in a business for 10 months. After Two months, Aryan invested Rs. 4000 more than Akash in the same business. If Akash and Aryan received Rs. 38500 and Rs. 42000 respectively as their profit after 10 months, find Aryan's investment?

- (a) Rs. 10000
- (b) Rs. 12000
- (c) Rs. 15000
- (d) Rs. 17000

**Q299.** Sanjay purchased 50 kg of rice at the rate of Rs. 13.40 per kg and 40 kg of rice at the rate of Rs. 16.75 per kg. He mixed the two and sold the mixture. Approximately at what price per kg should he sell the mixture to make 25% profit?

- (a) Rs. 18.61
- (b) Rs. 18.20
- (c) Rs. 15.60
- (d) Rs. 14.80

**Q300.** On investing Rs. 40000 in simple interest for two years, the interest earned is Rs. 380 more than the interest earned when Rs. 26000 is invested in simple interest for three years, at the same rate. Find the rate of interest (in % per annum).

- (a) 12
- (b) 16
- (c) 18
- (d) 19

## Solutions

### S1. Ans.(b)

**Sol.** % reduction needed in the price of table =  $\frac{R}{100+R} * 100\%$   
 $= \frac{9}{100+9} * 100\% = \frac{900}{109} = 8.26\%$

### S2. Ans.(c)

**Sol.** Satyam's one hour work =  $\frac{32}{6} = \frac{16}{3}$  jackets/hour

Shivam's one hour work =  $\frac{40}{5} = 8$  jackets/hour

Satyam's and Shivam's one hour work =  $\frac{16}{3} + 8 = \frac{40}{3}$  jackets/hour

They will finish the work together =  $\frac{\text{Total work}}{\text{efficiency}} = \frac{110}{\frac{40}{3}} = 8\frac{1}{4} = 8 \text{ hrs. } 15 \text{ min.}$

### S3. Ans.(d)

**Sol.** HCF = P and LCM = Q (given)

Given numbers are s and t respectively.

(Product of numbers is = Product of LCM \* HCF)

$\Rightarrow st = PQ$

Now  $\Rightarrow P + Q = s + t$  (given)

Take cube both sides

$\Rightarrow (P + Q)^3 = (s + t)^3$

$\Rightarrow P^3 + Q^3 + 3PQ(P + Q)$

$= s^3 + t^3 + 3st(s + t)$

$\Rightarrow P^3 + Q^3 + 3st(s + t)$

$= s^3 + t^3 + 3st(s + t)$

Therefore,

$P^3 + Q^3 = s^3 + t^3$

(Put  $PQ = st$  from above)

### S4. Ans.(b)

**Sol.** M.P. of smart tv = Rs. 4000

After two successive discounts of 20% and 10% =  $4000 * \frac{80}{100} * \frac{90}{100} = \text{Rs. } 2880$

Additional discount 5% for cash payment =  $2880 * \frac{95}{100} = \text{Rs. } 2,736$

### S5. Ans.(c)

**Sol.** Difference in rate  $(8 - 7\frac{3}{4})\% = \frac{1}{4}\%$

Let the capital be Rs. X

Therefore,

$\frac{1}{4}\%$  of x = 123

$x = 123 * 4 * 100 = \text{Rs. } 49,200$

**S6. Ans.(d)****Sol.** Let the value of  $(m + 4)$  be  $a$ 

$$m = a - 4$$

$$\Rightarrow (a-4)^2 + 4(a-4) + 1 = 0$$

$$\Rightarrow a^2 + 16 - 8a + 4a - 16 + 1 = 0$$

$$\Rightarrow a^2 - 4a + 1 = 0$$

on dividing by  $a$  both sides,

$$\Rightarrow a - 4 + 1/a = 0$$

$$\Rightarrow a + 1/a = 4 \dots\dots (1)$$

$$\Rightarrow a^3 + 1/a^3 = 64 - 12 = 52$$



**A.T.Q**Now, from equation (1) put the value of  $a + 1/a$  in the above equation, we get



$$\Rightarrow (m+4)^3 + 1/(m + 4)^3 = 52$$

**S7. Ans.(a)**

$$\text{Sol. } 12\% = \frac{3}{25}, 15\% = \frac{3}{20}$$

$$\text{Initial total cost} = 10,00,000 + 14,00,000 = 24,00,000$$

	Flat	
	Initial	Final
1st year	25	28
2nd year	25	28
3rd year	25	28
	15625	21952
	 * 64	 * 64
	1000000	1404928

	Car	
	Initial	Final
1st year	20	17
2nd year	20	17
3rd year	20	17
	8000	4913
	 * 175	 * 175
	1400000	859775

$$\text{Final price} = 1404928 + 859775 = 2264703$$

$$\text{Loss} = 2400000 - 2264703 = \text{Rs. } 135,297$$

**S8. Ans.(c)****Sol.** In 14 kg of alloy P

ratio of gold to copper is 5:2

gold = 10 kg, Copper = 4 kg

In 42 kg of alloy Q

$$\text{gold} = \frac{42 \times 3}{7} = 18 \text{ kg}$$

$$\text{copper} = \frac{42 \times 4}{7} = 24 \text{ kg}$$

therefore,

$$\text{Required ratio} = (10+18) : (4 + 24)$$

$$= 28 : 28 \text{ or } 1 : 1$$

**S9. Ans.(b)****Sol.** A.T.Q

P takes 72 minutes

Q takes 96 minutes

LCM of 72, 96 is 288 (total capacity)

According to the question,

P would be opened till the end.

$$\text{So, tank filled by P in 54 minutes} = 4 \times 54 = 216 \text{ units}$$

$$\text{Remaining capacity of tank} = 288 - 216 = 72 \text{ units}$$

Therefore,

$$\text{Pipe Q fill the remaining tank in} = \frac{72}{3} = 24 \text{ minutes}$$

So,

after 24 minutes it must have closed.

**S10. Ans.(b)**

$$\text{Sol. Actual length of Arpan's blazer} = \frac{240}{115} \times 100 = 208.69 \text{ cm}$$

**S11. Ans.(d)****Sol.** We know,

$$(a^b)^c = a^{bc}$$

$$a^b \div a^c = a^{b-c}$$

$$ab \times ac = ab + c$$

Therefore,

$$2^{97} \div 4^{27} \times 8^{22} \div 2^{34} = k^{25}$$

$$\Rightarrow 2^{97} \div (2^2)^{27} \times (2^3)^{22} \div 2^{34} = k^{25}$$

$$\Rightarrow 2^{97} \div 2^{54} \times 2^{66} \div 2^{34} = k^{25}$$

$$\Rightarrow 2^{97-54+66-34} = k^{25}$$

$$\Rightarrow 2^{75} = k^{25}$$

$$\Rightarrow (8^{1/3})^{75} = k^{25}$$

$$\Rightarrow 8^{25} = k^{25}$$

$$\Rightarrow k = 8$$

**S12. Ans.(c)****Sol.** By hit and trial method.Let  $x = y = z$  be 2,

Putting the above value in given equation,

$$\Rightarrow \{(2 \times 2) - 1\}/2 = \{(2 \times 2) - 1\}/2 = \{(2 \times 2) - 1\}/2$$

$$\Rightarrow 3/2 = 3/2 = 3/2$$

So,  $x = y = z = 2$  satisfy the condition,

Putting in asked equation,

$$\Rightarrow 2/2 + 2/2 + 2/2$$

$$\Rightarrow 1 + 1 + 1$$

$$\Rightarrow 3$$

**S13. Ans.(d)**

**Sol.**  $4a^2 + \frac{1}{a^2} = 2$

$$(2a)^2 + \left(\frac{1}{a}\right)^2 + 4 - 4 = 2$$

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

$$(2a + \frac{1}{a})^2 = 6$$

$$2a + \frac{1}{a} = \sqrt{6}$$

Taking cube both sides

$$(2a + \frac{1}{a})^3 = (\sqrt{6})^3$$

$$8a^3 + \frac{1}{a^3} + 3 * 2a * \frac{1}{a} (2a + \frac{1}{a}) = 6\sqrt{6}$$

$$8a^3 + \frac{1}{a^3} + 6\sqrt{6} = 6\sqrt{6}$$

$$8a^3 + \frac{1}{a^3} = 0$$

**S14. Ans.(a)**

$$\begin{aligned} \text{Sol. } \frac{\sqrt[3]{0.001728} \times \sqrt{0.256}}{\sqrt{0.16} \times \sqrt[3]{0.000216}} &= \frac{\sqrt[3]{1728 \times 10^{-6}} \times \sqrt{256 \times 10^{-4}}}{\sqrt{9 \times 10^{-2}} \times \sqrt[3]{216 \times 10^{-6}}} \\ &= \frac{0.12 \times 0.16}{0.4 \times 0.06} \\ &= \frac{0.0192}{0.024} \\ &= 0.8 \end{aligned}$$

**S15. Ans.(a)**

**Sol. I.**  $6m^2 + 51m + 105 = 0$

$$\Rightarrow 6m^2 + 21m + 30m + 105 = 0$$

$$\Rightarrow 3m(2m + 7) + 15(2m + 7) = 0$$

$$\Rightarrow (3m + 15)(2m + 7) = 0$$

$$\Rightarrow m = -15/3 = -5 \text{ or } m = -7/2 = -3.5$$

II.  $2n^2 + 25n + 78 = 0$

$\Rightarrow 2n^2 + 12n + 13n + 78 = 0$

$\Rightarrow 2n(n + 6) + 13(n + 6) = 0$

$\Rightarrow (2n + 13)(n + 6) = 0$

$\Rightarrow n = -13/2 = -6.5$  or  $n = -6$

So, when  $m = -5$ ,  $m > n$  for  $n = -6.5$  and  $m > n$  for  $n = -6$

And when  $m = -3.5$ ,  $m > n$  for  $n = -6.5$  and  $m > n$  for  $n = -6$

$\therefore$  We can observe that  $m > n$ .

**S16. Ans.(b)**

**Sol.**  $\sqrt{[(1 - m^2) \times (1 - n^2)]} = \sqrt{3/2}$

Put  $n = 0$  and squaring both side,

$\Rightarrow 1 - m^2 = 3/4$

$\Rightarrow m^2 = 1/4$

$\Rightarrow m = 1/2$

$\sqrt{[2m^2 + 2n^2 + 2mn]} + \sqrt{[2m^2 + 2n^2 - 2mn]}$

Put  $m = 1/2$  and  $n = 0$  here,

$\Rightarrow \sqrt{(2 \times 1/4 + 0 + 0)} + \sqrt{(2 \times 1/4 + 0 - 0)}$

$\Rightarrow \sqrt{1/2} + \sqrt{1/2}$

$\Rightarrow 2/\sqrt{2}$

$\Rightarrow \sqrt{2}$

**S17. Ans.(c)**

**Sol.**  $\frac{1}{n+1} + \frac{2n+1}{n^2-1} = \frac{n-1+2n+1}{n^2-1} = \frac{3(\frac{2-m}{1+m})}{(\frac{2-m}{1+m})^2-1} = \frac{3(2-m)*(1+m)}{4+m^2-4m-1-m^2-2m}$   
 $= \frac{3(2-m)*(1+m)}{-6m+3} = \frac{(2-m)(1+m)}{(1-2m)}$

**S18. Ans.(d)**

**Sol. I.**

$\Rightarrow 12 \times 4 / m^{4/7} - 3 \times 4 / m^{4/7} = m^{10/7}$

$\Rightarrow 48 - 12 = m^{10/7} \times m^{4/7}$

$\Rightarrow m^2 = 36$

$\therefore m = \pm 6$

**II.**

$\Rightarrow n^3 + 783 = 999$

$\Rightarrow n^3 = 999 - 783$

$\Rightarrow n^3 = 216$

$\therefore n = 6$

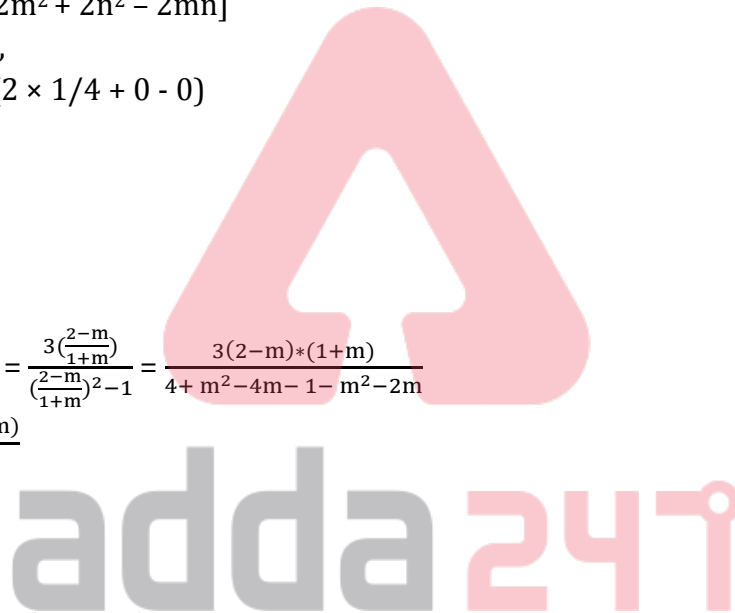
$\therefore n \geq m$

**S19. Ans.(b)**

**Sol.**  $(6m + n)(m - 6n)$

$= 6m^2 + mn - 36mn - 6n^2$

$= 6m^2 - 35mn - 6n^2$



**S20. Ans.(d)**

**Sol.**  $\frac{a}{2a^2+5a+2} = \frac{1}{6}$  .....(By divide x)

we get,

$$\frac{1}{2a + \frac{5}{a} + 2} = \frac{1}{6}$$

$$2\left(a + \frac{1}{a}\right) + 5 = 6$$

$$\left(a + \frac{1}{a}\right) = \frac{1}{2}$$

**S21. Ans.(a)**

**Sol.** Here  $(p/m) + (q/n) = 3$

$$\Rightarrow np + mq - 3mn = 0 \text{ ---- (1)}$$

Here  $(p/n) - (q/m) = 9$

$$\Rightarrow mp - nq - 9mn = 0 \text{ ---- (2)}$$

Multiplying equation 1 by 'm' and equation 2 by 'n'

$$\Rightarrow mnp + m^2q - 3m^2n = 0 \text{ ---- (3)}$$

$$\Rightarrow mnp - n^2q - 9mn^2 = 0 \text{ ---- (4)}$$

Subtracting equation 4 from 3,

$$\Rightarrow q = 3mn(m - 3n) / (m^2 + n^2),$$

substituting value of q in equation 3,

$$\Rightarrow p = 3mn(n + 3m) / (m^2 + n^2)$$

$$\Rightarrow p/q = (n + 3m) / (m - 3n)$$

$$\therefore \text{The value of } p/q = (n + 3m) / (m - 3n)$$

**S22. Ans.(c)**

**Sol. I.**

$$\Rightarrow p^3 \times 13 = p^2 \times 247$$

$$\Rightarrow (p^3 / p^2) = 247/13$$

$$\Rightarrow p = 19$$

**II.**

$$\Rightarrow q^{1/3} \times 14 = 294 \div q^{2/3}$$

$$\Rightarrow q^{1/3} \times q^{2/3} = 294/14$$

$$\Rightarrow q(1/3 + 2/3) = 294/14$$

$$\Rightarrow q(3/3) = 294/14$$

$$\Rightarrow q(1) = 294/14$$

$$\Rightarrow q = 21$$

$$\therefore q > p$$

So, the correct option is (c).

**S23. Ans.(a)**

**Sol.**  $(p-3)^2 + (q-5)^2 + (r-4)^2 = 0$

Therefore,

$$(p-3)^2 = 0 \quad p = 3$$

$$(q-5)^2 = 0 \quad q = 5$$

$$(r-4)^2 = 0 \quad r = 4$$

$$\frac{p^2}{9} + \frac{q^2}{25} + \frac{r^2}{16} = \frac{9}{9} + \frac{25}{25} + \frac{16}{16} = 3$$



**S24. Ans.(b)****Sol.** Using algebraic identities,

$$(p + q + r)^2 = p^2 + q^2 + r^2 + 2pq + 2qr + 2rp$$

By putting the respective values given in question,

$$\Rightarrow (9)^2 = p^2 + q^2 + r^2 + 2(pq + qr + rp) [\because pq + qr + rp = 26]$$

$$\Rightarrow (9)^2 = p^2 + q^2 + r^2 + 2(26)$$

$$\Rightarrow p^2 + q^2 + r^2 = 81 - 52 = 29$$

Given equations,

$$p^3 + q^3 = 91 \quad \text{----(1)}$$

$$q^3 + r^3 = 72 \quad \text{----(2)}$$

$$r^3 + p^3 = 35 \quad \text{----(3)}$$

On adding (1), (2) and (3)

$$p^3 + q^3 + q^3 + r^3 + r^3 + p^3 = 91 + 72 + 35$$

$$\Rightarrow 2(p^3 + q^3 + r^3) = 198$$

$$\Rightarrow p^3 + q^3 + r^3 = 99$$

Using algebraic identities,

$$p^3 + q^3 + r^3 - 3pqr = (p + q + r)(p^2 + q^2 + r^2 - pq - qr - rp)$$

By putting the respective values,

$$\Rightarrow 99 - 3pqr = 9(29 - 26) [\because pq + qr + rp = 26 \text{ and } p + q + r = 9]$$

$$\Rightarrow 3pqr = 99 - 27$$

$$\Rightarrow pqr = 72/3$$

$$\therefore pqr = 24$$

**S25. Ans.(b)****Sol.** To answer minimum number of possible working days of any month of any year, let us consider February of non-leap year.

Total no. of days = 28 (4 weeks)

Therefore, there will be 4 Saturdays and 4 Sundays.

No. of holidays = 2 Saturdays + 4 Sundays = 6

No. of working days = 28 - 6 = 22

Hence, option b is the correct answer.

**S26. Ans.(c)****Sol.** The given expanded form may be evaluated as:

$$\Rightarrow 12.12 \times 10^4 = 121,200$$

$$\Rightarrow 14 \times 10^3 = 14000$$

$$\Rightarrow 10 \times 10 = 100$$

Adding each term we get the simple form

$$\Rightarrow 12.12 \times 10^4 + 14 \times 10^3 + 10 \times 10 = 121,200 + 14000 + 100$$

$$\Rightarrow 135,300$$

**S27. Ans.(c)****Sol.** 4th July 2010 was Sunday.

As 2010 is a non-leap year, it means it has only 1 odd day.

Therefore, it was Monday on 4th July 2011.

So, on 5th July 2011 it was Tuesday.

Hence, 'Tuesday' is the correct answer.

**S28. Ans.(d)**

**Sol.** In an ordinary year there are 365 days which means 52 weeks and 1 odd day but in a leap year there are 366 days which means 52 weeks and 2 odd days  
 So between 2005 and 2010 only 2008 is a leap year so total odd days between 2005 and 2010 are 6 days.

As given the Valentine's Day in 2005 falls on Monday

So Monday + 6 odd days = Sunday

So the Valentine's Day will fall on Sunday in 2010.

**S29. Ans.(b)**

**Sol.** The remainder, which we get after dividing the number of days by 7 is considered as odd days.

As 10 Jan 2008 was Tuesday.

Since 2008 is a leap year,

There are 366 days between 10 Jan 2008 and 10 Jan 2009.

When 366 is divided by 7,

The remainder is 2.

Thus 2 more days after Tuesday.

So if 10 Jan 2008 was Tuesday,

10 Jan 2009 will be on "Thursday".

Hence, the correct answer is "Thursday".

**S30. Ans.(d)**

**Sol.** Since we want to find out approximate value,

So we can write these values to their nearest integers.

