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CSAT

Mathematics Questions for Practise

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Q1. What is the value of the expression $3.3 + 33.03 + 333.003 + 0.33 + 3.03$?

- a) 336.639
- b) 381.369
- c) 372.693
- d) 333.063

Answer: c

Explanation:

$$3.3 + 33.03 + 333.003 + 0.33 + 3.03 = 372.693$$

Hence, option c.

Q2. On dividing a larger number by a smaller number, the quotient obtained is 6 and the remainder is 30. What is the smaller number if the difference between the two numbers is 1380?

- a) 280
- b) 290
- c) 270
- d) 250

Answer: c

Explanation:

Let the smaller number be x .

\therefore Larger number = $6(x) + 30 = 6x + 30$ Difference between the two numbers is 1380.

$$\therefore (6x + 30) - x = 1380$$

$$\therefore 5x = 1350 \text{ i.e., } x = 270$$

Hence, **option c.**

Q3. The first two terms of a geometric progression add up to 16. The sum of the third and the fourth terms is 64. If the terms of the geometric progression are alternately positive and negative then the third term is:

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

Answer: d

Explanation:

Let the first term of the GP be a and the common ratio be r .

Hence, $a + ar = 16$ and $ar^2 + ar^3 = 64$

$$\therefore r^2 \times (a + ar) = 64$$

$$\therefore r^2 = 64/16 = 4$$

$$\therefore r = \pm 2$$

When $r = 2$; $a = 16/3$

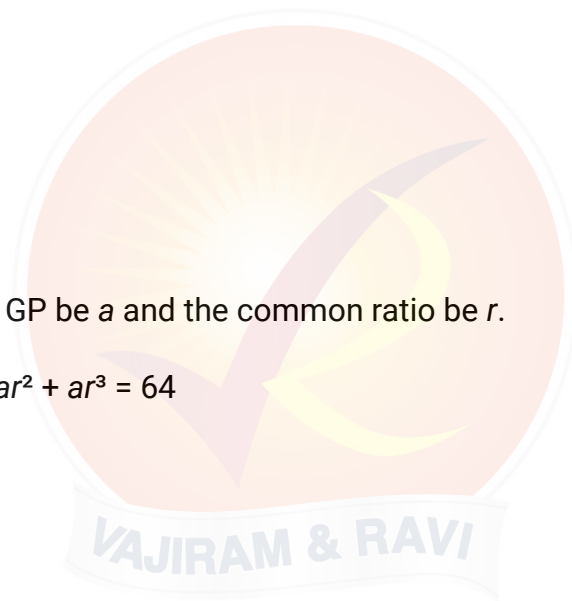
Also, all terms of the G.P. become positive. However, this violates the condition that alternate terms are positive and negative.

$$\therefore r = -2$$

$$\therefore a = -16$$

$$\therefore \text{Third term} = ar^2$$

$$= (-16) \times (-2)^2 = (-16) \times 4 = -64$$



Hence, **option d.**

Q4. 1st January 2000 was a Saturday. After this date, when would it happen at the earliest for the 1st January to be on Saturday?

- a) 1st January 2005
- b) 1st January 2006.
- c) 1st January 2011
- d) 1st January 2028

Answer: a

Explanation:

It makes zero odd days first time on 1st January 2005.

Hence **option a.**

Q5. What is the value of $283 + 293 + 303 \dots\dots\dots + 483$?

- a) 1241292
- b) 1360092
- c) 1240092
- d) 1242292

Answer: c

Explanation:

$$283 + 293 + 303 \dots\dots\dots + 483 = (13 + 23 + 33 \dots\dots\dots + 483) - (13 + 23 + 33 \dots\dots\dots + 273)$$

The sum of cube of first n natural numbers

$$\begin{aligned}
 n^2 \times (n \times 1) / 4 &= (n + 1) / 2 \\
 &= (\text{Sum of the first } n \text{ natural numbers})^2 \\
 (48(48+1)^2) / 4 - (27(27+1)^2) / 4 \\
 &= (1176)^2 - (378)^2 = (1176 + 378)(1176 - 378) \\
 &= 1554 \times 798 = 1240092
 \end{aligned}$$

Hence, option c.

