**Q 1.** Three cars - A, B and C travel at the speed of 90, 60 and 50 km/h respectively. These cars start from the same point and in the same direction. Car A and Car C started at 9 AM and 6 AM respectively. If all the three cars meet at the same place at the same time, then at what time did Car B start?

**1)** 6 : 08: 30 AM

**2)** 7 : 14 : 15 AM

**3)** 8 : 07 : 15 AM

**4)** 7 : 07 : 30 AM

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**Q 2.** If ABCD is a cyclic quadrilateral such that AB = BC = 6 cm, AD = DC and ∠ADC = 120°, then find the area (in sq. cm) of the circle whose diameter is BD.

**1)** $12\pi$

**2)** $24\pi$

**3)** $48\pi$

**4)** $8\pi$

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**Q 3.** A sum was lent for a year, another sum was lent for 2 years and a third sum was lent for 3 years. Each sum was lent at 12% per annum compound interest. Each sum amounted to the same value. Which of the following can be the first, second and third sums (in Rs.) respectively?

**1)** 7,290; 6,750; 6,250

**2)** 7,840; 7,000; 6,250

**3)** 2,800; 2,700; 2,500

**4)** 7,250; 7,500; 7,840

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**Q 4.** On Monday, Raj puts 'x' number of Re. 1 and Rs. 2 coins, 25% of which are Re. 1 coins, into a box. On each successive day he adds 'x' number of coins of the same mix of Re. 1 and Rs. 2 coins without removing any coins that is left. Each day, Asha, Raj's daughter takes out 25% of the Re. 1 coins and 100% of Rs. 2 coins from the box. On which day, just after Raj has put the coins, will Asha find that more than half the coins in the box are Re. 1 coins?

**1)** Friday

**2)** Wednesday

**3)** Thursday

**4)** Saturday

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**Q 5.**
Let p, q be the integer roots of the quadratic equation $a_1x^2 + b_1x + c_1 = 0$, $a_1 \neq 0$ and r, s be the integer roots of the quadratic equation $a_2x^2 + b_2x + c_2 = 0$, $a_2 \neq 0$ such that p : q = 1 : 2 and r : s = 4 : 5. If p + q = r + s, then the least possible value of |rs − pq| is

**1)** 0

**2)** 1

**3)** 2

**4)** 3

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**Q 6.** P and Q are running around a circular stadium that has three concentric running tracks of lengths 500 m, 600 m and 700 m. They run in opposite directions with initial speeds of 5 m/s and 20 m/s, respectively. Whenever they meet, they move to the next outer track and P doubles his speed whereas Q runs at half the speed in the previous track. After what time (in seconds) from the start will they meet for the third time?

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**Q 7.** How many 5-digit positive integers 'n = abcba' exist such that sum of the digits of n and 'n' are divisible by 5?

**1)** 12

**2)** 24

**3)** 20

**4)** 19

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**Q 8.** Three vessels contain three different mixtures of milk and water. Volume of each mixture is 15 liters and their respective concentrations of milk are 60%, 80% and 40%. 10 liters of the first, 5 liters of the second and 12.5 liters of the third are mixed and the mixture is named A. The leftovers of the three vessels are mixed and this mixture is named B. Eleven liters of A and 7 liters of B are mixed to form mixture C. Which of the following statements is/are true regarding the milk concentrations of A, B and C?
I. A has the highest concentration.
II. C has the lowest concentration.
III. B has the highest concentration.
IV. C has neither the highest nor the lowest concentration.

**1)** I & IV

**2)** II & III

**3)** III & IV

**4)** III only

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**Q 9.**
Let $xyz = 10^{81}$ and $\log_{10} x \times \log_{10} y + \log_{10} y \times \log_{10} z + \log_{10} z \times \log_{10} x = 468$, where x, y and z are positive numbers, then $(\log_{10} x)^2 + (\log_{10} y)^2 + (\log_{10} z)^2$ is divisible by

**1)** $5^4$

**2)** $3^3$

**3)** $5^3 \times 3^3$

**4)** $2^2 \times 3^4$

**Q 10.** A fort has a circular boundary and has 4 gates on its east, west, north and south. A watchman standing 3 km east of the eastern gate can just see a lion standing 9 km north of the western gate. What is the shortest distance (in km) between the watchman and the West Gate?