Given expression is –

$$[(7.99)^2 - (13.001)^2 + (4.01)^3]^2 = ?$$

$$\Rightarrow ? \approx [8^2 - 13^2 + 4^3]^2$$

$$\Rightarrow ? = [64 - 169 + 64]^2$$

$$\Rightarrow ? = [64 - 105]^2$$

$$\Rightarrow ? = [-41]^2$$

$$\Rightarrow ? = 1681$$

**S31. Ans.(c)**

**Sol.** Given,

Sonia's birthday  $\Rightarrow$  28 June, Monday

Pranay birthday  $\Rightarrow$  18 December

So, June has remaining  $\Rightarrow$  2 day

July  $\Rightarrow$  31

August  $\Rightarrow$  31

September  $\Rightarrow$  30

October  $\Rightarrow$  31

November  $\Rightarrow$  30

December 18  $\Rightarrow$  (as Pranay was born on 18<sup>th</sup> December)

Total days  $\Rightarrow (2 + 31 + 31 + 30 + 31 + 30 + 18) = 173$  days

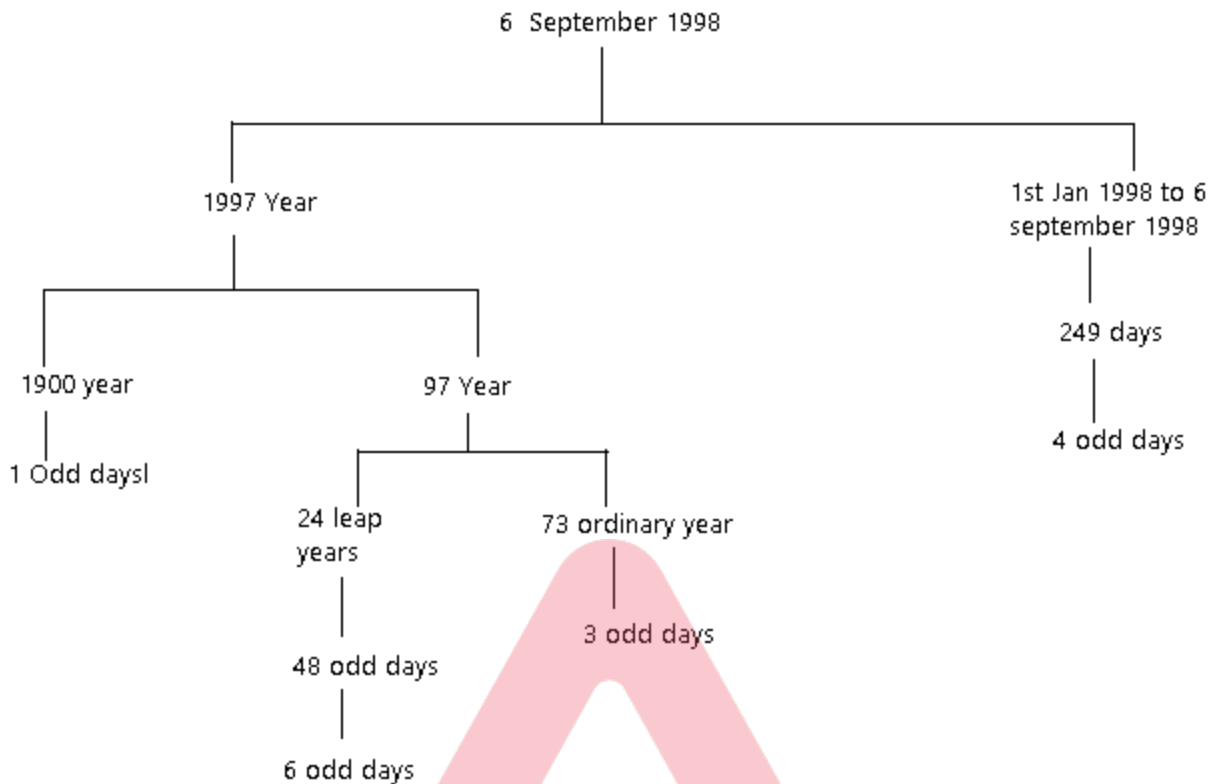
Dividing 173 days by 7 (as there are 7 days in a week)

We get remainder 5

Thus, 5 days ahead of Sonia's birthday will be Pranay's birthday which will be on Monday + 5 = Saturday.

**S32. Ans.(d)**

**Sol.**



Hence, Sunday is the correct answer.

**S33. Ans.(c)**

**Sol.** To find odd days in leap year century year:

Remainder left after dividing total number of days by 7.

Total number of days = total number of days/7 + remainder (odd days).

⇒ Total number of days (366) =  $366/7 + 2$  (odd days)

Hence, leap century year has 2 odd days.

So, the correct answer is option c.

**S34. Ans.(c)**

**Sol.** Radha: May 8, Thursday

Geeta: May 10, Thursday

Revathi: June 8, Friday

We know that April 1<sup>st</sup> = Tuesday

⇒ May 1<sup>st</sup> = Tuesday + Remainder of  $30/7$  = Tuesday + 2 days = Thursday.

Also, May 1<sup>st</sup> = Thursday

⇒ May 8<sup>th</sup> = Thursday

Also, June 8<sup>th</sup> = Thursday + Remainder of  $31/7$  = Thursday + 3 days = Sunday

⇒ Revathi is wrong.

Also, May 10<sup>th</sup> = May 8 + 2 days = Thursday + 2 days = Saturday

⇒ Geeta is also wrong.

Hence, only Radha is correct.

Hence, correct date is May 8, Thursday.

**S35. Ans.(d)****Sol.**  $M = 8^3 * 5^4$  and  $N = 8^5 * 5^3$ 

$$M * N = 8^3 * 5^4 * 8^5 * 5^3$$

$$M * N = 2^{3(3+5)} * 5^{(4+3)}$$

$$M * N = 2^{24} * 5^7$$

**S36. Ans.(c)****Sol.** We know that  $a^m \times a^n = a^{m+n}$  $\therefore$  We can observe that  $a = 13$ ,  $m=13$  and  $n=7$ 

$$\Rightarrow ? = 14^{13} \times 14^7 = 14^{(13+7)}$$

$$= ? = 14^{20}$$

**S37. Ans.(a)****Sol.** If the seventh day of a month is 3 days earlier than Friday, which means that the 10<sup>th</sup> of the month is Friday.Again,  $(10+7) = 17^{\text{th}}$  is Fridayso, 18<sup>th</sup> is Saturdayand 19<sup>th</sup> is Sunday

Hence, 'Sunday' is the correct answer.

**S38. Ans.(c)****Sol.** As, given 21<sup>st</sup> August 1998, 1998 = TuesdaySo, 21<sup>st</sup> August 1997 = Monday as the number of odd day = 1 (Tuesday - 1 = Monday).On 21<sup>st</sup> August 1996 = Sunday as the number of odd day = 1On 21<sup>st</sup> August 1995 = Friday as the number of odd day = 2 (As 1996 is a leap year, there will be 29 days in February 1996)Then 21<sup>st</sup> August to 16<sup>th</sup> August = 5 days.

So, Thursday - 5 = Saturday.

Hence, on 16<sup>th</sup> August 1994, it's Saturday.

Hence, the correct answer is "Saturday".

**S39. Ans.(b)****Sol.** The weighing machine shows a 20% increased weight.

Suppose Shah sells weight N units of a commodity for which cost price per unit is T.

If N units weight is measured, the weight machine will show =  $[N + N \times (20/100)]$  units = 1.2N units

Because of this fault, Shah will sell N units, but will take price of 1.2N units.

Cost price for Shah = N units  $\times$  Rs. T per unit = Rs. NT

Suppose Shah sells at P percent more than cost price.

We know, Selling Price = Cost Price  $\times (1 + (\text{Profit Percentage})/100)$ 

$$\text{Selling Price of one unit} = T * (1 + \frac{P}{100})$$

$$\text{Selling Price of 1.2N units} = 1.2NT * (1 + \frac{P}{100})$$

For profit to be 35%,

Selling Price of N units = Cost price of N units \*  $(1 + \frac{35}{100})$

$$1.2NT * (1 + \frac{P}{100}) = 1.35NT$$

$$(1 + \frac{P}{100}) = \frac{1.35}{1.2}$$

$$P = 100 \times (1.125 - 1) = 12.5$$

∴ To make a profit of 35%, commodities should be sold at 12.5% more than cost price.

**S40. Ans.(c)**

**Sol.** Given expression is –

$$(4 \times 4)^3 \div (512 \div 8)^4 \times (32 \times 8)^4 = (2 \times 2)^{?+4}$$

$$\Rightarrow (4)^6 \div (64)^4 \times 256^4 = (4)^{?+4}$$

$$\Rightarrow 4^6 \div 4^{12} \times 4^{16} = (4)^{?+4}$$

$$\Rightarrow 4^{10} = (4)^{?+4}$$

$$\therefore ? + 4 = 10$$

$$\Rightarrow ? = 6$$

So, the correct option is (c)

**S41. Ans.(d)**

**Sol.** Total Price = 150

Tax paid = Rs. 10

Tax = 10%

Let the taxable purchases = Rs x

$$\Rightarrow 10\% \text{ of } x = 10$$

$$\Rightarrow 0.1x = 10$$

$$\therefore x = 100$$

$$\therefore \text{Tax free earphones} = 150 - 100 - 10 = \text{Rs.40}$$

**S42. Ans.(b)**

**Sol.** Let average cost price of each table is Rs 'T' and average cost price of each chair is Rs 'C' .

So , Total cost price of 8 tables and 12 chairs is =  $8T + 12C$

According to the question ,

$$8T + 12C = 52500 \text{ ----(1)}$$

Now to make a profit of 25% on the tables, the selling price of each table is =  $T * \frac{125}{100}$

Again to make a profit of 20% on the chairs, the selling price of each chair is =  $C * \frac{120}{100}$

So, selling price of 8 tables and 12 chairs is,

$$= (T * \frac{125}{100} * 8) + (C * \frac{120}{100} * 12)$$

According to question the selling price of 8 Tables and 12 chairs is Rs 64500

$$= (T * \frac{125}{100} * 8) + (C * \frac{120}{100} * 12) = 64500$$

$$\Rightarrow (T \times 10) + (C * \frac{72}{5}) = 64500$$

By multiplying it by 5

$$\Rightarrow 50T + 72C = 64500 \times 5 = 322500 \text{ ----(2)}$$

Multiplying equation (1) by 6  
 $48T + 72C = 52500 \times 6 = 315000$  -----(3)  
 (2) - (3)  
 $2T = 322500 - 315000 = 7500$   
 $\Rightarrow T = 3750$   
 So cost price of table is Rs 3750.  
 Putting the value of Table in equation (1) we get,  
 $8T + 12C = 52500$   
 $\Rightarrow 8 \times 3750 + 12C = 52500$   
 $\Rightarrow 12C = 52500 - 30000 = 22500$   
 $\Rightarrow C = 1875$   
 So cost price of chair is Rs 1875

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#### S43. Ans.(b)

**Sol.** Given:

Loss% = 5%

Gain% after using false meter scale = 20%

Calculation:

Let the length of scale be 'x' metres

Let the cost price per meter cloth be Rs. 100

Trader advertise to sells cloth at Rs. 95/metre

But actually he sells x meters for Rs. 95, and gains 20% profit

Cost price of 1-meter length of cloth is 100.

$\Rightarrow$  Cost price of x meter length cloth =  $100x$

Cost Price + Profit = Selling Price

$\Rightarrow 100x + 20\% \text{ of } 100x = 95$

$\Rightarrow 100x + 20x = 95$

$\Rightarrow 120x = 95$

$\therefore x = 0.79 \approx 0.80 \text{ m}$

$\therefore$  Length of scale is 0.80 meter.

#### S44. Ans.(d)

**Sol.** Given expression is-

$(2 \times \sqrt{392} - 21) + (\sqrt{8} - 7)^2 = (?)^2$

$\Rightarrow (2 \times 14\sqrt{2} - 21) + (\sqrt{8} - 7)^2 = (?)^2$

$\Rightarrow (?)^2 = (28\sqrt{2} - 21) + (\sqrt{8})^2 - 2 \times \sqrt{8} \times 7 + 7^2$

$\Rightarrow (?)^2 = 28\sqrt{2} - 21 + 8 - 28\sqrt{2} + 49$

$\Rightarrow (?)^2 = 36$

$\Rightarrow ? = 6$

#### S45. Ans.(a)

**Sol.** Let price of 1 jeans be a

And price of 1 T-shirt be b.

Then we have

$\Rightarrow 2a + 4b = 16000$  -----[1]

Also, we have

$\Rightarrow a + 6b = 16000$  ----[2]

Since RHS of both the equations is same

Hence we have

$$\Rightarrow 2a + 4b = a + 6b$$

$$\Rightarrow 2a - a = 6b - 4b$$

$$\Rightarrow a = 2b.$$

Putting this value of a in equation [1]

$$\text{We have } 4b + 4b = 16000$$

$$\Rightarrow 8b = 16000$$

$$\Rightarrow b = 16000/8 = 2000$$

Hence, cost of 1 T-shirt = Rs 2000

$$\begin{aligned}\Rightarrow \text{Cost of 12 T-shirts} &= 12 \times 2000 \\ &= 24000\end{aligned}$$

#### S46. Ans.(d)

**Sol.** Let the cost of first painting be x and that of second painting be y.

S.P. of each painting = Rs. 1725

$\therefore$  first painting is sold at 15% gain,

$$x + (15\% \text{ of } x) = 1.15x = 1725$$

$$\Rightarrow x = 1725/1.15 = \text{Rs. } 1500$$

Second painting is sold at 25% loss.

$$\therefore y - (25\% \text{ of } y) = 0.75y = 1725$$

$$\Rightarrow y = 1725/0.75 = \text{Rs. } 2300$$

$$\therefore \text{total cost of both paintings} = 1500 + 2300 = \text{Rs. } 3800$$

$$\text{Total selling price of both paintings} = 1725 \times 2 = \text{Rs. } 3450$$

Here, S.P. < C.P.  $\Rightarrow$  Loss in overall transaction

$$\text{Loss} = 3800 - 3450 = \text{Rs. } 350$$

$$\text{Loss}\% = \frac{350}{3800} \times 100 = 9\frac{4}{19}$$

#### S47. Ans.(b)

**Sol.** Let Bimal's investment be 'x'

Chetan's investment be 'y'

Partner	Money	Time (Months)	Amount
Jubin	1200	12	$12 \times 1200 = 14400$
Bimal	x	9	9x
Chetan	Y	6	6y

$$\therefore \text{Ratio of Amount invested} = 14400 : 9x : 6y$$

$$\text{Ratio of profit} = 2 : 3 : 5$$

$\therefore$  Ratio of profit and ratio of amount are same.

Thus equating them, we get

$$\frac{14400}{9x} = \frac{2}{3}$$

$$\Rightarrow 9x = 3 \times 7200$$

$$\Rightarrow x = 2400$$

Thus, amount invested by Bimal is Rs. 2400.

**S48. Ans.(b)**

**Sol.** Suppose he mixes T kg brick powder in a kg of chilli powder.

If cost price of chilli powder is Rs. C, then selling price without adulteration will be Rs. 1.2C.

Now, he takes price of (1 + T) kg at 1.2C, but gives only 1 kg (for which cost price is C)

$$\Rightarrow (1 + T) \times 1.2C = C \times (1 + 30/100)$$

$$\Rightarrow 1.2 + 1.2T = 1.3$$

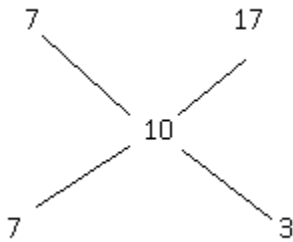
$$\Rightarrow T = 0.1/1.2 = 0.083$$

$$0.083 \text{ kg} = 83 \text{ grams}$$

$\therefore$  Gaurav mixes 83 grams brick powder in a kg of chilli powder.

**S49. Ans.(b)**

**Sol.** Now, Using Alligation method



Ratio of part sold at 7% profit and 17% profit = 7: 3

$$\text{So, } (7 + 3)x = 100 \text{ kg}$$

$$\text{Then, } 3x = 30 \text{ kg}$$

$\therefore$  Amount sold at 17% profit is 30 kg

**S50. Ans.(c)**

**Sol.** Since % profit will always be relative, you can eliminate decimal calculations by considering the labelled price directly as 100.

So, cost price will be 70, and selling price will be 112.

$$\therefore \% \text{profit} = [(112 - 70)/70] \times 100 = 60$$

**S51. Ans.(c)**

**Sol.** Average = (Sum of total observations)/(Total number of observation)

$$\Rightarrow (\text{Sum of total observations}) = \text{Average} \times (\text{Total number of observation})$$

$$\text{Sum of expenditure for 4 months} = 6000 \times 4 = \text{Rs. } 24000$$

$$\text{Sum of expenditure for 8 months} = 4000 \times 8 = \text{Rs. } 32000$$

$$\text{Total expenditure} = 24000 + 32000 = \text{Rs. } 56000$$

$$\text{Total income in a year} = \text{Total expenditure} + \text{Total saving}$$

$$\Rightarrow 56000 + 16000 = \text{Rs. } 72000$$

$$\text{Monthly income} = 72000/12 = \text{Rs. } 6000$$

$\therefore$  His average monthly income is Rs. 6000.



**S52. Ans.(a)**

**Sol.** Lata's Salary = 60% of Renu  
 = 60% of (50% of Deepa)  
 =  $60/100[(50/100)*100]$  % of Deepa  
 = 30% of Deepa  
 $\therefore$  Lata's salary is 30% of Deepa's salary.

**S53. Ans.(c)**

**Sol.** The number of students studying Accountancy =  $(1/3) \times 600$   
 $\Rightarrow 200$   
 The number of students studying Accountancy decreased by 10% =  $200 - 200 \times 10/100$   
 $\Rightarrow 200 - 20 = 180$   
 The number of students studying Science increased 25% =  $600 + 600 \times 25/100$   
 $\Rightarrow 600 + 150 = 750$   
 The ratio between the number of students studying Science to Accountancy =  $750 : 180$   
 $\Rightarrow 25 : 6$   
 $\therefore$  The required ratio is 25 : 6

**S54. Ans.(c)**

**Sol.** According to the question,

Principal	:	Amount
Ist year 100		103
IInd year 25		26
IIIrd year 20		21
50000		56238
* 1		* 1
50000		56238

Therefore,

Required Principal = Rs 50000

**S55. Ans.(c)**

**Sol.**  $m^2 + 8 = 4m$

Squaring on both side

$$\Rightarrow (m^2 + 8)^2 = (4m)^2$$

$$\Rightarrow m^4 + 16m^2 + 64 = 16m^2$$

$$\Rightarrow m^4 = -64 \quad \text{----1}$$

$$m^2 + 8 = 4m$$

$$\Rightarrow m^2 = 4m - 8$$

$$\Rightarrow m^2 = 4(m - 2)$$

$$\Rightarrow (m - 2) = m^2/4 \quad \text{----2}$$

To find  $m^4 - m^3 + 2m^2 + 10$

$$\Rightarrow -64 - m^2(m - 2) + 10$$

$$\Rightarrow -54 - m^2 \times m^2/4 \quad (\text{from equation 2})$$

$$\Rightarrow -54 - m^4/4$$

$$\Rightarrow -54 - (-64)/4 \quad (\text{from equation 1})$$

$$\Rightarrow -38$$

**S56. Ans.(a)**

$$\text{Sol. } A = 250 - 146 + 96 - 274 + 198$$

$$250 - 146 + 96 - 274 + 198 = A$$

$$\Rightarrow A = 346 - 146 - 274 + 198$$

$$\Rightarrow A = 544 - 146 - 274$$

$$\therefore A = 124$$

$$B = 76 + 12 \times 1.1 - 5.6 \times 10$$

$$\Rightarrow 76 + 6.6 - 28 = B$$

$$\Rightarrow B = 82.6 - 28 = 54.6$$

$$\therefore B = 54.6$$

$$C = 72 - 24 \div 8 \times 16 + 8$$

$$\Rightarrow 72 - 6 \times 16 + 8$$

$$\Rightarrow 72 - 48 + 8$$

$$\Rightarrow 32$$

$$\therefore A > B > C$$

**S57. Ans.(b)**

$$\text{Sol. } S.P. = C.P. \times (100 - L\%)/100$$

$$\text{So, } CP = (SP \times 100)/(100 - L\%)$$

$$\text{The cost price} = (450 \times 100)/(100 - 10) = 450 \times (100/90)$$

$$\Rightarrow CP = 500$$

For 10% profit

$$S.P. = C.P. \times (100 + P\%)/100$$

$$\Rightarrow S.P. = 500 \times (100 + 10)/100 = \text{Rs. } 550$$

**S58. Ans.(c)**

$$\text{Sol. } C's \text{ 2 days' work} = 2 \times 2 = 4 \text{ units}$$

$$\text{Remaining work} = 48 - 4 = 44 \text{ units}$$

Now,

$$\text{If we add the work of B} = 44 + 3 \times 1 = 47$$

These 47 units of work is done by A & B

Therefore,

$$\text{Total no. of days} = \frac{47}{9} = 5\frac{2}{9}$$

**S59. Ans.(d)**

$$\text{Sol. The highest five-digit number that can be formed} = 43210$$

$$\text{The lowest five-digit number that can be formed} = 10234$$

$$\text{Required difference} = 43210 - 10234$$

$$\Rightarrow 32976$$

**S60. Ans.(b)**

$$\text{Sol. } \frac{m_1 \times h_1 \times t_1}{w_1} = \frac{m_2 \times h_2 \times t_2}{w_2}$$

$$9_{\text{taps}} \times 20_{\text{mins}} = T_{\text{taps}} \times 15_{\text{mins}}$$

$$T = 12 \text{ taps}$$

**S61. Ans.(b)****Sol.** According to the question,Total runs made by Dhoni and Virat = Average runs made by them  $\times 2$ 

$$\Rightarrow \text{Dhoni} + \text{Virat} = 2 \times 55 = 110 \dots\dots\dots(1)$$

And, if Rohit replaces Virat, average becomes 53, therefore,

$$\Rightarrow \text{Dhoni} + \text{Rohit} = 2 \times 53 = 106 \dots\dots\dots(2)$$

And, if Rohit replaces Dhoni, average becomes 58, therefore,

$$\Rightarrow \text{Virat} + \text{Rohit} = 2 \times 58 = 116 \dots\dots\dots(3)$$

Adding all the 3 equations, we get,

$$(\text{Dhoni} + \text{Virat}) + (\text{Dhoni} + \text{Rohit}) + (\text{Virat} + \text{Rohit}) = 110 + 106 + 116$$

$$\Rightarrow 2 (\text{Dhoni} + \text{Virat} + \text{Rohit}) = 332$$

$$\Rightarrow \text{Dhoni} + \text{Virat} + \text{Rohit} = 332/2 = 166$$

$$\Rightarrow \text{Total runs made by all the three- Dhoni, Rohit and Virat} = 166$$

$$\therefore \text{Average runs made by all the three} = 166/3$$

Now,

Average runs made by Bhuvneshwar and Jadeja is half of the average runs made by all the three, hence,

$$\text{Average runs made by Bhuvneshwar \& Jadeja} = (166/3 \times 2)$$

$$\therefore \text{Average runs made by all the 5 batsmen} = \frac{\frac{166}{3} \times 3 + \frac{166}{3} \times 2}{5} = 44.26$$

Hence, the required average runs made by all the 5 batsman are 44.26.

