

CDC 15 2022 QA

Q 1. Dhruv scored 150% more than Guru in the Math test. Kamal's score was 120% of Sonia's score in the Math test. Sonia scored 25% more than Guru. Dhruv's score is what percentage more than Kamal's score?

- 1) 75%
 - 2) 66.67%
 - 3) 90%
 - 4) 33.33%
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Q 2. Find the area (in sq. cm) of a $\triangle AED$ drawn in a regular hexagon ABCDEF of side 8 cm.

- 1) $8\sqrt{3}$
 - 2) $16\sqrt{3}$
 - 3) $32\sqrt{3}$
 - 4) $64\sqrt{3}$
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Q 3.

Let $f(x + y) = f(x) \times f(y)$ and $f(1) = 3$, then what is the value of $\frac{f(2)}{f(1)} + \frac{f(3)}{f(2)} + \dots + \frac{f(2022)}{f(2021)}$?

Q 4. In an election contested by 5 candidates 1 lakh votes were cast. At a point, during the counting the 5 candidates had polled 9,000, 18,000, 21,000, 22,100 and 25,400 votes. How many of these 5 people could emerge as winners when all votes are counted?

Q 5. A bookseller sells books at a discount of 30%. Additionally, if a customer purchases 3 books at a time, he gives a pen, which costs him Rs.50, free apart from the discount. One day, only three customers visit his shop - one of them buys 3 books and the other two buy one book each. The profit earned by the bookseller on that day is 20%. If each book costs Rs. 200 to the bookseller, then what is the mark-up percentage?

Q 6. If a, b, c are positive integers, what is the maximum value of a^2bc if $a + b + c = 12$?

- 1) 81
 - 2) 64
 - 3) 256
 - 4) 324
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Q 7. A five-digit number is divisible by the sum of its digits. Also, the sum of these five digits equals the product of the digits. What could be the product of the digits of such a number?

- 1) 4
 - 2) 6
 - 3) 8
 - 4) 10
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Q 8. A date shown in DD/MM/YY format has a peculiarity: DD, MM and YY, in that order, form a Geometric Progression. If $1 < DD < 9$ and $DD \neq MM \neq YY$, then how many such dates are possible?

- 1) 15
 - 2) 12
 - 3) 16
 - 4) 22
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Q 9. At a hospital all elective surgical procedures are insured. One-sixth of insured surgical procedures at the hospital are elective and one-fourth of all child births are insured. On a particular day there are exactly 12 elective surgical procedures that are also child births and there are 78 child births that are not insured. If there are a total of 156 surgical procedures that are insured, then how many of these surgical procedures are neither child births nor elective but are insured?

Q 10. In a dairy farm, Jay has three different varieties of milk namely Paras, Amol and Desi with him. The quantity of Paras, Amol and Desi is 465 litres, 651 litres and 496 litres respectively. What is the minimum possible number of bottles of equal capacity (to be completely filled with milk) required by him to store all varieties of milk without mixing any two or more of the three varieties of milk?

Q 11. Six identical hemispheres are scooped out of each face of a cube of edge length 4 cm. All the hemispheres have their midpoints of the circular base coinciding with the midpoints of the faces, on which they are drawn. The hemispheres touch hemispheres drawn on the adjacent faces at exactly one point. What is the diameter (in cm) of the spheres?

- 1) $\sqrt{2}$
 - 2) $2\sqrt{2}$
 - 3) $4\sqrt{2}$
 - 4) $1/\sqrt{2}$
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Q 12. Shami gave a test that consists of two sections A and B comprising of 32 and 40 questions respectively. For every correct answer in section A and B, the Shami is rewarded with 3 and 4 marks respectively. For every wrong answer in section A and B, 2 marks and 3 marks are deducted and for every unattempted question in section A and B, 1 mark and 0 marks are deducted respectively. If Shami got 200 marks in the test and he got the maximum possible marks in section B, then the maximum number of questions left unattempted by him can be

- 1) 12
 - 2) 13
 - 3) 14
 - 4) 15
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Q 13. In a 100 m race, Asha beats Bina by 10 m even if she gives Bina a head start of 5 seconds. If Asha gives Bina a head start of 10 seconds in the same race, then Bina beats Asha by 20 m. What is the speed (in m/s) of Bina?

- 1) 4
 - 2) $14/3$
 - 3) $13/3$
 - 4) 5
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Q 14.

For how many integral values of x , $\sqrt{x+2\sqrt{x-1}} + \sqrt{x-2\sqrt{x-1}} = 2$?

Q 15.

N is a positive integer. How many integers are there between $\sqrt{N^2 + N + 1}$ and $\sqrt{16N^2 + 8N - 2}$?

- 1) $3N$
- 2) $3N - 1$
- 3) $2N$
- 4) Depends on the value of N .

Q 16. Raman and Raju were playing an interesting game. There were 7 numbers written on the board 7, 8, 13, 15, 16, 24 and 25. Each one took turns to erase one of the numbers, till only one number remained on the board. The numbers erased by Raman and Raju respectively were neither a factor nor a multiple of a number erased earlier by them. The sum of the numbers erased by Raman was twice that of Raju's. Which was the number that was left on the board finally?

- 1) 13
- 2) 15
- 3) 16
- 4) 24

Q 17. If $y = |x - 2.5| + |x - 3.6| + |x - 4.7| + \dots + |x - 16.8|$, for how many real values of x does y attain its minimum possible value?

- 1) 1
- 2) 2
- 3) 18
- 4) Infinite

Q 18. Nine civil engineers are working on a certain number of projects, with exactly four engineers working on each project. If no pair of projects has more than one engineer working on both the projects, what is the maximum possible number of projects that are being handled by the nine engineers?

- 1) 2
- 2) 3
- 3) 4
- 4) 5

Q 19. Find the remainder when 5555 (upto 33 digits) is divided by 17.

Q 20. In a group, there were 9 children whose weights were 1 kg, 2 kg, 3 kg, ..., 9 kg. They were split into 3 equal groups. The sum of the weights in two of the groups is 23 kg and 15 kg. Which of the following statements is true?

- (i) There are two ways of dividing them into 2 groups.
- (ii) The 8 kg child is in the group weighting 23 kg.
- (iii) There is one group where all the three weights are prime numbers.

- 1) (i) & (ii) only
- 2) (ii) & (iii) only
- 3) (i) & (iii) only
- 4) All of them

Q 21. Three women and two girls can do a piece of work in 8 days and four women and five girls can do the same work in 5 days. In how many days can 8 women and 2 girls do half the work?

- 1) 3.5
- 2) 4.5
- 3) 5.5
- 4) 2.5

Q 22. What is the sum to 12 terms of the following series:
1, 4, 7, 12, 21, 38, 71, ... and so on.