**1)** 9

**2)** 11

**3)** 12

**4)** 13

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**Q 11.** A pool has a capacity of 8.712 lakh liters. Two pipes of diameters 6 cm and 4 cm are used to fill the pool. The rate at which water flows through the first and the second pipe is 14 liters per second and 8 liters per second respectively. An emptying pipe of diameter 2 cm is also connected to the pool and water flows through this at a rate of 4 liters per second. If all the three pipes are opened simultaneously, then find the time taken to fill the empty pool (in minutes).

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**Q 12.** The average marks scored by 24 students in a Quantitative Aptitude Test are 25. The maximum number of marks scored by a student is 29 and the minimum is 21. The marks scored by students are between 21 and 29. What can be the maximum number of students who scored at least 27 marks?

**1)** 14

**2)** 15

**3)** 16

**4)** 8

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**Q 13.** Let f and g be a real valued functions defined as $f(x) = x^2 + 8$ and $g(x) = f(x - 2) + f(x + 2) - 36$. For how many integral values of 'x', g(x) < 0?

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**Q 14.** The inhabitants of Kailasa island (where the currency is kD) are taxed in a funny manner. They must pay a fixed sum irrespective of their income level. In addition to this they have to pay a sum which is proportional to the excess of their annual salary over kD.40,000. Nityananda pays a total tax of kD.8,200 per annum when his annual salary is kD.60,000 and his brother pays a total tax of kD.9,600 per annum when his annual salary is kD.80,000. What is the annual salary (in kD) of Yogananda who pays a total tax of kD.13,100 per annum?

**1)** 1,20,000

**2)** 1,12,000

**3)** 1,30,000

**4)** 1,07,000

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**Q 15.** Three types of chocolates numbered 60, 84 and 126 are to be distributed among the students. If each student gets equal number of chocolates but of one type only, find the minimum number of students.

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**Q 16.** In the triangle PQR, A, B and C are the midpoints of QR, PR and PQ. PA and RC meet at point D. A quadrilateral is formed by joining the points CQAD. What is the ratio of the area of quadrilateral CQAD and the area of triangle PCR?

**1)** 3 : 4

**2)** 1 : 3

**3)** 1 : 2

**4)** 2 : 3

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**Q 17.** Let $|x + y| + |x - y| = 4$, then what is the maximum possible value of $x^2 - 8x + y^2 - 3y$?

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**Q 18.** Three persons A, B and C working alone can complete a piece of work in 16 days, 24 days and 20 days respectively. Every day B works half a day with A, who works full day, while C works 2/3rd day. After 8 days A and C stop working, then how much time (in days) will take by B to complete the remaining work while working for 2/5th day?

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**Q 19.** A fruit vendor bought some apples and some oranges. He bought some apples at the rate of Rs.192 per dozen and 3 times as many oranges at the rate of Rs.96 per dozen. One-sixth of the apples and one-fifth of the oranges got spoilt. He sold the remaining apples at Rs.216 per dozen and the remaining oranges at Rs.180 per dozen. Find his profit or loss percentage.

**1)** 24.5%

**2)** 16.5%

**3)** 27.5%

**4)** 18.25%

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**Q 20.** Let p, q and r be non-negative integers such that p + q + r = 9. Then the maximum value of (pqr + pq + qr + rp)/6 is

**Q 21.** In 2021, the price of article A rose by 25% during 1st quarter, fell by 20% during 2nd quarter, rose by 20% during 3rd quarter, and fell by x% during 4th quarter. The price of article A at the end of 4th quarter was the same as it had been at the beginning of 1st quarter. To the nearest integer, what is 'x'?

**1)** 12

**2)** 17

**3)** 20

**4)** 25

**Q 22.**

Let $\dfrac{1+ab}{a+b} < \dfrac{3}{2}$ where a and b are integers and a, b > 1, then how many pairs of (a, b) are possible?