**S62. Ans.(a)**

$$\text{Sol. Total marks obtained} = 89 + 102 + 163 = 354$$

$$\text{Total marks} = 100 + 150 + 200 = 450$$

$$\text{Hence, percentage} = 354/450 \times 100 = 78.67\%$$

**S63. Ans.(a)****Sol.** Let us assume that Lakhbir and Sukhbir took same time 'T' to write the different number of lines at different speeds.

Let us assume that Lakhbir has written total x lines.

$$\text{The number of lines written by Sukhbir} = 8190 - x$$

$$\text{Time} = \frac{\text{Number of lines written}}{\text{rate}}$$

$$\frac{x}{200} = \frac{8190-x}{150}$$

$$\Rightarrow 3x = 32760 - 4x$$

$$\Rightarrow 7x = 32760$$

$$\Rightarrow x = 4680$$

**S64. Ans.(c)****Sol.** A.T.Q

$$\begin{aligned} \text{Average} &= \frac{7 \times 800 + 8000 + 5 \times 1200}{20} \\ &= \frac{5600 + 8000 + 6000}{20} \end{aligned}$$

$$\text{Average} = \text{Rs. } 980$$

**S65. Ans.(a)**

**Sol.** Let the sum of the marks of the remaining 99 students be N.

$$\Rightarrow \frac{N+68}{100} = 58$$

$$\Rightarrow N = 5800 - 68 = 5732$$

Hence, calculating the original average, we have

$$\frac{N+86}{100} = \frac{5732+86}{100} = 58.18$$

**S66. Ans.(d)**

**Sol.** Let the total number of students be 100

Given,

$$\Rightarrow \text{Average of 100 students} = 64$$

$$\Rightarrow \text{Total score of 100 students} = 64 \times 100 = 6400$$

Then,

$$\Rightarrow \text{Total score of first 15 students} = 15 \times 90 = 1350$$

$$\Rightarrow \text{Total score of last 20 students} = 20 \times 28 = 560$$

$$\Rightarrow \text{Total score of remaining 65 students} = 6400 - (1350 + 560) = 4490$$

$$\Rightarrow \text{Average of 65 students} = 4490/65 = 69.07$$

**S67. Ans.(b)**

**Sol.** There are 4 companies named – Amazon, Britannia, Chegg India and Wipro. the number of employees working in the companies is 20, 30, 25 and 15 respectively. Also the average age of employees of companies – Amazon, Britannia, Chegg India and Wipro are 25 years, 22 years, 20 years and 27 years respectively.

$$\therefore \text{Required average} = \frac{(20 \times 25) + (30 \times 22) + (25 \times 20) + (15 \times 27)}{20 + 30 + 25 + 15}$$

$$= (500 + 660 + 500 + 405)/90 = 22.94 \text{ years}$$

Hence, the required average age of all the employees of all the companies taken together is 22.94 years.

**S68. Ans.(d)**

**Sol.** ∴ The average in the first 3 months = 1337

$$\therefore \text{Sum of salaries in the first 3 months} = \text{Average in the first 3 months} \times 3$$

$$\Rightarrow \text{Sum of salaries in the first 3 months} = 1337 \times 3$$

$$\Rightarrow \text{Sum of salaries in the first 3 months} = 4011 \text{ ----(1)}$$

$$\therefore \text{Average earning in the 2nd and 3rd month} = 1423$$

$$\therefore \text{Sum of salaries in the 2nd and 3rd month} = \text{Average in the 2nd and 3rd month} \times 2$$

$$\Rightarrow \text{Sum of salaries in the 2nd and 3rd month} = 1423 \times 2$$

$$\Rightarrow \text{Sum of salaries in the 2nd and 3rd month} = 2846 \text{ ----(2)}$$

$$\therefore (\text{Salaries of 2nd and 3rd month}) + (\text{salary of 1st month}) = \text{Sum of salaries of the first 3 months}$$

from equation (1) and (2) we get

$$\Rightarrow \text{salary of 1st month} = 4011 - 2846$$

$$\therefore \text{salary of 1st month} = 1165$$

Thus salary of 1st month is Rs.1165

**S69. Ans.(d)****Sol.** Average = Sum of observations/Number of observations

Given,

Amit Mishra worked 15 hours a day for the first 4 days

 $\therefore$  Time the man worked in first 4 days =  $(15 \times 4)$  hours = 60 hours

Amit Mishra worked 14 hours a day for the next 3 days

 $\therefore$  Time taken by Amit Mishra worked in next 3 days =  $(14 \times 3)$  hours = 42 hoursAnd, he did not work on the 8<sup>th</sup> days $\therefore$  Total amount of time he worked in 8 days

= 60 hours + 42 hours + 0 hours = 102 hours

 $\therefore$  Average working time=  $102/8$  hours

= 12.75 hours

= 12 hours + 0.75 hours

= 12 hours + 45 minutes = 12 hours 45 minutes

**S70. Ans.(d)****Sol.** We know that,Average of some entities =  $\frac{\text{Sum of the entities}}{\text{number of the entities}}$ Given,  $\frac{p+q}{2} = 5.8 \Rightarrow p + q = 11.6$ ..... (i)Also,  $\frac{q+r}{2} = 1.4 \Rightarrow q + r = 2.8$  ..... (ii)And,  $\frac{r+s}{2} = 0.7 \Rightarrow r + s = 1.4$  ..... (iii)

From operation, [(i) - (ii) - (iii)] we get,

 $\Rightarrow p + q - q - r - r - s = 11.6 - 2.8 - 1.4$  $\Rightarrow p - 2r - s = 7.4$ **S71. Ans.(d)****Sol.** Total bit coins with Mr. Arpan = 950.

Let the number of coins received by Anita. Sunita and Manita be x. y and z respectively.

 $\Rightarrow x + y + z = 950$ .

Now. according to the question.

Anita gave 25 bit coins to her husband

 $\therefore$  New number of coins with Anita =  $(x - 25)$ 

Sunita donated 15 bit coins.

 $\therefore$  New number of coins with Sunita =  $(y - 15)$ 

And.

Manita keeps 30 bit coins for payment.

 $\therefore$  New number of coins with Manita =  $(z - 30)$ 

Now.

New ratio of the bit coins with Anita. Sunita and Manita =  $20 : 73 : 83$  $\Rightarrow (x - 25) : (y - 15) : (z - 30) = 20 : 73 : 83$ .

The total number of coins left with the three daughters =  $950 - (25 + 15 + 30) = 880$ .

Let the proportional constant be 'a'.

So,  $20a + 73a + 83a = 880$ .

$$\Rightarrow 176a = 880$$

$$\Rightarrow a = 5.$$

So, for Sunita  $y - 15 = 73a$

$$\Rightarrow y - 15 = 73 \times 5$$

$$\Rightarrow y - 15 = 365$$

$$\Rightarrow y = 365 + 15 = 380.$$

$$y = 380.$$

Hence, the number of bit coins received by Sunita is 380.

### S72. Ans.(a)

**Sol.** Given that,

Old metro fare = Rs.30

Old bus fare = Rs.20

After increment:

New metro fare =  $30 + 30 \times (20/100) = \text{Rs.}36$

Similarly, new bus fare =  $20 + 20 \times (10/100) = \text{Rs.}22$

Ratio of new bus fare and metro fare =  $22 : 36$

$$= 11 : 18$$

### S73. Ans.(d)

**Sol.**  $\because$  Neither the no. of students appearing for the UPTET exam in any of the districts nor the number of students appearing for the UPTET exam in all the 3 districts are mentioned, we cannot calculate individual no. of students appearing for the exam in each district so the data is inadequate.

### S4. Ans.(c)

**Sol.** According to the given information,

Number of total employees in the company = 320

Ratio of men and women =  $9 : 11$

Number of men employees = total number of employees  $\times \frac{9}{9+11}$

$$\text{Number of men employees} = 320 \times \frac{9}{9+11} = 144$$

$$\text{Number of female workers} = 320 - 144 = 176$$

According to the given information,

8 female employees leave the work,

$$\text{the remaining number of female employees} = 176 - 8 = 168$$

$$\text{New ratio of male to female employees} = 144 : 168 = 6 : 7$$

Hence new ratio is  $6 : 7$

### S75. Ans.(c)

**Sol.** Let the fourth proportional to 5, 8 and 25 be a

$$\Rightarrow \frac{5}{8} = \frac{25}{a}$$

$$\Rightarrow a = \frac{8 \times 25}{5}$$

$$\Rightarrow a = 40$$

$$\Rightarrow x = \frac{4}{100} \times 40 = \frac{160}{100} = 1.6$$



**S76. Ans.(d)**

**Sol.** For dividing 16 into two whole numbers, the sum of the ratio terms must be a factor of 16.

Atul :-  $5 : 3 \rightarrow 5+3 = 8$  (factor of 16)

Vinod :-  $1 : 1 \rightarrow 1+1 = 2$  (factor of 16)

Chintu :-  $1 : 7 \rightarrow 1+7 = 8$  (factor of 16)

Deepak :-  $3 : 4 \rightarrow 3+4 = 7$  (not factor of 16)

Hence option (d) because  $3 + 4 = 7$  doesn't divide 16 into whole numbers.

**S77. Ans.(b)**

**Sol.** The Initial ratio is  $4 : 6 : 9$

Let the common ratio be 'x'

Therefore the respective number of students in the 3 classes will be  $4x$ ,  $6x$  and  $9x$

After addition of 12 students to each class,

The numbers will be  $4x + 12$ ,  $6x + 12$ ,  $9x + 12$

The ratio after that will be  $7 : 9 : 12$

$$\therefore (4x + 12)/(6x + 12) = 7/9$$

$$\therefore 9 \times (4x + 12) = 7 \times (6x + 12)$$

$$\therefore 36x + 108 = 42x + 84$$

$$\therefore 6x = 24$$

$$\therefore x = 4$$

$$\therefore \text{The initial number of students in the 2}^{\text{nd}} \text{ class} = 24$$

**S78. Ans.(a)**

**Sol.** The ratio of male and female players in an academy is  $7:9$  respectively

Let the number of male players =  $7x$  and female players =  $9x$

The average number of male and female players is 272

$$\Rightarrow \frac{7x+9x}{2} = 272$$

$$\Rightarrow 16x = 272 \times 2 = 544$$

$$\Rightarrow x = 34$$

The number of male players =  $7x = 7 \times 34 = 238$  and female players =  $9x = 9 \times 34 = 306$

The difference between the number of male and female players in the academy =  $306 - 238 = 68$

**S79. Ans.(c)**

**Sol.** Let the journey covered by Uber, Meru cabs and carzonrent = ' $4a$ ', ' $3a$ ' and ' $2a$ ' respectively.

Let fare of Uber, Meru cabs & carzonrent = ' $b$ ', ' $2b$ ' and ' $4b$ ' per km.

Then, fare paid for Uber, Meru cabs & carzonrent =  $4ab$ ,  $6ab$ ,  $8ab$  respectively.

$$\therefore \text{Total fare} = 4ab + 6ab + 8ab = 18ab$$

Given that,

$$\Rightarrow 18ab = 1440$$

$$\text{Or, } ab = 80$$

$$\therefore \text{Fare spent on Uber} = 4ab$$

$$= 4 \times 80 = \text{Rs. } 320.$$

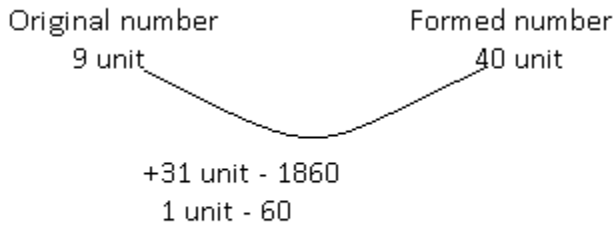
**S80. Ans.(d)****Sol.** [Vaibhav : Shivam = 3 : 2] × 3

[Shivam : Manish = 3 : 4] × 2

⇒ Vaibhav : Shivam : Manish = 9 : 6 : 8

⇒ Vaibhav : Manish = 9 : 8

∴ Vaibhav : Manish is equal to 9 : 8.

**S81. Ans.(b)****Sol.**  $444\frac{4}{9}\% = \frac{40}{9}$ 

So, the original number = 9 × 60 = 540

**S82. Ans.(a)****Sol.** Let the maximum marks in the examination be 100%

Passing marks are = 35% = 400 + 20

⇒ 35% = 420

⇒ 1% = 12

Then total marks = 100% = 100 × 12 = 1200

**S83. Ans.(d)****Sol.** Let total sale be 'x' rupees.

Then,

95% of (20,000) + 96% of (x - 20,000) = 62200

adding 1% of 20,000 on both sides i.e., 200

⇒ 200 + 95% of (20,000) + 96% of (x - 20,000) = 62200 + 200

⇒ 95% of (20,000) + 96% of (x - 20,000) = 62400

⇒ 96% of x = 62400

 $x = \frac{62400}{96} \times 100$ 

= Rs. 65,000

**S84. Ans.(c)****Sol.** Let Kamal = 100%

Then Shivam = 100 - 30 = 70%

So Aman = 70 × (150/100) = 105%

Now the ratio between Aman : Shivam : Kamal = 105 : 70 : 100 = 21 : 14 : 20

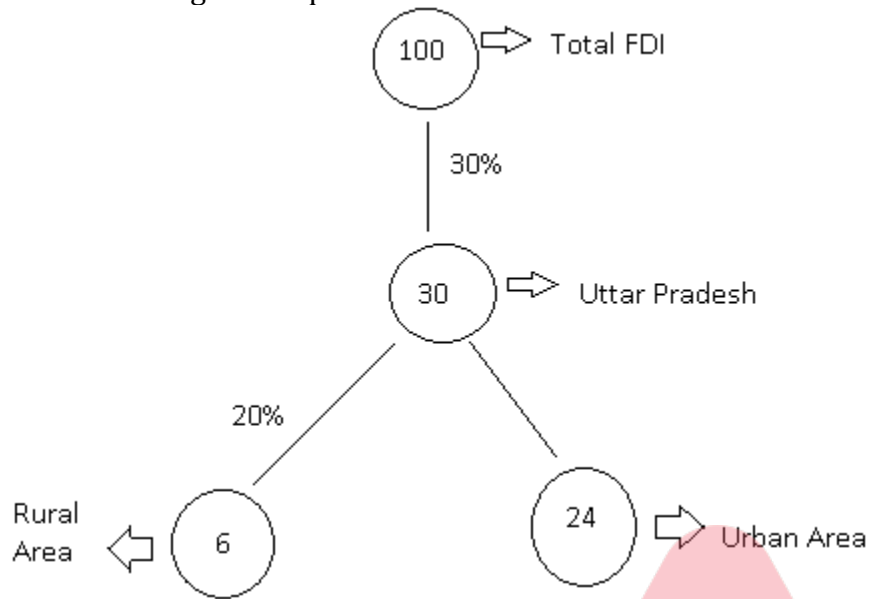
Sum of the ratio = 21 + 14 + 20 = 55

Thus, Aman's share = (21/55) × 825 = Rs. 315



**S85. Ans.(c)**

**Sol.** Let the total FDI = 100 units  
Now According to the question: -



24 units = \$ 144 million

1 unit = \$ 6 million

Total FDI = 6 \* 100 = \$ 600 million

FDI for Bihar =  $\frac{600 \times 20}{100} = \$ 120$  million

FDI for Rural Bihar =  $\frac{120 \times 50}{100} = \$ 60$  million

**S86. Ans.(b)**

**Sol.** 25% =  $\frac{1}{4}$ , so the price increase by 1.

∴ Increased price = 5

So % decrease in price from the new price =  $[(5 - 4)/5] \times 100 = 20\%$

**S87. Ans.(d)**

**Sol.** Let the original Price = Y Rs.

A.T.Q,

$$y * \frac{(100+a)}{100} * \frac{(100-a)}{100} = \frac{P}{100}$$

$$y = \frac{100 * P}{(100+a)(100-a)}$$

$$y = \frac{100 * P}{(100^2 - a^2)}$$

**S88. Ans.(c)**

**Sol.** Given,

50% of (m - n) = 30% of (m + n)

⇒ (50/100) (m - n) = (30/100) (m + n)

⇒ 5(m - n) = 3(m + n)

⇒ 5m - 3m = 3n + 5n

⇒ 2m = 8n

⇒ m = 4n

∴ Required per cent

⇒ (n/m) × 100%

⇒ (n/4n) × 100%

⇒ (1/4) × 100%

⇒ 25%

**S89. Ans.(b)**

**Sol.** % reduction needed in the price of bed =  $\frac{R}{100+R} * 100\%$   
 $= \frac{9}{100+9} * 100\% = \frac{900}{109} = 8.26\%$

**S90. Ans.(c)**

**Sol.** Akash is 50% more than Avil

Ratio of Akash : Avil = 3 : 2

Shubham is  $\frac{2}{3}$  of Akash

Ratio of Shubham : Akash = 2 : 3

Ratio of Akash : Avil : Shubham = 3 : 2 : 2 -- (i)

Shelly is 60% more than Shubham

Ratio of Shubham : Shelly = 5 : 8 -- (ii)

To equate the ratio we multiply equation (i) with 5 and equation (ii) with 2

Akash : Avil : Shubham =  $(3 : 2 : 2) \times 5$

Shubham : Shelly =  $(5 : 8) \times 2$

Akash : Avil : Shubham : Shelly = 15 : 10 : 10 : 16

There is an equal increase in all so it makes no difference here.

Shelly is what percent of Avil

$$\Rightarrow (16/10) \times 100 = 160\%$$

**S91. Ans.(b)**

**Sol.** Total quantity of mango juice = 1620000 ml (i.e.  $1620 * 1000$ )

Number of bottles required to fill =  $1620000/180 = 9000$

**S92. Ans.(b)**

**Sol.**  $2/3 = 0.666$

$4/5 = 0.8$

$3/4 = 0.75$

$5/6 = 0.83$

$7/9 = 0.77$

$5/7 = 0.71$

$3/4$ ,  $7/9$  and  $5/7$  lie between  $2/3$  and  $4/5$ .

Therefore,

$5/6$  doesn't lie between  $2/3$  and  $4/5$ .

**S93. Ans.(c)**

**Sol.** 24 hours = 1 day

576 hours = 24 days

**S94. Ans.(a)**

**Sol.**  $^{\circ}F = \frac{9}{5} ^{\circ}C + 32$

$$^{\circ}F = \frac{9}{5} (-40) + 32 = -72 + 32 = -40^{\circ}F$$

**S95. Ans.(d)**

**Sol.**

<b>Reema</b>		<b>Shekhar</b>
4	:	5
Diff. of time = 5 years		
5	:	6
$x = 5 - 4 = 6 - 5 = 1$		
Present age of Reema = $5/1 \times 4 = 20$ years		

**S96. Ans.(c)**

**Sol.** 1 sec  $\rightarrow$  1 drop

No. of second in 300 days.

$(24_{\text{min}} \times 60_{\text{min}} \times 60_{\text{sec}}) \times 300$  days

No. of litres wasted =  $100 \times \frac{24 \times 60 \times 60 \times 300}{600} \times \frac{1}{1000}$   
 $= \frac{4320000}{1000} = 4320$  litres

**S97. Ans.(a)**

**Sol.** In 75 days there are 10 weeks and 5 days

$70 + 5 = 75$

$70/7$ (days in one week) + 5 = 10 weeks and 5 days

**S98. Ans.(b)**

**Sol.** Number of buzzes in a day =  $\frac{12(12+1)}{2} \times 2 = 156$

**S99. Ans.(d)**

**Sol.** 1 km = 1000 metres

Similarly,

5 km = 5000 metres

**S100. Ans.(b)**

**Sol.** Here, divide 47 by 7. We get 5 as remainder. Hence, we can conclude that the day will fall on five days after Sunday i.e., Friday.

**S101. Ans.(b)**

**Sol.** Income = Saving  $\times (100/(100 - R_1)) \times (100/(100 - R_1)) \times (100/(100 - R_1))$

$\Rightarrow 1224 \times (100/90) \times (100/80) \times (100/85)$

$\Rightarrow$  Rs. 2000

$\therefore$  Total sum is Rs. 2000

**S102. Ans.(d)**

**Sol.** Let the volume of equal glasses be 'a'.

Volume of milk in first glass =  $2a/3$

Volume of water in first glass =  $a/3$

Volume of milk in second glass =  $a/2$

Volume of water in second glass =  $a/2$

Ratio of milk to water in the third glass =  $\frac{\frac{2a}{3} + \frac{a}{2}}{\frac{a}{3} + \frac{a}{2}} = 7:5$

**Therefore the correct answer is 7:5.**

**S103. Ans.(d)**

**Sol.** let the cost price of 100 eggs is Rs. 100

according to question,

The selling price of 100 eggs is Rs.100

But profit percent = 25%

So, cost price  $\times 125\% = 100$

So, cost price = Rs. 80

And, we know that in Rs. 80 we can buy only 80 eggs

So, the quantity of rotten eggs is  $100 - 80 = 20$

So, the percentage of rotten eggs is  $20/100 \times 100\%$

therefore, the required percentage is 20%

**S104. Ans.(d)**

**Sol.** Let average score of first 11 innings be  $x$  runs.

Then, total runs made by Rituraj Gaikwad in 11 innings =  $11x$

According to the question, after 12<sup>th</sup> inning, average score =  $x + 1$

$$\therefore \frac{79+11x}{12} = x + 1$$

$$\Rightarrow 79 + 11x = 12x + 12$$

$$\Rightarrow x = 79 - 12 = 67$$

Thus, average score after 12<sup>th</sup> inning =  $67 + 1 = 68$  runs.

**S105. Ans.(c)**

**Sol.** Let the time taken to complete individually by Sudhir, Sunil and Suraj be  $a$ ,  $b$  and  $c$  respectively

$$1/a + 1/b = 1/40$$

$$1/b + 1/c = 1/48$$

$$1/a + 1/c = 1/60$$

Time taken by all to complete the work =  $1/(1/a + 1/b + 1/c)$

$$(2/a + 2/b + 2/c) = 1/40 + 1/48 + 1/60$$

$$(1/a + 1/b + 1/c) = 1/32$$

Time taken by all to complete the work = 32 days

**S106. Ans.(c)**

$$\text{Sol. I. } x = \sqrt[3]{5832} = \sqrt[3]{(18)^3} = 18$$

$$\Rightarrow x = 18$$

$$\text{II. } y^2 = 324$$

$$\Rightarrow y^2 = (18)^2$$

$$\Rightarrow y = \pm 18$$

So, when  $x = +18$ ,  $x = y$  for  $y = +18$  and  $x > y$  for  $y = -18$

Also, when  $x = -18$ ,  $x = y$  for  $y = -18$  and  $x > y$  for  $y = +18$

$\therefore$  We can observe that relation between  $x$  and  $y$  is  $x \geq y$ .



**S107. Ans.(c)****Sol.**  $0.36$  of  $52.5 + ?$  of  $35 = 57.4$ 

$$\Rightarrow 18.9 + ? \text{ of } 35 = 57.4$$

$$\Rightarrow ? \text{ of } 35 = (57.4 - 18.9)$$

$$\Rightarrow ? = 38.5/35$$

$$\Rightarrow ? = 1.1$$

**S108. Ans.(d)****Sol.** The unit digit in  $341^{98}$  is one since one power is always 1Similarly for  $211^{59}$  is also oneThe unit digit for  $45^{100}$  is five since five power any number is always 5Similarly for  $105^{35}$  is also five $\therefore$  By adding unit digits of the numbers, we get

$$= 1 + 1 - 5 + 5 - 4 + 9$$

$$= 7$$

**S109. Ans.(c)****Sol.** Let  $P$  = Principal,  $R$  = rate % per annum, Time =  $N$  years.

Simple interest

$$= (10000 \times 10 \times 2)/100$$

$$= 2000$$

Simple interest is Rs. 2000.

 $P$  = Rs. 10000,  $R$  = 10% and  $N$  = 2

Amount

$$= 10000[1 + 10/100]^4$$

$$= 10000[1.1]^4$$

$$= 10000 \times 1.1 \times 1.1 \times 1.1 \times 1.1$$

$$= 14641$$

Compound interest

$$= \text{Amount} - P$$

$$= 14641 - 10000$$

$$= 4641$$

Compound interest is Rs. 4641

Difference between compound interest and simple interest

$$= 4641 - 2000$$

$$= 2641$$

 $\therefore$  Rs. 2641 more money Anshika will save.**S110. Ans.(d)****Sol.** Given:

$$\{(2.5)^3 + (1.5)^3\} / \{(2.5)^3 - (1.5)^3\}$$

Calculation:

$$\Rightarrow ? = \{(2.5)^3 + (1.5)^3\} / \{(2.5)^3 - (1.5)^3\}$$

$$\Rightarrow ? = (15.625 + 3.375) / (15.625 - 3.375)$$

$$\Rightarrow ? = 19/12.25$$

$$\Rightarrow ? = 1900/1225 = 76/49$$

**S111. Ans.(a)****Sol.** Speed = distance/timeTime taken by Tinku to run 2000m = 4 min =  $4 \times 60 = 240$  sec $\therefore$  Speed of Tinku,  $x = 2000/240$  m/sTime taken by Minku to run 2000m = 4min 10sec =  $4 \times 60 + 10 = 250$  sec $\therefore$  Speed of Minku,  $y = 2000/250$  m/s

To meet dead heat, both of them must complete the race in equal time, i.e., 240 sec

Difference in speeds =  $x - y = \frac{2000}{240} - \frac{2000}{250} = \frac{1}{3}$  m/sec

Total distance by which Minku should be ahead of Tinku at the beginning of the race =

$$\frac{1}{3} \times 240 = 80\text{m}$$

**S112. Ans.(d)****Sol.** Given

Distance between two stations = 800 km

Calculation

Let time 't' be the time the starting two trains meet each other.

A and B are the two stations.

Distance between A and B = 800 km

The distance from A at which the trains cross each other = 440 km

 $\therefore$  The distance from B at which the trains cross each other =  $800 \text{ km} - 440 \text{ km} = 360 \text{ km}$  $\therefore$  Speed of the train from A = Distance covered/Time required =  $(440/t)$  km/hr

And,

Speed of the train from B = Distance covered/Time required =  $(360/t)$  km/hr $\therefore$  Required ratio =  $(440/t) : (360/t)$ 

$$= 110 : 90$$

$$= 11 : 9$$

**S113. Ans.(d)****Sol.** Let the length of train be x meters.

The speed of train be y m/s.

Since, Train is crossing a man, so the distance travelled by train to pass a man is equal to its own length.

Now, as we know that Speed = Distance/Time

$$\therefore y = x/16$$

$$\Rightarrow x = 16y$$

While crossing the platform total distance covered by train would be summation of length of train and length of platform.

 $\therefore$  Speed = distance/time

$$\therefore y = (x + 60)/20$$

$$\Rightarrow 20y = x + 60$$

$$\Rightarrow x = 20y - 60$$

On equating value of x, we get

$$16y = 20y - 60$$

$$\Rightarrow 4y = 60$$

$$\Rightarrow y = 15 \text{ m/s.}$$

$$\Rightarrow y = 15 \times \frac{3600}{1000} \text{ kmph} = 54 \text{ kmph}$$

Speed of train is 54 kmph.

**S114. Ans.(b)**

**Sol.** Let the distance be 'D'.

Speed of bullock cart = 24 kmph

Time taken by Ansh in going to temple and back home = Distance/speed =  $2 \times D/24 = D/12 = 0.083D$

Speed of boat = 20 kmph; Speed of stream = 5 kmph

Time taken by Raghav in going to temple and back home

$$= \left[ \frac{D}{\text{Upstream}} + \frac{D}{\text{downstream}} \right] = \left[ \frac{D}{20-5} + \frac{D}{20+5} \right] = \frac{8D}{75} = 0.106D$$

Clearly, Ansh is taking lesser time. Hence, he will reach first.

**S115. Ans.(a)**

**Sol.** We know that,

Minutes per hour of stoppage = (Difference in speeds/Greater speed) =  $(160 - 120)/160 = 40/160 = \frac{1}{4}$  hrs =  $60/4 = 15$  min/hr

∴ The train stops for 15 minutes per hour.

**S116. Ans.(d)**

**Sol.** Suppose the trains meet after time 't' from starting.

Distance travelled = Speed × Time

Therefore, in t hours train Anand Vihar will travel =  $40 \times t$  km

Similarly, in t hours train Preet Vihar will travel =  $90 \times t$  km

Total Distance =  $(40t + 90t)$  km =  $130t$  km

At the time of their meeting, the second train has travelled 100 km more than the first,

So,

$$90t - 40t = 100$$

$$\Rightarrow 50t = 100$$

$$\Rightarrow t = 2$$

So, the total distance =  $130 \times 2 = 260$  km

**S117. Ans.(b)**

**Sol.** Distance to be covered when train crosses an object = Length of the train + Length of the object

Let two trains meet after t hours when the train from Los Angeles leaves at 9 am

∴ Distance covered in t hours at 40 km/hr + Distance covered in (t - 2) hours at 50 km/hr = 170 km

$$\therefore 40t + 50(t - 2) = 170$$

$$\Rightarrow 40t + 50t - 100 = 170$$

$$\Rightarrow 90t = 170 + 100$$

$$\Rightarrow 90t = 270$$

$$\Rightarrow t = 270/90 = 3 \text{ hours}$$

The two trains will meet at 12 noon.

**S118. Ans.(b)**

**Sol.** Time taken by a train of length l metres to pass a pole or standing man or a signal post is equal to the time taken by the train to cover l metres.

Then the distance covered by train to cross a pole = Length of train = 600 m

Since the train of length 600 m crosses an electric pole in 15 sec, its speed can be calculated as

$$\Rightarrow (\text{length of train})/(\text{time taken to cross the electric pole}) = 600/15 = 40 \text{ m/s}$$

Therefore, length of platform = distance covered by the train in 30 sec =  $40 \times 30 = 1200$  m

Time taken by the person to cross 1200 m long platform = 5 minute =  $5 \times 60 \text{ sec} = 300 \text{ sec}$

$$\therefore \text{Speed of person} = s_t = (\text{length of platform})/(\text{time taken of cross platform}) = 1200/300 = 4 \text{ m/s}$$

**S119. Ans.(a)**

**Sol.** Speed of steamer in still water = (speed downstream + speed upstream)/2  
 = (15 + 5)/2 = 10 kmph.

Hence, speed of the steamer in still water is 10 kmph.

**S120. Ans.(b)**

**Sol.** Given:

Distance between Azamgarh and Hyderabad = 680 Km

Train cover Azamgarh to Hyderabad at the speed = 40 kmph

Train cover Hyderabad to Azamgarh at the speed = 60 kmph

Formula used:

$$\text{Average speed} = \{2xy/(x + y)\}$$

Calculation:

Given that train cover the journey from Azamgarh to Hyderabad at 40 km per hour and returns back to Azamgarh with a uniform speed of 60 km per hour.

$$\text{Required average speed} = \{2xy/(x + y)\} \text{ km/h}$$

$$\Rightarrow \text{Required average speed} = (2 \times 40 \times 60)/(40 + 60)$$

$\therefore$  Average speed of the train during the whole journey is 48 km/h.

**S121. Ans.(a)**

**Sol.** Let the speed of stream be 'a' and speed of boat be 'b'.

In still water, speed of boat = b

In upstream speed of boat relative to stream = b - a

Given, boat goes 30 km an hour in still water, and takes thrice the time to cover the same distance upstream.

$$\text{Speed} = \text{distance}/\text{time}$$

$$b = 30/1$$

$$\Rightarrow b = 30 \text{ km/hr}$$

$$b - a = 30/3$$

$$\Rightarrow b - a = 10$$

$$\Rightarrow a = b - 10 = 20 \text{ km/hr}$$

**S122. Ans.(b)**

**Sol.** Downstream speed = (56 + 20)

$$\Rightarrow 76 \text{ km/h}$$

Upstream speed = (56 - 20)

$$\Rightarrow 36 \text{ km/h}$$

$$\text{Time} = (684/76) + (684/36)$$

$$\Rightarrow 9 + 19$$

$$\Rightarrow 28 \text{ hours}$$

$\therefore$  Total time taken is 28 hours.



**S123. Ans.(c)**

**Sol.** The speed of the stream is  $y$  km/hour (say)

Hence upstream speed will be  $(14 - y)$  km/hour

And downstream speed will be  $(14 + y)$  km/hour

it takes twice the time to row upstream than the time to row downstream. Hence, speed of downstream is twice than the speed of upstream.

According to the problem,  $14 + y = 2(14 - y)$

$$\Rightarrow 14 + y = 28 - 2y$$

$$\Rightarrow 3y = 14$$

$$\Rightarrow y = 4.67$$

Speed of the stream = 4.67 km/hour

**S124. Ans.(d)**

**Sol.** Speed of Boat in Current = Speed of Boat in still water – Speed of Current

A boat goes 20 kms an hour in still water

$\therefore$  Speed of Boat in still water = 20km/hr

Let it travels for 1 hr and covered 20 km

It takes twice as much time in going the same distance against the current

Thus, it will take 2 hr to cover the same distance of 20 km

$\therefore$  Speed of Boat against Current =  $20\text{km} / 2\text{hrs} = 10\text{km/hr}$

Speed of Current =  $20\text{km/hr} - 10\text{km/hr} = 10\text{km/hr}$

**S125. Ans.(d)**

**Sol.** Let the speed of boat be 'a' and speed of the stream be 'b'.

Relative speed of boat going upstream =  $a - b$

Relative speed of boat going downstream =  $a + b$

Given, boat goes downstream in one-third the time it takes to go upstream.

Time = distance/speed

Distance is same in both cases.

$$\therefore \frac{d}{a+b} = \frac{1}{3} * \frac{d}{a-b}$$

$$\Rightarrow 3a - 3b = a + b$$

$$\Rightarrow a = 2b$$

$$\therefore a : b = 2 : 1$$

**S126. Ans.(c)**

**Sol.** Let the speed of the boat be  $C$  and the velocity of the stream be  $V$ .

Hence,

$$C + V = 24 \text{ and}$$

$$C - V = 16$$

Adding both the equations to eliminate  $V$ , we have

$$2C = 40$$

$$\Rightarrow C = 20 \text{ kmph}$$

Hence, the time taken by the boat to cover 48 km in still water =  $48/20 = 2.4$  h

**S127. Ans.(c)**

**Sol.** Let the speed of the water current be 'x' km/hr

Downstream:

While going downstream,

Total speed = speed of the boat + speed of the water current

$$\Rightarrow \text{Total speed} = 68 + x$$

Distance covered = 9.6 km

Time taken = 8 min = 0.133 hrs

We know that

Speed = Distance/Time

$$\Rightarrow 68 + x = 9.6/0.133$$

$$\Rightarrow 68 + x = 72 \text{ (approx.)}$$

$$\Rightarrow x = 4$$

Thus speed of the Current is 4 km/hr

(The same can be confirmed using the upstream condition where the total speed will be the difference between the speed of the boat and that of the current)

**S128. Ans.(a)**

**Sol.** Speed of stream = (downstream - upstream)/2

$$\Rightarrow (31 - 17)/2 = 14/2 = 7 \text{ km/hr}$$

**S129. Ans.(c)**

**Sol.** Speed of the steamer downstream  $S_d = 60/4 = 15 \text{ kmph}$

Speed of the steamer upstream  $S_u = 60/12 = 5 \text{ kmph}$

Let speed of the steamer be 'x', then speed of the current would be (x/2).

According to the question,

$$x + (x/2) = 15 \text{ .....(1)}$$

$$x - (x/2) = 5 \text{ .....(2)}$$

From equations (1) and (2) we get,

$$2x = 20 \Rightarrow x = 10 \text{ kmph}$$

Hence, speed of the steamer is 10 kmph.

**S130. Ans.(b)**

**Sol.** We know that Speed = Distance/Time

Let speed of Bablu in still water be g kmph.

Then speed of Bablu in upstream = g - 6 kmph

Speed of Bablu in downstream = g + 6 kmph

We have the Bablu covering double the distance in downstream than in upstream in the same time.

Hence, the speed of Bablu in downstream should be double his speed in upstream

Hence,

We have

$$\Rightarrow (g + 6) = 2 \times (g - 6)$$

$$\Rightarrow g + 6 = 2g - 12$$

$$\Rightarrow g = 18 \text{ kmph}$$

**S131. Ans.(a)****Sol.** Speed = distance/timeTime taken by Tinku to run 2000m = 4 min =  $4 \times 60 = 240$  sec $\therefore$  Speed of Tinku,  $x = 2000/240$  m/sTime taken by Minku to run 2000m = 4min 10sec =  $4 \times 60 + 10 = 250$  sec $\therefore$  Speed of Minku,  $y = 2000/250$  m/s

To meet dead heat, both of them must complete the race in equal time, i.e., 240 sec

Difference in speeds =  $x - y = \frac{2000}{240} - \frac{2000}{250} = \frac{1}{3}$  m/sec

Total distance by which Minku should be ahead of Tinku at the beginning of the race =

$$\frac{1}{3} \times 240 = 80\text{m}$$

**S132. Ans.(d)****Sol.** Given

Distance between two stations = 800 km

Calculation

Let time 't' be the time the starting two trains meet each other.

A and B are the two stations.

Distance between A and B = 800 km

The distance from A at which the trains cross each other = 440 km

 $\therefore$  The distance from B at which the trains cross each other =  $800 \text{ km} - 440 \text{ km} = 360 \text{ km}$  $\therefore$  Speed of the train from A = Distance covered/Time required =  $(440/t)$  km/hr

And,

Speed of the train from B = Distance covered/Time required =  $(360/t)$  km/hr $\therefore$  Required ratio =  $(440/t) : (360/t)$ 

$$= 110 : 90$$

$$= 11 : 9$$

**S133. Ans.(d)****Sol.** Let the length of train be x meters.

The speed of train be y m/s.

Since, Train is crossing a man, so the distance travelled by train to pass a man is equal to its own length.

Now, as we know that Speed = Distance/Time

$$\therefore y = x/16$$

$$\Rightarrow x = 16y$$

While crossing the platform total distance covered by train would be summation of length of train and length of platform.

 $\therefore$  Speed = distance/time

$$\therefore y = (x + 60)/20$$

$$\Rightarrow 20y = x + 60$$

$$\Rightarrow x = 20y - 60$$

On equating value of x, we get

$$16y = 20y - 60$$

$$\Rightarrow 4y = 60$$

$$\Rightarrow y = 15 \text{ m/s.}$$

$$\Rightarrow y = 15 \times \frac{3600}{1000} \text{ kmph} = 54 \text{ kmph}$$

Speed of train is 54 kmph.

**S134. Ans.(b)**

**Sol.** Let the distance be 'D'.

Speed of bullock cart = 24 kmph

Time taken by Ansh in going to temple and back home = Distance/speed =  $2 \times D/24 = D/12 = 0.083D$

Speed of boat = 20 kmph; Speed of stream = 5 kmph

Time taken by Raghav in going to temple and back home =  $\left[\frac{D}{\text{Upstream}} + \frac{D}{\text{downstream}}\right] = \left[\frac{D}{20-5} + \frac{D}{20+5}\right] = \frac{8D}{75} = 0.106D$

Clearly, Ansh is taking lesser time. Hence, he will reach first.

**S135. Ans.(a)**

**Sol.** We know that,

Minutes per hour of stoppage = (Difference in speeds/Greater speed) =  $(160 - 120)/160 = 40/160 = \frac{1}{4}$  hrs = 60/4 = 15 min/hr

∴ The train stops for 15 minutes per hour.

**S136. Ans.(d)**

**Sol.** Suppose the trains meet after time 't' from starting.

Distance travelled = Speed × Time

Therefore, in t hours train Anand Vihar will travel =  $40 \times t$  km

Similarly, in t hours train Preet Vihar will travel =  $90 \times t$  km

Total Distance =  $(40t + 90t)$  km =  $130t$  km

At the time of their meeting, the second train has travelled 100 km more than the first,

So,

$$90t - 40t = 100$$

$$\Rightarrow 50t = 100$$

$$\Rightarrow t = 2$$

So, the total distance =  $130 \times 2 = 260$  km

**S137. Ans.(b)**

**Sol.** Distance to be covered when train crosses an object = Length of the train + Length of the object

Let two trains meet after t hours when the train from Los Angeles leaves at 9 am

∴ Distance covered in t hours at 40 km/hr + Distance covered in (t - 2) hours at 50 km/hr = 170 km

$$\therefore 40t + 50(t - 2) = 170$$

$$\Rightarrow 40t + 50t - 100 = 170$$

$$\Rightarrow 90t = 170 + 100$$

$$\Rightarrow 90t = 270$$

$$\Rightarrow t = 270/90 = 3 \text{ hours}$$

The two trains will meet at 12 noon.

**S138. Ans.(b)**

**Sol.** Time taken by a train of length l metres to pass a pole or standing man or a signal post is equal to the time taken by the train to cover l metres.

Then the distance covered by train to cross a pole = Length of train = 600 m

Since the train of length 600 m crosses an electric pole in 15 sec, its speed can be calculated as

$$\Rightarrow (\text{length of train})/(\text{time taken to cross the electric pole}) = 600/15 = 40 \text{ m/s}$$

Therefore, length of platform = distance covered by the train in 30 sec =  $40 \times 30 = 1200$  m

Time taken by the person to cross 1200 m long platform = 5 minute =  $5 \times 60 \text{ sec} = 300 \text{ sec}$

∴ Speed of person =  $s_t = (\text{length of platform})/(\text{time taken of cross platform}) = 1200/300 = 4 \text{ m/s}$

**S139. Ans.(a)**

**Sol.** Speed of steamer in still water = (speed downstream + speed upstream)/2

$$= (15 + 5)/2 = 10 \text{ kmph.}$$

Hence, speed of the steamer in still water is 10 kmph.

**S140. Ans.(b)**

**Sol.** Given:

Distance between Azamgarh and Hyderabad = 680 Km

Train cover Azamgarh to Hyderabad at the speed = 40 kmph

Train cover Hyderabad to Azamgarh at the speed = 60 kmph

Formula used:

$$\text{Average speed} = \{2xy/(x + y)\}$$

Calculation:

Given that train cover the journey from Azamgarh to Hyderabad at 40 km per hour and returns back to Azamgarh with a uniform speed of 60 km per hour.

$$\text{Required average speed} = \{2xy/(x + y)\} \text{ km/h}$$

$$\Rightarrow \text{Required average speed} = (2 \times 40 \times 60)/(40 + 60)$$

$\therefore$  Average speed of the train during the whole journey is 48 km/h.

**S141. Ans.(a)**

**Sol.** Let the speed of stream be 'a' and speed of boat be 'b'.

In still water, speed of boat = b

In upstream speed of boat relative to stream = b - a

Given, boat goes 30 km an hour in still water, and takes thrice the time to cover the same distance upstream.

$$\text{Speed} = \text{distance/time}$$

$$b = 30/1$$

$$\Rightarrow b = 30 \text{ km/hr}$$

$$b - a = 30/3$$

$$\Rightarrow b - a = 10$$

$$\Rightarrow a = b - 10 = 20 \text{ km/hr}$$

**S142. Ans.(b)**

**Sol.** Downstream speed = (56 + 20)

$$\Rightarrow 76 \text{ km/h}$$

Upstream speed = (56 - 20)

$$\Rightarrow 36 \text{ km/h}$$

$$\text{Time} = (684/76) + (684/36)$$

$$\Rightarrow 9 + 19$$

$$\Rightarrow 28 \text{ hours}$$

$\therefore$  Total time taken is 28 hours.

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**S143. Ans.(c)**

**Sol.** The speed of the stream is  $y$  km/hour (say)

Hence upstream speed will be  $(14 - y)$  km/hour

And downstream speed will be  $(14 + y)$  km/hour

it takes twice the time to row upstream than the time to row downstream. Hence, speed of downstream is twice than the speed of upstream.

According to the problem,  $14 + y = 2(14 - y)$

$$\Rightarrow 14 + y = 28 - 2y$$

$$\Rightarrow 3y = 14$$

$$\Rightarrow y = 4.67$$

Speed of the stream = 4.67 km/hour

**S144. Ans.(d)**

**Sol.** Speed of Boat in Current = Speed of Boat in still water – Speed of Current

A boat goes 20 kms an hour in still water

$\therefore$  Speed of Boat in still water = 20km/hr

Let it travels for 1 hr and covered 20 km

It takes twice as much time in going the same distance against the current

Thus, it will take 2 hr to cover the same distance of 20 km

$\therefore$  Speed of Boat against Current =  $20\text{km} / 2\text{hrs} = 10\text{km/hr}$

Speed of Current =  $20\text{km/hr} - 10\text{km/hr} = 10\text{km/hr}$

**S145. Ans.(d)**

**Sol.** Let the speed of boat be 'a' and speed of the stream be 'b'.

Relative speed of boat going upstream =  $a - b$

Relative speed of boat going downstream =  $a + b$

Given, boat goes downstream in one-third the time it takes to go upstream.

Time = distance/speed

Distance is same in both cases.

$$\therefore \frac{d}{a+b} = \frac{1}{3} * \frac{d}{a-b}$$

$$\Rightarrow 3a - 3b = a + b$$

$$\Rightarrow a = 2b$$

$$\therefore a : b = 2 : 1$$

**S146. Ans.(c)**

**Sol.** Let the speed of the boat be  $C$  and the velocity of the stream be  $V$ .

Hence,

$$C + V = 24 \text{ and}$$

$$C - V = 16$$

Adding both the equations to eliminate  $V$ , we have

$$2C = 40$$

$$\Rightarrow C = 20 \text{ kmph}$$

Hence, the time taken by the boat to cover 48 km in still water =  $48/20 = 2.4$  h

**S147. Ans.(c)**

**Sol.** Let the speed of the water current be 'x' km/hr

Downstream:

While going downstream,

Total speed = speed of the boat + speed of the water current

$$\Rightarrow \text{Total speed} = 68 + x$$

Distance covered = 9.6 km

Time taken = 8 min = 0.133 hrs

We know that

Speed = Distance/Time

$$\Rightarrow 68 + x = 9.6/0.133$$

$$\Rightarrow 68 + x = 72 \text{ (approx.)}$$

$$\Rightarrow x = 4$$

Thus speed of the Current is 4 km/hr

(The same can be confirmed using the upstream condition where the total speed will be the difference between the speed of the boat and that of the current)

**S148. Ans.(a)**

**Sol.** Speed of stream = (downstream - upstream)/2

$$\Rightarrow (31 - 17)/2 = 14/2 = 7 \text{ km/hr}$$

**S149. Ans.(c)**

**Sol.** Speed of the steamer downstream  $S_d = 60/4 = 15 \text{ kmph}$

Speed of the steamer upstream  $S_u = 60/12 = 5 \text{ kmph}$

Let speed of the steamer be 'x', then speed of the current would be (x/2).

According to the question,

$$x + (x/2) = 15 \text{ .....(1)}$$

$$x - (x/2) = 5 \text{ .....(2)}$$

From equations (1) and (2) we get,

$$2x = 20 \Rightarrow x = 10 \text{ kmph}$$

Hence, speed of the steamer is 10 kmph.

**S150. Ans.(b)**

**Sol.** We know that Speed = Distance/Time

Let speed of Bablu in still water be g kmph.

Then speed of Bablu in upstream = g - 6 kmph

Speed of Bablu in downstream = g + 6 kmph

We have the Bablu covering double the distance in downstream than in upstream in the same time.

Hence, the speed of Bablu in downstream should be double his speed in upstream

Hence,

We have

$$\Rightarrow (g + 6) = 2 \times (g - 6)$$

$$\Rightarrow g + 6 = 2g - 12$$

$$\Rightarrow g = 18 \text{ kmph}$$

**S151. Ans.(a)**

**Sol.** Total distance covered =  $750 + 750 = 1500$  miles

Total time =  $3 \text{ hrs } 45 \text{ min} + 4 \text{ hrs } 45 \text{ min} = 3.75 + 4.75 = 8.5 \text{ hrs}$

$\therefore$  Average Speed =  $1500/8.5 = 176.47$  mile per hour

**S152. Ans.(c)**

**Sol.** Speed = Distance / time

$1 \text{ kmph} = 5/18 \text{ m/s}$

Calculating time taken by each segments

$\Rightarrow$  Segment 1:  $T_1 = 30/10$

$\Rightarrow T_1 = 3 \text{ hours}$

$\Rightarrow$  Segment 2:  $T_2 = 36 / 18$

$\Rightarrow T_2 = 2 \text{ hour}$

$\Rightarrow$  Segment 3:  $T_3 = 24/6$

$\Rightarrow T_3 = 4 \text{ hours}$

Total time taken =  $3 + 2 + 4$

$\therefore$  Total time taken is 9 hours

**S153. Ans.(b)**

**Sol.** Let time taken from Meerut to Delhi be  $x$  hrs.

$\therefore$  Time taken from Delhi to Meerut is  $(3 - x)$  hrs

Distance between Meerut to Delhi = Distance between Delhi to Meerut

$\Rightarrow 40 \times x = 45 \times (3 - x)$

$\Rightarrow 40x + 45x = 135$

$\Rightarrow x = 135/85 = 1.59 \text{ hrs}$

$\therefore$  Total distance =  $2(40 \times x) = 2 \times 40 \times 1.59 = 127.2 \text{ km}$

$\therefore$  Average speed =  $127.2/3 = 42.4 \text{ km/hr}$

**S154. Ans.(d)**

**Sol.** Let be assume the speed of the faster train is  $2x$  and the slower train is  $x$ .

$\Rightarrow (200 + 200)/(2x + x) = 24$

$\Rightarrow x = 400/72 \text{ m/s} = 20 \text{ kmph}$

$\Rightarrow$  Speed of faster train =  $2x = 2 \times 20 = 40$

$\therefore$  The required result will be 40 kmph.

**S155. Ans.(b)**

**Sol.** Let the two trains meet after  $x$  hrs after 7 a.m.

Distance covered by train from Bundelkhand in  $x$  hours =  $20x \text{ km}$

Distance covered by train from Paryagraj in  $(x - 1)$  hours =  $25(x - 1) \text{ km}$

$\Rightarrow 20x + 25(x - 1) = 110$

$\Rightarrow 45x = 135$

$\Rightarrow x = 3$

$\therefore$  They meet at  $(7 + 3) \text{ a.m.} = 10 \text{ am}$



**S156. Ans.(c)****Sol.** Distance covered by Naushad is  $x$  km

$$\text{Time} = x/50$$

Distances covered by Naushad when speed increases =  $(x + 180)$  km

$$\text{Time} = (x + 180)/80$$

$$\Rightarrow x/50 = (x + 180)/80$$

$$\Rightarrow 80x = 50x + 9000$$

$$\Rightarrow 30x = 9000$$

$$\Rightarrow x = 9000/30$$

$$\Rightarrow x = 300 \text{ km}$$

 $\therefore$  Naushad travelled a distance of 300 km.**S157. Ans.(a)****Sol.** Relative speed = Speed of train from Delhi + Speed of train from Saharanpur  
when both are traveling in the opposite directions of each other.

Speed = distance/time

Let the distance travelled be ' $x$ ', such that distance travelled by slower train is  $x$  and by faster is " $x + 180$ "

Now time taken is same in both the cases, hence:

$$\Rightarrow x/60 = (x + 180)/80$$

$$\Rightarrow 4x = 3(x + 180)$$

$$\Rightarrow 4x = 3x + 540$$

$$\Rightarrow x = 540 \text{ km}$$

$$\therefore \text{Total distance covered} = x + x + 180 = 2x + 180 = 2(540) + 180$$

$$\Rightarrow 1080 + 180 = 1260 \text{ km}$$

 $\therefore$  The total distance between Saharanpur and Delhi is 1260 km.**S158. Ans.(d)****Sol.** 40 seconds =  $[240 + 560]/\text{RS}$ 

$$\Rightarrow 40 \text{ seconds} = [240 + 560]/\text{Speed of train} [\because \text{speed of platform} = 0]$$

$$\Rightarrow \text{Speed of train} = 800/40 = 20 \text{ m/s}$$

Now, time taken by train to cross the pole = Distance/Speed

$$\Rightarrow \text{Time taken by train to cross the pole} = \text{Length of train} / \text{Speed of train}$$

$$= 240/40 = 6 \text{ seconds}$$

**S159. Ans.(d)****Sol.** Average speed = Total distance/ Total time

Time has taken on walking both ways at constant speed = 10 hrs

Time has taken on walking one way at constant speed =  $10/2 \Rightarrow 5$  hrs

He gained 2 hours by riding on both ways

Time taken on riding both ways at constant speed =  $10 - 2 = 8$  hrsTime has taken on riding one way =  $8/2 \Rightarrow 4$  hrsTotal time taken if he goes walking and comes by riding =  $5 \text{ hrs} + 4 \text{ hrs} \Rightarrow 9 \text{ hrs}$ 

Total journey distance = 18 miles

 $\therefore$  Average speed =  $18/(5 + 4) = 18/9 = 2$  miles per hour

**S160. Ans.(b)**

**Sol.** Let the distance travelled with 80 km/h speed be 'x' km  
 Let the distance travelled with 40 km/h speed be '1200 - x' km  
 Time for x km =  $x/80$   
 Time for 1200 - x km =  $(1200 - x)/40$   
 Total time =  $(x/80) + (1200 - x)/40$   
 $\Rightarrow (x/80) + (1200 - x)/40 = 16$   
 $\Rightarrow x = 1120$  km  
 Distance travelled by car = 1200 - x  
 $\Rightarrow 1200 - 1120$   
 $\Rightarrow 80$  km.

**S161. Ans.(d)**

**Sol.** Kavita : Savita  
 4 : 5

Difference of time = 10 years

5 : 6  
 $x = 5 - 4 = 6 - 5 = 1$

Present age of Kavita =  $10/1 * 4 = 40$  years

**S162. Ans.(b)**

**Sol.** Suppose the average age of M, N and O is x. Then

O's age = 2x

M's age =  $\frac{x}{2} = 0.5x$

N's age = 5 years

Now, A.T.Q

or,  $\frac{M+N+O}{3} = X$

or,  $\frac{0.5x+5+2x}{3} = x$

or,  $2.5x + 5 = 3x$

or,  $0.5x = 5$

Therefore,

$x = 10$

Hence, the average age of M, N and O is 10 years.

**S163. Ans.(a)**

**Sol.** Age of Gautam after 10 yrs. = 40 yrs.

Age of Gautam presently = 30 yrs.

Age of Gautam 10 yrs. Ago = 20 yrs.

Age of Abhishek 10 yrs. Ago = 10 yrs.

Present Age of Abhishek = 20 yrs.

**S164. Ans.(c)**

**Sol.** Sum of age after 10 yrs. = 76 years

Sum of present age =  $76 - (10 + 10) = 56$  years

Shivam : Vinay

$$3 : 1 = 4 \text{ units} \Rightarrow 56$$

So,

$$1 \text{ unit} = 14$$

$$\text{Shivam} = 3 * 14 = 42$$

$$\text{Vinay} = 1 * 14 = 14$$

**S165. Ans.(c)**

**Sol.** Sum of their present ages = 45 years.

Sum of their ages 5 years ago = 35 years.

$$\text{Kishore} * \text{Raj Kishore} = 4 * \text{Harsh}$$

$$\text{Raj Kishore} = 4 \text{ years.}$$

$$\text{Kishore} = 35 - 4 = 31 \text{ years.}$$

Therefore,

$$\begin{aligned} \text{Present age} &= (31 + 5) \text{ \& } (4 + 5) \\ &= 36 \text{ yr. \& } 9 \text{ yr.} \end{aligned}$$

**S166. Ans.(c)**

**Sol.** A.T.Q

$$\text{Present age of Meenakshi} = (y + 3) \text{ years}$$

$$\begin{aligned} \text{Present age of Palak} &= (y + 3) - 8 \text{ years} \\ &= (y - 5) \text{ years} \end{aligned}$$

**S167. Ans.(b)**

**Sol.** Manik present age = 5 years

$$\text{So, Vicky's present age} = (5 - 2) = 3 \text{ years}$$

$$\text{According to question, } \frac{R-6}{18} = 3$$

$$R = 18 * 3 + 6 = 54 + 6 = 60 \text{ yrs.}$$

$$\text{Rishabh's present age} = 60 \text{ yrs.}$$

**S168. Ans.(c)**

**Sol.** Ratio of Sunita's and Manita's age = 3 : 5

Ratio of Manita's and Saloni's age = 2 : 3

Therefore,

Sunita's Age : Manita's Age: Saloni's Age

$$3 : 5$$

$$2 : 3$$

$$= 6 : 10 : 15 \text{ (Upper ratio multiplied by 2 and lower ratio multiplied by 5 to make Manita's age equal)}$$

To find the actual age of Sunita, we require actual age of either Manita or Saloni.

Therefore,

Can't be determined.

**S169. Ans.(c)**

**Sol.** Let the present age of Rakshit be 'x' years.

9 years ago, the age of Rakshit = (x - 9) years

According to question

$$x = 1\frac{1}{3} * (x - 9)$$

$$3x = 4 (x - 9)$$

$$4x - 3x = 36$$

$$x = 36$$

So, Present age of Rakshit = 36 years

Therefore, Present age of his daughter =  $\frac{1}{6}$  of present age of Rakshit

$$= \frac{1}{6} * 36 = 6 \text{ years}$$

Her daughter age two years ago = (6 - 2) = 4 years.

**S170. Ans.(c)**

**Sol.** Let the age of son = x yrs.

Then, present age of father = (5x + 1) yrs.

A.T.Q,

$$\Rightarrow 4(x + 3) - 2 = (5x + 1) + 3$$

$$\Rightarrow 12 - 2 - 4 = 5x - 4x$$

$$\Rightarrow x = 6 \text{ yrs.}$$

Therefore,

$$\text{Present age of father} = 5x + 1 = 5 * 6 + 1 = 31 \text{ yrs.}$$

**S171. Ans.(b)**

**Sol.** A.T.Q

$$m/21 = 3/(m + 2) = 26/(71 + m)$$

Taking,

$$3/(m + 2) = 26/(71 + m)$$

$$\Rightarrow 3(71 + m) = 26(3 + 2)$$

$$\Rightarrow 213 + 3m = 26m + 52$$

$$\Rightarrow 26m - 3m = 213 - 52$$

$$\Rightarrow 23m = 161$$

Therefore,

$$m = 7$$

**S172. Ans.(c)**

$$\text{Sol. } 2C + 3H = 8000 \text{ ..... (1)}$$

$$3C + 2H = 7000 \text{ ..... (2)}$$

on solving equation 1 and equation 2, we get

$$C = 1000 \text{ and } H = 2000$$

Therefore, the cost of one cow is Rs. 1000

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**S173. Ans.(b)**

**Sol.** If a quadratic equation ( $ax^2 + bx + c = 0$ ) has equal root, then discriminant should be zero i.e.,  $b^2 - 4ac = 0$

$$x^2 + 18x + a = 0$$

$$\text{Therefore, } b^2 - 4ac = 0$$

$$\Rightarrow (18)^2 - 4(1)(a) = 0$$

$$\Rightarrow 4a = 324$$

$$\Rightarrow a = 81$$

**S174. Ans.(a)**

**Sol.** A.T.Q

$$a + b = 6 \dots\dots (1)$$

$$4a + 7b = 36 \dots\dots\dots (2)$$

Multiply by 4 in equation 1

$$4a + 4b = 24 \dots\dots\dots (3)$$

Subtract equation (2) from equation (3)

$$4a + 7b - 4a - 4b = 36 - 24$$

$$3b = 12$$

$$b = 4$$

Putting  $b = 4$  in equation 1

$$a = 6 - 4$$

$$a = 2$$

**S175. Ans.(d)**

**Sol.** In equations  $3a - 4b = 5$  and  $12a - 16b = 20$

$$3/12 = -4/-16 = 5/20$$

$$\Rightarrow \frac{1}{4} = \frac{1}{4} = \frac{1}{4}$$

So the system is consistent and has infinitely many solutions

Therefore,

They have more than two common solutions.

**S176. Ans.(d)**

**Sol.** If a polynomial equation, is exactly divisible by another equation, then they have the same roots.

$$m^2 + 5m - 6k = 0 \text{ at } m = 3$$

$$\Rightarrow 3^2 + 5 \times 3 - 6k = 0$$

$$\Rightarrow 24 = 6k$$

$$\Rightarrow k = 4$$

$\therefore$  The value of  $k$  is 4.

**S177. Ans.(a)**

**Sol.** Given  $n^2 = n + 7$

Multiplying LHS and RHS by  $y$

$$\Rightarrow n^3 = n^2 + 7n$$

$$\therefore n^3 = n + 7 + 7n = 8n + 7 [\because n^2 = n + 7]$$

**S178. Ans.(d)**

**Sol.**  $a + b + c = 12$

Squaring both sides we get,

$$(a + b + c)^2 = 12^2$$

$$\Rightarrow a^2 + b^2 + c^2 + 2(ab + bc + ca) = 144 \quad \dots(i)$$

$$\Rightarrow a^2 + b^2 + c^2 = 144 - 2(ab + bc + ca)$$

Here  $a^2 + b^2 + c^2$  will be minimum only when  $(ab + bc + ca)$  will be maximum.And for  $ab + bc + ca$  to be maximum,  $a, b, c$  must be equal.

$$\Rightarrow a = b = c = 12/3 = 4$$

$$\Rightarrow ab + bc + ca = 4 \times 4 + 4 \times 4 + 4 \times 4 = 48$$

Putting this value in eqn (i) we get,

$$a^2 + b^2 + c^2 + 2 \times 48 = 144$$

$$\Rightarrow a^2 + b^2 + c^2 = 144 - 96 = 48$$

$$\therefore a^2 + b^2 + c^2 = 48$$

**S179. Ans.(a)****Sol.** Let the price of a pencil be  $p$  and the price of the textbook be  $M$ .For Rakshit, the total cost =  $M + 2p = 65$ For Shashank, the total cost =  $M + 10p = 69$ 

We subtract the second equation from the first, and see that

$$8p = 4$$

$$\Rightarrow p = 0.5$$

**S180. Ans.(c)**

**Sol.**  $2x(3x + 4) - 5(x^2 + 2) + 7x$

$$\Rightarrow 6x^2 + 8x - 5x^2 - 10 + 7x$$

$$\Rightarrow x^2 + 15x - 10$$

$$\therefore 2x(3x + 4) - 5(x^2 + 2) + 7x = x^2 + 15x - 10.$$

**S181. Ans.(d)**

**Sol.** Total distance =  $4 \times 210 + 6 \times 270$  (distance = speed  $\times$  time)

$$\Rightarrow 840 + 1620 = 2460 \text{ km}$$

Average speed =  $2460/10$  (distance = 2460 and time =  $4 + 6 = 10$  hours)

$$\Rightarrow 246 \text{ km/h}$$

Now,

Average of speeds =  $(210 + 270)/2$  (He travelled with speed of 210 km/h and 270 km/h)

$$\Rightarrow 480/2 = 240$$

Now required ratio =  $240/246 = 40/41$

**S182. Ans.(b)****Sol.** The distance climb in first minute is 30 m

The distance slip in second minute is 24 m

The distance covered in 2 min =  $30 - 24 = 6$  mThe time to cover 30 m =  $30/3 \times 2 = 20$  minutesThe remaining distance =  $60 - 30 = 30$  m

The remaining 30 m covered in 21st minutes

 $\therefore$  The time required to reach on the top of the pole is 21 minutes.

**S183. Ans.(b)****Sol.** Let that certain number of men be 'y'

$$\Rightarrow y * 100 = (y-8) * 140$$

$$\Rightarrow 100y = 140y - 1120$$

$$\Rightarrow 40y = 1120$$

$$\Rightarrow y = 28$$

Therefore,

Number of men initially = 28

**S184. Ans.(d)**

$$\text{Sol. } 7 * 0.7 * 0.07 * 0.007 * 70 = 7 * (7/10) * (7/100) * (7/1000) * 70$$

$$\Rightarrow 168070/1000000 = 0.16807$$

**S185. Ans.(c)****Sol.** Let the present age of Avnish be x years

Present age of Yash = x + 16 years

Present age of Gaurav = x + 10 years

The ratio of the age of Avnish 6 years hence and age of Gaurav 14 years ago is 4:3

Age of Avnish 6 years hence = x + 6

Age of Gaurav 14 years ago = x + 10 - 14 = x - 4 years

A.T.Q

$$(x + 6)/(x-4) = 4/3$$

$$\Rightarrow x = 34 \text{ years}$$

Present age of Yash = x + 16 = 34 + 16 = 50 years.

therefore,

The correct answer is 50 years.

**S186. Ans.(b)****Sol.** Let the ratio of L:B = 5x:2x

Perimeter of rectangle = 2(5x+ 2x)

$$\Rightarrow 14x = 420$$

$$x = 30$$

Hence, length = 5x = 5 \* 30 = 150 cm and breadth = 2x = 2 \* 30 = 60 cm

Area of rectangle = L \* B = 150 \* 60 = 9000 cm<sup>2</sup>**S187. Ans.(a)****Sol.** Given:

Ratio of profit of Piyush and Kamal = 21: 22

Ratio of investment of Piyush and Kamal = 7 : 11

Formula used:

Ratio of profit = Ratio of investment × Ratio of time period of investment

Calculation:

Let x be the time for which Piyush invested.

Now, ratio of profit = ratio of investment × ratio of time period of investment

$$\Rightarrow 21 : 22 = 7 \times x : (11 \times 6)$$

$$\Rightarrow 21 : 22 = 7x : 66$$

$$\Rightarrow x = 9 \text{ years}$$

**S188. Ans.(d)****Sol.** L.P. of article = Rs. 800After successive discount,  $= 800 \times \frac{75}{100} \times \frac{85}{100} = \text{Rs. } 510$ 

Let new list price = Rs. X

According to question

 $120\% \text{ of } 510 = 90\% \text{ of } x$  $120 \times 510 = 90 \times x$  $x = \text{Rs. } 680$ **S189. Ans.(c)****Sol.** Average speed of the entire journey

Total distance = 3584 kms

Total time =  $24 + 24 + 8 = 56$  hrsAverage speed of the entire journey  $= 3584/56 = 64\text{km/hr}$ Average speed of the remaining journey  $= 536/8 = 67\text{km/hr}$ Difference in average speed of the remaining journey and average speed of the entire journey  $= 67 - 64 = 3\text{km/hr}$ 

Therefore,

The required difference =  $3\text{km/hr}$ **S190. Ans.(a)****Sol.** Number of boys going to the picnic  $= 0.8 * 5x = 4x$ 

According to question,

 $188 = 60 + 4x$  $4x = 128$  $x = 32$ 

Therefore,

Total number of girls in the college  $= 3x = 3 * 32 = 96$ **S191. Ans.(a)****Sol.** M is the mid-point of YZ

In triangle XPM:

 $XP^2 = XM^2 + PM^2$  $XP^2 = (XY^2 - YM^2) + PM^2 \dots\dots\dots(i)$ 

Therefore,

 $ZP = 3YP$  $YZ = 4YP$  $YZ^2 = 16YP^2$  $XY^2 = YZ^2 = 16YP^2$ 

So,

 $YM = \frac{1}{2}YZ = \frac{1}{2} * 4YP = 2YP$  $YX^2 = 4YP^2$  $YP^2 = YM^2/4$  $YP = YM/2$  $PM = YM - YP = YM - YM/2$  $PM = YM/2$  $PM^2 = YM^2/4$



From equation (i),  
 $XP^2 = 4YM^2 - YM^2 + YM^2/4$   
 $XP^2 = 3YM^2 + YM^2/4$   
 Therefore,  
 $4XP^2 = 13YM^2$

**S192. Ans.(c)**

**Sol.** In  $\Delta MNO$ ,  $MN = MO$ ,  $\angle M = x + 15^\circ$ ,  $\angle O = 2x + 25^\circ$   
 It is an isosceles triangle,  $\therefore \angle O = \angle N = 2x + 25^\circ$   
 Sum of interior angles of  $\Delta = 180^\circ$   
 $\Rightarrow x + 15^\circ + 2x + 25^\circ + 2x + 25^\circ = 180^\circ$   
 $\Rightarrow 5x + 65^\circ = 180^\circ$   
 $\Rightarrow 5x = 115^\circ$   
 $\Rightarrow x = 23^\circ$   
 $\angle O = 2x + 25^\circ = 2 \times 23 + 25 = 71^\circ$

**S193. Ans.(a)**

**Sol.** Since, angles are in AP,

Case 1:

Suppose,  $\angle X : \angle Y : \angle Z = 5:6:7$

$$5x + 6x + 7x = 180^\circ$$

$x = 10$  (Valid case)

Case 2:

Suppose,  $\angle Y : \angle Z : \angle X = 6:7:8$

$$6x + 7x + 8x = 180^\circ$$

$x = 60/7$  (Invalid case)

Case 3:

Let  $\angle Y : \angle X : \angle Z = 6: 6.5: 7$

$$6x + 6.5x + 7x = 180^\circ$$

$x = 120/13$  (Invalid case)

Hence,

$$\angle X = 5x = 50^\circ, \angle Y = 6x = 60^\circ \text{ and } \angle Z = 7x = 70^\circ$$

$$\angle XIY = 90^\circ + 35^\circ = 125^\circ$$

$$\angle YMZ = 90^\circ - 25^\circ = 65^\circ$$

Therefore,

$$\text{Required difference} = 125^\circ - 65^\circ = 60^\circ$$

**S194. Ans.(c)**

**Sol.** First circle subtend angle =  $120^\circ$

2nd circle subtend angle =  $150^\circ$

For the first circle:

$$\Rightarrow \text{angle1} = 120 = 120 \times \pi/180 = 2\pi/3 \text{ radians}$$

For the second circle:

$$\Rightarrow \text{angle2} = 150 = 150 \times \pi/180 = 5\pi/6 \text{ radians}$$

We have the formula

$$\text{Angle} = \frac{\text{arc}}{\text{radius}}$$

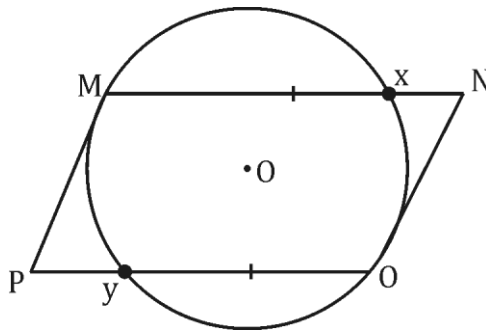
$$\text{Hence, } \frac{\text{angle1}}{\text{angle2}} = \frac{\text{radius2}}{\text{radius1}}$$

$$\frac{\text{radius2}}{\text{radius1}} = \frac{2\pi}{3} : \frac{5\pi}{6}$$

$$\text{radius 1 : radius 2} = 5 : 4$$

**S195. Ans.(b)**

**Sol.**



$$NX \cdot MN = NO^2$$

$$2 \cdot 6 = NO^2$$

$$NO = \sqrt{12} = 2\sqrt{3}$$

$$NO = MP$$

$$MP^2 = PO \cdot PY$$

$$(2\sqrt{3})^2 = (PY + YO) \cdot PO$$

$$12 = (4 + x)x$$

$$x^2 + 4x - 12 = 0$$

$$(x + 6)(x - 2) = 0$$

$$x = 2, x = -6$$

Therefore,

$$x = 2$$

**S196. Ans.(c)**

**Sol.** According to the given information:

$$\angle Q - \angle R = 30^\circ$$

$$\therefore \angle Q = \angle R + 30^\circ$$

$$\angle X - \angle Q = 18^\circ$$

$$\therefore \angle P = 18^\circ + \angle Q = 18^\circ + \angle R + 30^\circ = \angle R + 48^\circ$$

$$\text{Now, } \angle P + \angle Q + \angle R = 180^\circ$$

$$\Rightarrow \angle R + 48^\circ + \angle R + 30^\circ + \angle R = 180^\circ$$

$$\Rightarrow 78^\circ + 3\angle R = 180^\circ$$

$$\Rightarrow 3\angle R = 180^\circ - 78^\circ$$

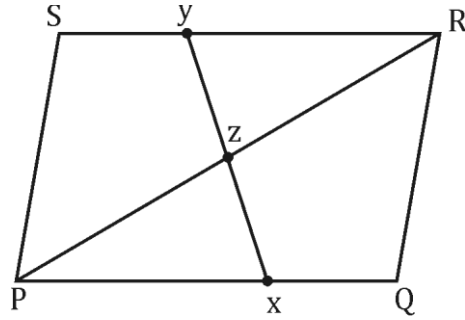
$$\Rightarrow \angle R = 102^\circ / 3$$

$$\Rightarrow \angle R = 34^\circ$$

$$\Rightarrow \angle P = \angle R + 48^\circ = (34 + 48)^\circ = 82^\circ$$

$$\Rightarrow \angle Q = \angle R + 30^\circ = (34 + 30)^\circ = 64^\circ$$

Hence, then  $\angle P$ ,  $\angle Q$  and  $\angle R$  are  $82^\circ$ ,  $64^\circ$ ,  $34^\circ$

**S197. Ans.(b)****Sol.**

PQ is parallel to RS

In triangle PZX and triangle YZR

 $\angle ZPX = \angle ZRY$  (alternate interior angles) $\angle ZXP = \angle ZYR$ 

Triangle PZY is similar to triangle ZRY

$$\Rightarrow \frac{ZR}{PZ} = \frac{YR}{PX} = \frac{4}{3}$$

Adding 1 both the sides

$$\frac{ZR}{PZ} + 1 = \frac{4}{3} + 1$$

$$\frac{ZR+PZ}{PZ} = \frac{7}{3}$$

$$PZ = \frac{3}{7}PR$$

**S198. Ans.(d)****Sol.** Consider the following rectangle:

In a rectangle, all angles are 90 degrees.

Opposite sides are equal  $\Rightarrow$  Consecutive sides are not congruent $\Rightarrow$  Diagonals do not bisect opposite angles as all the sides are not equal.

But diagonals form two congruent triangles with equal sides.

**S199. Ans.(a)****Sol.** In a  $\Delta PQR$ , QR is extended up to S;  $\angle PRS = 150^\circ$ ,  $\angle Q = \frac{1}{4} \angle P$ .

We know that the summation of two interior angle is equal to the opposite side exterior angle.

So,  $\angle Q + \angle P = \angle PRS$ 

$$\Rightarrow \frac{1}{4} \angle P + \angle P = 150^\circ$$

$$\Rightarrow \angle P = 150^\circ \times (4/5)$$

$$\Rightarrow \angle P = 120^\circ$$

$$\text{Hence, } \angle Q = \frac{1}{4} \angle A = (1/4) \times 120^\circ = 30^\circ$$

**S200. Ans.(d)****Sol.** O is the circumcentre of  $\Delta XYZ$ .

The circumcentre is the point which is equidistant from all the three vertices of a triangle.

So,  $XO = YO = ZO$ Here,  $XO = 8$  cmHence,  $YO = 8$  cm.

**S201. Ans.(c)**

**Sol.**  $\frac{XM}{MY} = \frac{1}{4}$

In triangle XYZ

MQ is parallel to XZ

Then,

$$\frac{ZQ}{QY} = \frac{XM}{MY} = \frac{4}{3} = \frac{4 \times 7}{3 \times 7} = \frac{28}{21}$$

In triangle YZM

QN is parallel to ZM

$$\frac{MN}{MY} = \frac{ZN}{QY} = \frac{4}{3}$$

Let MY = 21 and XM = 28

Therefore,

$$MN : NY = 4 : 3$$

$$\text{Hence, } MN = \frac{21}{7} \times 4 = 12$$

$$\text{Hence, } XM : MN = 28 : 12 = 7 : 3$$

**S202. Ans.(b)**

**Sol.** Let the sides of the square be 'x' unit

$$\Rightarrow \text{Area of square with side 'x' unit} = x^2$$

$$\Rightarrow \text{Area of square with side 'x}\sqrt{2}\text{' unit} = 2x^2$$

Therefore,

$$\text{Required ratio of area} = x^2 / 2x^2 = \frac{1}{2}$$

**S203. Ans.(b)**

**Sol.** In triangle XYM

$$2a = 90^\circ \Rightarrow a = 45^\circ$$

In triangle XMO

$$XM = XO \text{ and } MP = PO$$

P is mid-point

$$\Rightarrow XP \text{ is perpendicular to } MO$$

$$y = 90^\circ$$

In triangle XMZ,

$$\sin Z = \frac{XM}{XZ} = \frac{x}{2x} = \frac{1}{2}$$

$$Z = 30^\circ$$

$$x + y + z = 45^\circ + 90^\circ + 30^\circ = 165^\circ$$

**S204. Ans.(c)**

**Sol.** Let one angle be x

$$\text{Its adjacent angle (m)} = x + 24^\circ$$

A.T.Q, we have

Sum of its angles is  $180^\circ$

$$\Rightarrow x + x + 24^\circ = 180^\circ$$

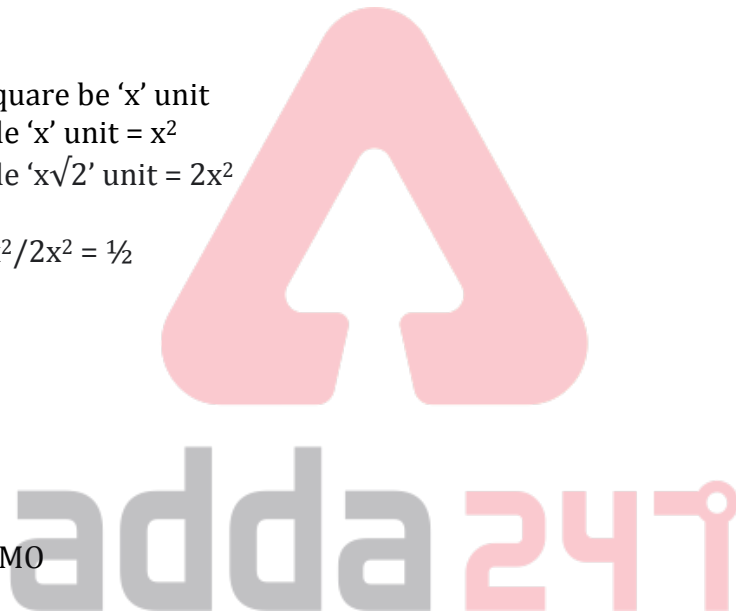
$$\Rightarrow x = 78^\circ$$

So, the value of m is

$$a = x + 24^\circ$$

$$a = 78^\circ + 24^\circ$$

$$a = 102^\circ$$



**S205. Ans.(b)**

**Sol.**  $\angle QRN = 180^\circ - 150^\circ$

$\Rightarrow \angle QRN = 30^\circ$

$RQ = RN = \text{radius}$

$\Rightarrow \angle RQN + \angle RNQ + \angle QRB = 180^\circ$

$\angle RQN = \frac{180^\circ - 30^\circ}{2} = \frac{150^\circ}{2} = 75^\circ$

$\angle RNQ = 75^\circ$

Therefore,

$\angle ONQ = 180 - 75 = 105^\circ$

**S206. Ans.(c)**

**Sol.** We know,

The sum of all the angles around a point is  $360^\circ$

According to this, we have

$\angle MKO + \angle OKN + \angle NKP + \angle PKM = 360^\circ$

$\Rightarrow 260^\circ + \angle PKM = 360^\circ$

$\Rightarrow \angle PKM = 100^\circ$

**S207. Ans.(d)**

**Sol.** We know,

Diagonal of a rectangle are equal and bisect each other.

In rectangle MNOP,

$LM = LN$  (Diagonals are equal and bisect each other)

$\Rightarrow \angle LMN = \angle LNM$  (Angle opposite to equal sides are equal)

$\Rightarrow \angle LMN = \angle LNM = 60^\circ$

By using the angle sum property,

$\angle LMN + \angle LNM + \angle MLN = 180^\circ$

$\Rightarrow 60^\circ + 60^\circ + \angle MLN = 180^\circ$

Therefore,

$\angle MLN = 60^\circ$

**S208. Ans.(d)**

**Sol.** Sum of interior angle of a polygon =  $(n-2) * 180^\circ$

Where, n is the number of sides.

So,

$6840 = (n-2) * 180^\circ$

$\Rightarrow n - 2 = 38$

$\Rightarrow n = 40$

Hence,

Number of sides = 40

**S209. Ans.(d)**

**Sol.** Considering the sides with length 30 and 27 as  $b_1$  and  $b_2$  respectively, and the distance between these sides as  $h_1$  and  $h_2$ ,

We get,  $h_2 = 12$

$$\Rightarrow b_1 * h_1 = b_2 * h_2$$

$$\Rightarrow 30 * h_1 = 27 * 12$$

$$\Rightarrow h_1 = 10.8 \text{ cm}$$

Therefore,

The distance between the longer sides of the parallelogram is 10.8 cm.

**S210. Ans.(c)**

**Sol.**  $\angle CAB = 70^\circ$

As it is rhombus all sides are equal so  $AB = BC$

In triangle ABC

$$\angle CAB = \angle ACB = 70^\circ$$

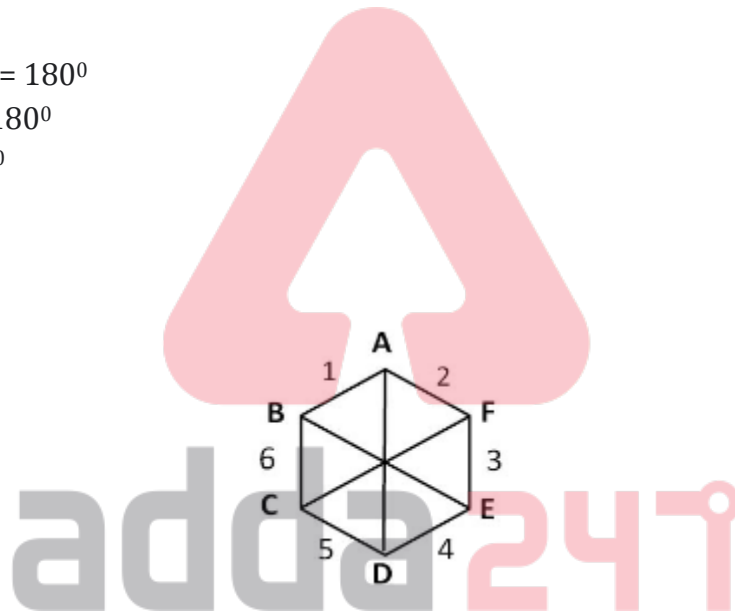
Sum of angles in triangle =  $180^\circ$

$$\angle CAB + \angle ACB + \angle ABC = 180^\circ$$

$$\angle ABC = 180^\circ - 140^\circ = 40^\circ$$

**S211. Ans.(b)**

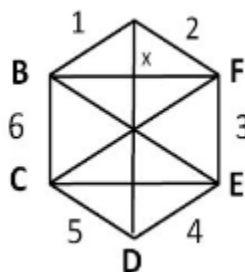
**Sol.**



A regular hexagon comprises six equilateral triangles - each of side 2 m, the measure of the side of the regular hexagon - as shown above. The 6 triangles are numbered 1 to 6 in the figure shown above.

BX is the altitude of triangle 1 and XF is the altitude of triangle 2.

Both triangle 1 and triangle 2 are equilateral triangles.



$$\text{Hence, } BX = XF = \frac{\sqrt{3}}{2} \times 2 = \sqrt{3}$$

Therefore, BF, the length of the rectangle =  $2\sqrt{3}$  m

Hence, the area of the rectangle BCEF = length \* width =  $2\sqrt{3} \times 2 = 4\sqrt{3}$  sq.m

**S212. Ans.(d)**

**Sol.** The circumference of the front wheel is 60 ft and that of the rear wheel is 72 feet.

Let the rear wheel make  $n$  revolutions. At this time, the front wheel should have made  $n+5$  revolutions.

As both the wheels would have covered the same distance,  $n \cdot 72 = (n+5) \cdot 60$

$$72n = 60n + 300$$

$$12n = 300$$

$$n = 25.$$

$$\text{Distance covered} = 25 \cdot 72 = 1800 \text{ ft.}$$

**S213. Ans.(c)**

**Sol.** ATQ -

$$\text{Area of park} = (240 + 160 - 48) \times 48 = 16896 \text{ m}^2$$

**S214. Ans.(a)**

**Sol.** Each side of a square =  $a$

Length and breadth =  $l$  &  $b$

$$4a = 2(l + b)$$

$$a = \frac{(l + b)}{2}$$

Area of rectangle =  $l \times b$

$$\text{Area of square} = a^2 = \frac{1}{4}(l + b)^2$$

But since we know that -

$$AM > GM$$

$$\frac{l + b}{2} > \sqrt{lb}$$

$$\left(\frac{l + b}{2}\right)^2 > lb$$

Area of square > Area of rectangle

**S215. Ans.(c)**

**Sol.**  $NX$  and  $OY$  are two altitudes of a triangle  $ABC$ .

$$MN = 16 \text{ cm, } MO = 12 \text{ cm and } OX = 6 \text{ cm}$$

$$\text{The area of } \triangle MON = \frac{1}{2} \times \text{base} \times \text{height} = \frac{1}{2} \times MN \times OX = \frac{1}{2} \times 16 \times 6 = 48$$

$$\text{So, area of } \triangle MON = 48 \text{ cm}^2$$

$$\text{The area of } \triangle MNO = \frac{1}{2} \times MO \times NX = \frac{1}{2} \times 12 \times NX$$

$$\text{The area of } \triangle MON = \text{the area of } \triangle MNO$$

$$\text{So, } \frac{1}{2} \times 12 \times NX = 48$$

$$\Rightarrow NX = 48 \times (2/12) = 8$$

$$\therefore \text{The length of } NX = 8 \text{ cm}$$

**S216. Ans.(d)**

**Sol.** Let the radius of the circle be ' $r$ ' units.

The circumference of the circle will therefore be  $2\pi r$  units.

If the radius is increased by ' $y$ ' units, the new radius will be  $(r + y)$  units.

$$\text{The new circumference will be } 2\pi(r + y) = 2\pi r + 2\pi y$$

Or the circumference increases by  $2\pi y$  units.

**S217. Ans.(b)**

**Sol.** A circular road is constructed outside a square field. So, the road is in the shape of a circular ring. If we have to determine the lowest cost of constructing the road, we have to select the smallest circle that can be constructed outside the square.

Therefore, the inner circle of the ring should circumscribe the square.

Perimeter of the square = 200 ft.

Therefore, side of the square field = 50 ft

The diagonal of the square field is the diameter of the circle that circumscribes it.

Measure of the diagonal of the square of side 50 ft =  $50\sqrt{2}$  ft.

Therefore, inner diameter of the circular road =  $50\sqrt{2}$ .

Hence, inner radius of the circular road =  $25\sqrt{2}$  ft.

Then, outer radius =  $25\sqrt{2} + 7\sqrt{2} = 32\sqrt{2}$

The area of the circular road

=  $\pi r_o^2 - \pi r_i^2$ , where  $r_o$  is the outer radius and  $r_i$  is the inner radius.

$$= \frac{22}{7} \times \{(32\sqrt{2})^2 - (25\sqrt{2})^2\}$$

$$= \frac{22}{7} \times 2 \times (32 + 25) \times (32 - 25)$$

$$= 2508 \text{ sq. ft.}$$

If per sq. ft. cost is Rs. 100, then cost of constructing the road =  $2508 \times 100 = \text{Rs. } 2,50,800$ .

Cost of constructing 50% of the road = 50% of the total cost =  $\frac{250800}{2} = \text{Rs. } 1,25,400$

**S218. Ans.(c)**

**Sol.** The breadth of the rectangular field =  $\frac{104000}{650}$

$$\therefore [6.5 \text{ cm} = 650 \text{ m}] = 160 \text{ m}$$

**S219. Ans.(a)**

**Sol.** Ungrazed area = area of square - 4(area of quadrants)

$$= (84)^2 - 4 \times \frac{1}{4} \times \pi (42)^2 = 1512 \text{ m}^2$$

**S220. Ans.(a)**

**Sol.** ATQ,

$$\pi R^2 = \pi [r_1^2 + r_2^2 + r_3^2]$$

$$R^2 = [256 + 324 + 576]$$

$$R = 34 \text{ m}$$

**S221. Ans.(c)**

**Sol.** The Ratio, Summit: Pranay: Mayank = 11:13:17

Let the amount be 11x, 13x, and 17x respectively

Sum of shares of Summit and Pranay = Rs. 288000

$$\Rightarrow 11x + 13x = 288000$$

$$\Rightarrow x = \text{Rs. } 12000$$



The property divided among the three sons =  $11x + 13x + 17x = 41x$

$$\Rightarrow 41x = 41 * 12000 = \text{Rs. } 492000$$

The person divides only 41% of his property among his 3 sons

$$\Rightarrow 41\% \text{ of the total property} = \text{Rs. } 492000$$

Therefore,

$$\text{Total Property} = \text{Rs. } (492000 * 100)/41 = \text{Rs. } 1200000$$

The remaining property of the person will be total property - 41% of the total property = 59% of the total property

$$\Rightarrow (59/100) * 1200000 = \text{Rs. } 708000$$

therefore,

$$\text{The remaining property of the person} = \text{Rs. } 708000$$

### S222. Ans.(b)

**Sol.** The ratio of the money with two persons Kartik and Himanshu = 3:4

The ratio of expenditure per day =  $(3/5) : (4/6)$

Let the number of days be x

$$\Rightarrow (3 - (3x/5)) / (4 - (4x/6)) = 9/20$$

$$\Rightarrow (3 - (3x/5)) * 20 = (4 - (4x/6)) * 9$$

$$\Rightarrow 60 - 12x = 36 - 6x$$

$$\Rightarrow 60 - 36 = (12 - 6)x$$

$$\Rightarrow 24 = 6x$$

Therefore,

$$x = 4$$

After 4 days their money be in the ratio of 9:20

### S223. Ans.(d)

**Sol.** Dimensions of a hall =  $(600 * 320 * 480)$  cm

Each person requires 800 cube cm of air

Number of persons that can sit in the hall = Volume of hall / Air required per person =  $(600 * 320 * 480) / 800 = 115,200$  persons.

### S224. Ans.(d)

$$\text{Sol. } 864000 = P * [1 + 20/100]^3$$

$$\Rightarrow 864000 = P * 6/5 * 6/5 * 6/5$$

$$\Rightarrow P = (864000 * 125) / 216$$

$$\Rightarrow P = 500000$$

### S225. Ans.(b)

**Sol.** let the total work be LCM of 3, 4 and 5 = 60 unit work

Work done by Raju on first day =  $60/3 = 20$  unit

Work done by Shalu on second day =  $60/4 = 15$  unit

Work done by Kapil on third day =  $60/5 = 12$  unit

Each took one day to work and the portion of work they completed in 3 days =  $(20 + 15 + 12)$  unit work = 47 unit

work left =  $60 - 47$  unit = 13 unit work

therefore,

13 unit left work will be completed by Raju on the 4<sup>th</sup> day.

**S226. Ans.(d)**

**Sol.** Since the month has 30 days and it starts with Saturday hence there will be 5 Sundays in the month and rest 25 will be normal days.

So, total number of visitors who comes on Sunday =  $500 \times 5 = 2500$

And total number of visitors on weekdays =  $200 \times 25 = 5000$

Hence total number of visitors in that month =  $5000 + 2500 = 7500$

As we know that,

$$\text{Average of given entities} = \frac{\text{Sum of the given entities}}{\text{Number of given entities}}$$

So the required average =  $7500/30 = 250$

**S227. Ans.(b)**

**Sol.** 40% → Hotel Expenses

20% → Books and Stationery

(50% of remaining 40%) = 20% → Transport

Remaining → 20%

50% of 20% = 10% → Rs. 1200

10% of x = Rs. 1200

x = Rs. 12000

**S228. Ans.(a)**

**Sol.**  $\frac{\text{Aman}}{\text{Amit}} = \frac{7}{2}$  ..... (1)

$$\frac{\text{Aman}-2}{\text{Amit}} = \frac{7}{6}$$

$$6\text{Aman} - 12 = 7\text{Amit} \text{ ..... (2)}$$

Substitute from (1)

$$6\text{Aman} - 12 = 7 * \frac{2\text{Aman}}{7}$$

$$\Rightarrow (6-2)\text{Aman} = 12$$

$$\Rightarrow 4\text{Aman} = 12$$

$$\Rightarrow \text{Aman} = 3$$

**S229. Ans.(d)**

**Sol.** I.  $m^2 - 16m = 0$

$$\Rightarrow m(m - 16) = 0$$

$$\text{Then, } m = 0 \text{ or } m = 16$$

II.  $n^2 + 27n = 0$

$$\Rightarrow n(n + 27) = 0$$

$$\text{Then, } n = 0 \text{ or } n = -27$$

So, when  $m = 0$ ,  $m = n$  for  $n = 0$  and  $m > n$  for  $n = -27$

And when  $m = 16$ ,  $m > n$  for  $n = 0$  and  $m > n$  for  $n = -27$

∴ So, we can observe that  $m \geq n$ .

**S230. Ans.(b)**

**Sol.** Let time taken from IFCO chowk to GTB Nagar be  $x$  hrs.

$\therefore$  Time taken from GTB Nagar to IFCO chowk is  $(3 - x)$  hrs

Distance between GTB Nagar to IFCO chowk = Distance between IFCO chowk to GTB Nagar

$$\Rightarrow 40 \times x = 45 \times (3 - x)$$

$$\Rightarrow 40x + 45x = 135$$

$$\Rightarrow x = 135/85 = 1.59 \text{ hrs}$$

$$\therefore \text{Total distance} = 2(40 \times x) = 2 \times 40 \times 1.59 = 127.2 \text{ km}$$

$$\therefore \text{Average speed} = 127.2/3 = 42.4 \text{ km/hr}$$

**S231. Ans.(c)**

**Sol.** Let  $\frac{m}{\sqrt{512}} = \frac{\sqrt{648}}{m}$

$$\text{Then } m^2 = \sqrt{2 \times 256 \times 324 \times 2}$$

$$= \sqrt{16 \times 16 \times 18 \times 18 \times 4}$$

$$= 16 \times 18 \times 2$$

$$= 288 \times 2$$

$$\text{Therefore, } x = \sqrt{576} = 24$$

**S232. Ans.(b)**

**Sol.** Let  $\sqrt{0.0324 \times x} = 18$

$$\text{Then, } 0.0324x = (1.8)^2 = 3.24$$

$$\Rightarrow x = \frac{3.24}{0.0324} = 100$$

**S233. Ans.(b)**

**Sol.** Let the employees be  $x$

A.T.Q

$$x \times x = 11236$$

$$x^2 = 2809 \times 4$$

$$x = 53 \times 2 = 106$$

**S234. Ans.(c)**

**Sol.**  $50,600 + 23 = 50623$  (3 can't be the last digit of any square number)

$50,600 + 24 = 50624$  (It is not a perfect square)

$50,600 + 25 = 50625$  (It is a perfect square of 225)

$50,600 + 27 = 50627$  (7 can't be the last digit of any square number)

**S235. Ans.(c)**

**Sol.**  $N^2 \Rightarrow \text{digits} \Rightarrow \text{even}$

$$N \Rightarrow \text{digits} \Rightarrow \frac{\text{even}}{2}$$

$$N \Rightarrow \text{digits} \Rightarrow \frac{88}{2} = 44$$

**S236. Ans.(b)**

$$\begin{aligned}
\text{Sol. } \sqrt{4p^2 - 4p + 1} + 3p &= \sqrt{(1)^2 + (2p)^2 - 2 * 1 * 2p} + 3p \\
&= \sqrt{(1 - 2p)^2} + 3p \\
&= 1 - 2p + 3p \\
&= 1 + p \\
&= 1 + 0.2078 \\
&= 1.2078
\end{aligned}$$

**S237. Ans.(b)**

$$\begin{aligned}
\text{Sol. } 8011 \times 8012 &= 8012 * (8012 - 1) \\
&= 8012^2 - 8012 + 8012 \text{ (if 8012 is added it become perfect square)}
\end{aligned}$$

Hence, 8012 is correct answer.

**S238. Ans.(a)**

$$\begin{aligned}
\text{Sol. } &= \sqrt{87559 * 87573 + 49} = ? \\
&= \sqrt{(87566 - 7) * (87566 + 7) + 49} \\
&= \sqrt{(87566)^2 - 7^2 + 49} \\
&= 87566
\end{aligned}$$

**S239. Ans.(c)**

$$\begin{aligned}
\text{Sol. If we add 20 it become } 102^2 &= 10404 \\
20 * 5 &= 100
\end{aligned}$$

**S240. Ans.(c)**

$$\begin{aligned}
\text{Sol. Money collected} &= (237.16 * 100) \text{ paise} = 23716 \text{ paise.} \\
\text{Therefore, Number of members} &= \sqrt{23716} = 154.
\end{aligned}$$

**S241. Ans.(c)**

$$\begin{aligned}
\text{Sol. Harmonic mean of a and b} &= 2ab/(a + b) \\
\text{The sum is S and product is P.} \\
\text{Then, the Harmonic mean of these two observations} &= 2P/S \\
\text{Therefore,} \\
\text{H.M. of two observations is } &2P/S
\end{aligned}$$

**S242. Ans.(c)**

$$\begin{aligned}
\text{Sol. As per the given the data,} \\
9, 5, 8, 9, 9, 7, 8, 9, 8 \\
\text{Arranging the numbers in numerical order} \\
5, 7, 8, 8, 8, 9, 9, 9, 9 \\
\text{Since there is an odd number of numbers, the middle number is the median of the given data} \\
\text{Median} &= 8 \\
\text{The value which appears mostly is considered as mode, as 9 is repeated 4 times.} \\
\text{mode} &= 9 \\
\text{Mean} &= (9 + 5 + 8 + 9 + 9 + 7 + 8 + 9 + 8)/9 = 8 \\
\text{Therefore,} \\
\text{Median, mode and mean} &= (8, 9, 8)
\end{aligned}$$

**S243. Ans.(d)****Sol.** Arithmetic mean of first  $n$  natural number =  $(n + 1)/2$ 

A.T.Q

$$(n + 1)/2 = 200$$

$$n = 200 \times 2 - 1$$

$$n = 399$$

**S244. Ans.(d)****Sol.** Arranging data in ascending order:

1,2,3,4,5,6,7,8,9

$$N = 9$$

$$\text{Median} = (n + 1)/2^{\text{th}} \text{ term}$$

$$= (9+1)/2^{\text{th}} \text{ term}$$

$$= 5^{\text{th}} \text{ term}$$

Hence, Median = 5

**S245. Ans.(c)****Sol.** Arranging the ages of all the cricketers in ascending order,

6,12,13,29,35,45,52,81,87

$$\text{Sum of ages of all the cricketers} = 6 + 12 + 13 + 29 + 35 + 45 + 52 + 81 + 87 = 360$$

$$\text{Mean age} = 360/9 = 40$$

$$\text{Number of persons} = 9$$

$$\text{Median} = (n + 1)/2^{\text{th}} \text{ term}$$

$$(9 + 1)/2^{\text{th}} \text{ term} = 5^{\text{th}} \text{ term} = 35$$

$$\text{the sum of mean and median} = 40 + 35 = 75$$

**S246. Ans.(a)****Sol.** Arranging data in ascending order:

10,15,18,20,21,25,28,30,35,36,40

$$N = 11$$

$$\text{Median} = (n + 1)/2^{\text{th}} \text{ term}$$

$$= (11 + 1)/2^{\text{th}} \text{ term}$$

$$= 6^{\text{th}} \text{ term}$$

Hence, median = 25

**S247. Ans.(b)****Sol.** We know,

The mode is the value of the most frequently appearing number.

A.T.Q,

The most frequently appearing number is 9.

Therefore,

The mode of the data is 9.

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**S248. Ans.(b)**

**Sol.** Median is the most suitable average for qualitative measurement because Median divides a series in two equal parts thus representing the average qualitative measure without being affected by extreme values.

**S249. Ans.(a)**

**Sol.** Arranging the given terms in ascending order, 6,6,8,8,9,9,9,14

Most repeated term in the data = 9 (3 times)

Mode = 9

Number of terms = 8

Median =  $\{[(8/2)\text{th term} + [(8/2) + 1]\text{th term}]/2$   
 $(4^{\text{th}} \text{ term} + 5^{\text{th}} \text{ term})/2$

$(8+9)/2 = 8.5$

Range =  $14-6 = 8$

Mean of mode, median and range =  $(9 + 8.5 + 8)/3 = 8.5$

**S250. Ans.(c)**

**Sol.** It is defined as the sum of the values of all observations divided by the number of observations and therefore, it is affected most by extreme values.

**S251. Ans.(d)**

**Sol.** Here we see

Degree of the given expressions is 2

it means  $m = n = o$

$$m^2 = n + o$$

$$m^2 = 2m$$

$$m = 2$$

Therefore,

$$\frac{1}{1+m} * 3 = \frac{1}{1+2} * 3 = 1$$

**S252. Ans.(b)**

**Sol.** Put  $p = q = r$  as it is a symmetrical expression

$$pq + qr + rp = pqr$$

$$p^2 + p^2 + p^2 = p^3$$

$$3p^2 = p^3$$

$$p = 3$$

$$= \frac{q+r}{qr(p-1)} + \frac{r+p}{rp(q-1)} + \frac{p+q}{qp(r-1)}$$

$$= \frac{2p}{p^2(p-1)} * 3$$

$$= 1$$

**S253. Ans.(b)**

**Sol.** The logic is:

$$13 : 65 : 104 \Rightarrow 13 : (13 * 5) : (13 * 8)$$

Similarly,

$$15 : 75 : 120 \Rightarrow 15 : (15 * 5) : (15 * 8)$$

Hence, '15 : 75 : 120' is the correct answer.

**S254. Ans.(c)**

**Sol.** A regular hexagon has all 6 sides equal. So, it is having rotational symmetry at every  $1/6$  turn.

Therefore,

The correct answer is option c.

**S255. Ans.(c)**

**Sol.** A scalene triangle has no line of symmetry because its all sides are different.

Hence, option c is the correct answer.

**S256. Ans.(d)**

**Sol.** Number of lines of symmetry of a square is 4

Number of lines of symmetry of a rectangle is 2

So,

$$M = 4 \text{ and } N = 2$$

therefore,

$$M > N$$

**S257. Ans.(c)**

**Sol.** A diameter divides the circle into 2 equal parts. So, it can be considered as a line of symmetry.

**S258. Ans.(a)**

**Sol.** Since,  $XY = XZ$  and  $XM$  is perpendicular to  $YZ$  it means angle  $YXM = \text{angle } ZXM$ . So, the triangle is symmetrical about  $XM$  as it bisects the apex angle.

**S259. Ans.(d)**

**Sol.** As we know it the symmetrical expression

$$\text{Put } a = b = c$$

$$\frac{j-bc}{b+c} + \frac{j-ca}{c+a} + \frac{j-ab}{a+b} = (a + b + c)$$

$$\frac{j-a^2}{2a} * 3 = (3a).$$

$$j = 3a^2$$

Now check from the options

option d  $ab + bc + ca = 3a^2 = j$  satisfied the condition.

**S260. Ans.(d)**

**Sol.** Here the logic is,

Second number is 14 more than the first number and the third number is 28 more than the second number.

$$(291, 305, 333) \Rightarrow 305 - 291 = 14 \text{ and } 333 - 305 = 28$$

Similarly,

$$(410, 424, 452) \Rightarrow 424 - 410 = 14 \text{ and } 452 - 424 = 28$$

**S261. Ans.(c)**

**Sol.** The correct ascending order will be

$$5.055 < 50.005 < 50.050 < 050.50 < 500.05$$

**S262. Ans.(b)**

$$\text{Sol.} \Rightarrow (2.637 + 2.363)^2 / [(2.637)^2 - (2.363)^2]$$

$$\Rightarrow [(2.637 + 2.363) (2.637 + 2.363)] / [(2.637 + 2.363) (2.637 - 2.363)]$$

$$\Rightarrow (2.637 + 2.363) / (2.637 - 2.363)$$

$$\Rightarrow 5 / 0.274 = 18 \text{ (approx.)}$$

**S263. Ans.(d)**

**Sol.** After observing the question, we know that numerator is in the form of  $(a^3 + b^3)$  and denominator is in the form of  $(a^2 - ab + b^2)$ .

$$\text{Since, } (a^3 + b^3) = (a + b) (a^2 - ab + b^2)$$

$$\text{Here, } a = 0.236, b = 0.089$$

Therefore,

$$\frac{0.236 \times 0.236 + 0.236 \times 0.089 + 0.089 \times 0.089}{0.236 \times 0.236 - 0.236 \times 0.089 + 0.089 \times 0.089} = 0.236 + 0.089 = 0.325$$

**S264. Ans.(b)**

**Sol.** The given expression is:

$$[3.5 * (2.3 + 4.9 - 1.8) \div 0.6] \div 7 * 0.02 = ?^2 + 0.05$$

$$\Rightarrow [3.5 * (7.2 - 1.8) \div 0.6] \div 7 * 0.02 = ?^2 + 0.05$$

$$\Rightarrow [3.5 * (5.4) \div 0.6] \div 7 * 0.02 = ?^2 + 0.05$$

$$\Rightarrow [3.5 * 9] \div 7 * 0.02 = ?^2 + 0.05$$

$$\Rightarrow 31.5 \div 7 * 0.02 = ?^2 + 0.05$$

$$\Rightarrow 4.5 * 0.02 = ?^2 + 0.05$$

$$\Rightarrow 0.09 = ?^2 + 0.05$$

$$\Rightarrow ?^2 = 0.04$$

Therefore,

$$? = 0.2$$



**S265. Ans.(b)**

**Sol.** Since, we need to find out the approximate value, we can write these values to their nearest integers.

Given expression is:

$$46.98 + 83.98 - ? \times 2.99 = 31.98$$

$$\Rightarrow 47 + 84 - ? \times 3 = 32$$

$$\Rightarrow 131 - ? \times 3 = 32$$

$$\Rightarrow 131 - 32 = ? \times 3$$

$$\Rightarrow 99 = ? \times 3$$

Therefore,

$$? = 33$$

**S266. Ans.(c)**

**Sol.** From the given data,

$$\Rightarrow 1.123 + 11.23 + 112.3 = 124.653$$

$$\therefore ? = 124.653$$

**S267. Ans.(d)**

$$\text{Sol. } [(10.336 \times 8906 \times 6.388) / (135.998 \times 8448.034)]$$

$$\Rightarrow (10 \times 2 \times 4453 \times 6) / (135 \times 8448)$$

$$\Rightarrow 0.46$$

$\therefore$  The answer is 0.46.

**S268. Ans.(c)**

**Sol. Given:**

$$\{(2.5)^3 + (1.5)^3\} / \{(2.5)^3 - (1.5)^3\}$$

**Calculation:**

$$\Rightarrow ? = \{(2.5)^3 + (1.5)^3\} / \{(2.5)^3 - (1.5)^3\}$$

$$\Rightarrow ? = (15.625 + 3.375) / (15.625 - 3.375)$$

$$\Rightarrow ? = 19 / 12.25$$

$$\Rightarrow ? = 1900 / 1225 = 76 / 49$$

**S269. Ans.(c)**

$$\text{Sol. } 0.\bar{8} = 0.88888\ldots$$

$$0.0\bar{8} = 0.080808\ldots$$

$$0.0\bar{8} = 0.088888\ldots$$

Now,  $0.8888\ldots$  or  $0.\bar{8}$  is largest among all.

**S270. Ans.(a)**

**Sol.** Let  $x = 0.0191919\ldots$

$$\Rightarrow 10x = 0.1919\ldots \quad \text{----eq (1)}$$

$$\Rightarrow 1000x = 19.1919\ldots \quad \text{----eq (2)}$$

Now, eq (2) - eq (1)

$$\Rightarrow 1000x - 10x = 19.1919\ldots - 0.1919\ldots$$

$$\Rightarrow 990x = 19$$

$$\Rightarrow x = 19/990$$

**S271. Ans.(c)**

$$\begin{aligned}
 \text{Sol. } P &= \frac{6}{14} \div \frac{6}{5} * \frac{4}{6} + \frac{1}{5} * \frac{3}{2} \\
 &= \frac{3}{7} * \frac{5}{6} * \frac{2}{3} + \frac{3}{10} \\
 &= \frac{5}{21} + \frac{3}{10} = \frac{50+63}{210} = \frac{113}{210} \\
 N &= \frac{4}{10} * \frac{5}{6} \div \frac{2}{6} + \frac{3}{5} * \frac{4}{6} \div \frac{3}{5} \\
 &= \frac{2}{5} * \frac{5}{6} * \frac{3}{1} + \frac{3}{5} * \frac{2}{3} * \frac{5}{3} \\
 &= 1 + \frac{2}{3} = \frac{5}{3} \\
 \frac{P}{Q} &= \frac{113}{210} \div \frac{5}{3} = \frac{113}{350}
 \end{aligned}$$

**S272. Ans.(d)**

$$\begin{aligned}
 \text{Sol. } \frac{\sqrt[3]{0.005832} \times \sqrt{0.196}}{\sqrt{0.64} \times \sqrt[3]{0.000512}} &= \frac{\sqrt[3]{5832 \times 10^{-6}} \times \sqrt{196 \times 10^{-4}}}{\sqrt{8 \times 10^{-2}} \times \sqrt[3]{512 \times 10^{-6}}} \\
 &= \frac{0.18 \times 0.14}{0.8 \times 0.08} \\
 &= \frac{0.0252}{0.064} \\
 &= 0.39
 \end{aligned}$$

**S273. Ans.(c)****Sol.**  $0.000099 \div 0.33 = ?$ 

$$\begin{aligned}
 \Rightarrow ? &= \frac{99}{1000000} * \frac{100}{33} \\
 \Rightarrow ? &= 0.0003
 \end{aligned}$$

**S274. Ans.(d)**

$$\begin{aligned}
 \text{Sol. } \Rightarrow (30,690 \div 90) + (29184 \div 114) - (30660 \div 84) \\
 &= \frac{30690}{90} + \frac{29184}{114} - \frac{30660}{84} \\
 &= 341 + 256 - 365 \\
 &= 232 \\
 \therefore ? &= 232
 \end{aligned}$$

**S275. Ans.(c)****Sol.** The given expression may be evaluated as:

$$\Rightarrow 44.2424 + 16.001 = 60.2434$$

$$60.2434 - 20.2202 = 40.0232$$

Therefore,

$$44.2424 + 16.001 - 20.2202 = 40.0232$$

**S276. Ans.(c)****Sol.** Statement I:

$$8\sqrt{3} > 12\sqrt{2}$$

$$\Rightarrow (8\sqrt{3})^2 > (12\sqrt{2})^2$$

$$\Rightarrow 192 > 288 \text{ which is not true}$$

So, statement I is not true

Statement II:

$$16\sqrt{2} > 8\sqrt{8} = 16\sqrt{2}$$

$$\Rightarrow 16\sqrt{2} > 16\sqrt{2} \text{ which is not true}$$

 $\therefore$  Both statements are not true

**S277. Ans.(d)**

**Sol.**  $(-8) * (-7) * (-6) * (-5) * (-4) * (-3) * (-2) * 0 + 0 * (2) * (4) * (5) * (6) * (7) * (8) * (9)$

Multiplication of 0 with any number is 0

$$= 0 + 0 = 0$$

**S278. Ans.(c)**

**Sol.** Given expression:

$$\frac{2}{16} \text{ of } \frac{4}{6} \text{ of } \frac{6}{10} \text{ of } 6860 = ?$$

$$\Rightarrow ? = (2/16) \times (4/6) \times (6/10) \times 6860$$

$$\Rightarrow ? = (1/20) \times 6860$$

$$\Rightarrow ? = 343$$

Hence, the required number in place of question mark is 343.

**S279. Ans.(a)**

**Sol.**  $X = 250 - 146 + 96 - 274 + 198$

$$250 - 146 + 96 - 274 + 198 = A$$

$$\Rightarrow X = 346 - 146 - 274 + 198$$

$$\Rightarrow X = 544 - 146 - 274$$

$$\therefore X = 124$$

$$Y = 76 + 12 \times 1.1 - 5.6 \times 10$$

$$\Rightarrow 76 + 6.6 - 28 = B$$

$$\Rightarrow Y = 82.6 - 28 = 54.6$$

$$\therefore Y = 54.6$$

$$Z = 72 - 24 \div 8 \times 16 + 8$$

$$\Rightarrow 72 - 6 \times 16 + 8$$

$$\Rightarrow 72 - 48 + 8$$

$$\Rightarrow 32$$

$$\therefore X > Y > Z$$

**S280. Ans.(d)**

**Sol.**  $(12 \text{ of } 144 \div 24 - 8) + (676 \div 52 \times 20) - (192 \times 28 \div 24) = ?$

$$\Rightarrow (1728 \div 24 - 8) + (13 \times 20) - 224$$

$$\Rightarrow (72 - 8) + 260 - 224$$

$$\Rightarrow 64 + 260 - 224$$

$$\Rightarrow 100$$

$\therefore$  The value of the expression is 100

**S281. Ans.(c)**

**Sol.** Let, number of students in class = x

Average marks of the class = y

According to the question,

$$\Rightarrow x(y + 1/5) = xy + 216 - 196$$

$$\Rightarrow xy + x/5 = xy + 20$$

$$\Rightarrow x/5 = 20$$

$$\Rightarrow x = 100$$

$\therefore$  Number of students in the class = 100



**S282. Ans.(b)**

**Sol.** We know,

7-digit number  $134x58y$  is divisible by 72, so we can say number also divisible by 8 and 9.

Divisibility law of 8  $\Rightarrow$  A number divisible by 8 if its last three-digit is divisible by 8

Divisibility law of 9  $\Rightarrow$  A number is divisible by 9 if the sum of its digit is divisible by 9.

7-digit number  $134x58y$  is divisible by 8 if its last digit will be  $y = 4$ .

7-digit number  $134x584$  divisible by 9 if  $x = 2$

$$\Rightarrow 1 + 3 + 4 + x + 5 + 8 + 4$$

$$\Rightarrow 25 + x$$

If we put  $x = 2$ , then number become 27 which is divisible by 9.

Now,  $(2x + y)$

$$\Rightarrow (2 \times 2 + 4)$$

$$\Rightarrow 4 + 4$$

$$\Rightarrow 8$$

**S283. Ans.(c)**

**Sol.** Average = sum of total observation/Number of observations

$$\text{Sum of 11 observations} = 120 \times 11 = 1320$$

$$\text{Sum of first 6 observation} = 6 \times 118 = 708$$

$$\text{Sum of last 6 observation} = 6 \times 124 = 744$$

$$708 + 744 = 1452$$

$$1452 - 1320 = 6^{\text{th}} \text{ Observation} = 132$$

$\therefore$  6th observation is 132.

**S284. Ans.(c)**

**Sol.** Let the numbers be  $3x$  and  $4x$  respectively

$$\text{LCM} = 168$$

$$x \times 3 \times 4 = 12x$$

$\Rightarrow$  LCM number = common factor (other factors)

$$\Rightarrow 12x = 168$$

$$\Rightarrow x = 14$$

$$\therefore \text{Number are} = 3x = 14 \times 3 = 42$$

$$4x = 14 \times 4 = 56$$

$\therefore$  Greater number is 56.

**S285. Ans.(d)**

**Sol.** let each side of the square be  $a$ , then area =  $a^2$

As given that the side is increased by 15%, then

$$\text{New side} = 115a/100 = 23a/20$$

$$\text{New area} = (23a/20)^2$$

$$\text{Increased area} = (529a^2/400) - a^2$$

$$\text{Increase area}\% = [129a^2/400]/a^2 \times 100 = 32.25\%$$

**S286. Ans.(c)****Sol.** Let radius be  $r$ Circumference of base =  $2\pi r = 264$  cm

$$\Rightarrow 2 \times (22/7) \times r = 264$$

$$\Rightarrow r = 42 \text{ cm}$$

Number of litres of water =  $\pi r^2 h = (22/7) \times 42 \times 42 \times 50$ 

$$\Rightarrow 277,200 \text{ cm}^3$$

**Note:**  $1000 \text{ cm}^3 = 1 \text{ litre}$ ,  $\therefore 1 \text{ cm}^3 = 1/1000 \text{ liter}$ 

$$\therefore \text{Number of litres of water} = 277200/1000 = 277.2 \text{ litres}$$

**S287. Ans.(b)****Sol.** Let the income of Bobby be 100 $\Rightarrow$  The income of Anurag will be 20% less than Anurag i.e., 80 $\therefore$  The income of Bobby is more than Anurag by 20 $\therefore$  Percentage of income of Bobby is more than Anurag by  $[(100 - 80)/80] \times 100 = 25\%$ **S288. Ans.(b)****Sol.** Let efficiency of Komal be 1 unit/day

Hence,

$$\text{Total work} = 1 \times 300 = 300 \text{ units}$$

Now,

Efficiency of Shelly = 150% of A = 1.5 units/day

$$\therefore \text{Required time} = 300/1.5 = 200 \text{ days}$$

**S289. Ans.(d)****Sol.** Given expression is  $\{(18) - (-16) + (48 \div 26 - 14)\}$ 

$$\Rightarrow 34 + (48/26) - 14$$

$$\Rightarrow 20 + 48/26$$

$$\Rightarrow 568/26 = 284/13$$

**S290. Ans.(a)****Sol.**  $(0.0081)^{0.14} \times (0.0081)^{0.11}$ 

$$= (0.0081)^{0.14 + 0.11}$$

$$= (81 \times 10^{-4})^{0.25}$$

$$= (3^4 \times 10^{-4})^{25/100}$$

$$= (3^4 \times 10^{-4})^{1/4}$$

$$= 3 \times 10^{-1}$$

$$= 0.3$$

**S291. Ans.(c)****Sol.** Formula: Average of  $n$  quantity = (sum of  $n$  quantities)/ $n$ 

Age of female wrestler sitting in the middle = (total age of seven female wrestlers) - (total age of first three female wrestlers + total age of last three female wrestlers)

$$= (24 \times 7) - (3 \times 20 + 3 \times 28)$$

$$= 168 - (60 + 84)$$

$$= 168 - 144$$

$$= 24 \text{ years}$$

**S292. Ans.(b)****Sol.** Let his monthly salary be Rs. x

$$\Rightarrow x \times 16/100 \times 67/100 = 7705$$

$$\Rightarrow x = \text{Rs. } 71875$$

**S293. Ans.(b)****Sol.** Let the third proportional be 'x', then,

$$\Rightarrow 3/15 = 15/x$$

$$\Rightarrow x = \frac{15 \times 15}{3} = 5 \times 15$$

$$\Rightarrow x = 75$$

$$= 3 \times 25.$$

**S294. Ans.(b)****Sol.** Let the distance be 'D'.

Speed of bullock cart = 24 kmph

Time taken by Manish in going to temple and back home = Distance/speed =  $2 \times D/24 = D/12 = 0.083D$ 

Speed of boat = 20 kmph; Speed of stream = 5 kmph

Time taken by Kartik in going to temple and back home

$$= \left[ \frac{D}{\text{Upstream}} + \frac{D}{\text{downstream}} \right] = \left[ \frac{D}{20-5} + \frac{D}{20+5} \right] = \frac{8D}{75} = 0.106D$$

Clearly, Manish is taking lesser time. Hence, he will reach first.

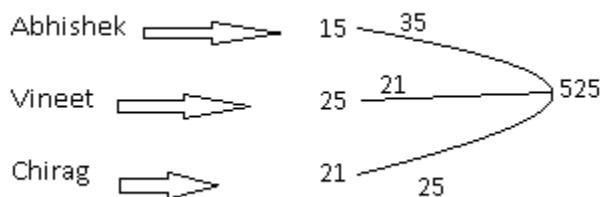
**S295. Ans.(b)****Sol.** Let, the two numbers are 30x and 30y

Given,

$$\Rightarrow (30x) \times (30y) = 3600$$

$$\Rightarrow xy = 4$$

Value of co-primes of x and y are (1, 4)

 $\therefore$  The two numbers are  $(1 \times 30, 4 \times 30) = (30, 120)$ **S296. Ans.(b)****Sol.** Abhishek  $\frac{1}{3}$  unit work = 5 daysAbhishek 1-unit work =  $5 \times 3 = 15$  daysVineet  $\frac{3}{5}$  unit work = 15 daysVineet 1-unit work =  $15 \times \frac{5}{3} = 25$  daysChirag  $\frac{6}{7}$  unit work = 18 daysChirag 1-unit work =  $18 \times \frac{7}{6} = 21$  daysTotal efficiency of one day =  $35 + 21 + 25 = 81$ All three together complete the work =  $\frac{525}{81} = \frac{175}{27}$

**S297. Ans.(a)**

**Sol.**  $m^2 - 2m - \sqrt{5}m + 2\sqrt{5} = 0$

$\Rightarrow m(m - 2) - \sqrt{5}(m - 2) = 0$

$\Rightarrow m = 2 \text{ or } \sqrt{5}$

$n^2 - \sqrt{3}n - \sqrt{2}n + \sqrt{6} = 0$

$\Rightarrow n(n - \sqrt{3}) - \sqrt{2}(n - \sqrt{3}) = 0$

$\Rightarrow n = \sqrt{2} \text{ or } \sqrt{3}$

Thus,  $m = 2, \sqrt{5}$  and  $n = \sqrt{2}, \sqrt{3}$

Comparing these values of  $m$  and  $n$ , we get  $m > n$

**S298. Ans.(c)**

**Sol.** Let Akash's investment be Rs. 'x'

Aryan's investment = Rs.  $(x + 4000)$

Now, ratio of their investments = ratio of their share of profit

$(x \times 10) : [(x + 4000) \times 8] = 38500 : 42000$

$\Rightarrow 10x / (32000 + 8x) = 11/12$

$\Rightarrow 120x = 352000 + 88x$

$\Rightarrow 32x = 352000$

$\Rightarrow x = \text{Rs. } 11000$

$\therefore \text{Aryan's investment} = 4000 + 11000 = \text{Rs. } 15000$

**S299. Ans.(a)**

**Sol.** C.P. of 50 kg of rice @ Rs. 13.4/kg =  $50 \times 13.4 = \text{Rs. } 670$

C.P. of 40 kg of rice @ Rs. 16.75/kg =  $40 \times 16.75 = \text{Rs. } 670$

Total C.P. of 90 kg of rice =  $670 + 670 = \text{Rs. } 1340$

As per the given information, Sanjay wants to earn a profit of 25%.

$\therefore 25 = \frac{\text{Total S.P.} - 1340}{1340} \times 100$

$\Rightarrow \text{Total S.P.} = \text{Rs. } 1675$

$\Rightarrow \text{Selling price of 90 kg of rice} = \text{Rs. } 1675$

$\Rightarrow \text{Selling price of rice per kg} = 1675/90 = \text{Rs. } 18.61$

**S300. Ans.(d)**

**Sol.** We know, Simple Interest =  $(\text{Principal Amount} \times \text{Rate of Interest} \times \text{Time Period})/100$

Let rate of interest be  $R\%$  per annum.

On investing Rs. 40000 in simple interest for two years, the interest earned is Rs. 380 more than the interest earned when Rs. 26000 is invested in simple interest for three years, at the same rate.

$\Rightarrow (40000 \times R \times 2)/100 = 380 + (26000 \times R \times 3)/100$

$\Rightarrow 800R = 380 + 780R$

$\Rightarrow 20R = 380$

$\Rightarrow R = 19$

$\therefore$  Rate of interest is 19% per annum.

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