Q6. In a mini zoo, 60% of the animals are monkeys and 70% of all the animals have a tail. If 50% of the monkeys have a tail, what percentage of the other animals have a tail?

- a) 40%
- b) 100%
- c) 50%
- d) 90%

Answer: b

Explanation:

Let there be 100 animals in the mini-zoo.

So, 60 of these are monkeys and 40 are other animals.

Since 50% of monkeys have a tail, the number of monkeys with a tail = 50% of 60 i.e., 30.

Total animals with a tail = 70

∴ Other animals with a tail = 40

∴ Required percentage = $(40/40) \times 100 = 100\%$

Hence, **option b**

Q7. There is a leak in the bottom of the tank. This leak can empty a full tank in 8 hours. When the tank is full, a tap is opened into the tank which admits 6 litres per hour, and the tank is now emptied in 12 hours. What is the capacity of the tank?

- a) 28.8 litres
- b) 36 litres
- c) 144 litres
- d) Cannot be determined

Answer: c

Explanation:

Let the capacity of this tank be x liters and the emptying rate of the leak be y liters per hour. Therefore,

Also,

Solving the above two equations. $x = 8 \times 18 = 144$ liters.

Hence, option c.

Q8. At a reputed Engineering College in India, total expenses of a trimester are partly fixed and partly varying linearly with the number of students. The average expense per student is Rs.400 when there are 20 students and Rs.300 when there are 40 students. When there are 80 students, what is the average expense per student?

- a) Rs.250
- b) Rs.300
- c) Rs.330
- d) Rs.350

Answer: a

Explanation:

Let F be the fixed charges and v be the varying charges per student.

So,

Solving the above two, we get $v = 200$ and $F = 4000$

Therefore, the total cost = $4000 + 200n$ (where n is the number of students)

So, at 80 students, the total cost would be = $4000 + 16000 = 20000$

Average

Hence, **option a.**

Q9. Manish was asked to find $\frac{5}{6}$ times of a number and he instead multiplied it by $\frac{6}{5}$. As a result, he got an answer which was more than the correct answer by 649. What is the number?

- a) 1770
- b) 1760
- c) 1860
- d) 1740

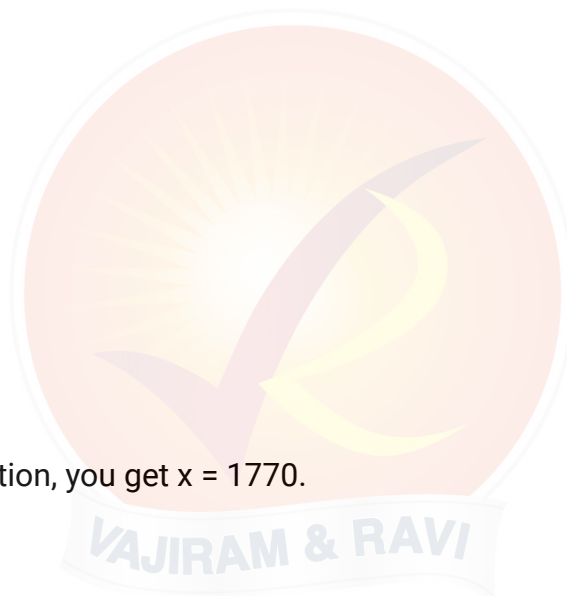
Answer: a

Explanation:

let x be the number. So,

Solving the above equation, you get $x = 1770$.

Hence, **option a.**



Q10. A class has 54 girls. For an event, the teacher has to select girls who know how to dance. If there are 12 such girls in the class, in how many ways can the teacher select 6 girls?

- a) 944
- b) 882
- c) 856
- d) 924

Answer: d

Explanation:

Since only the girls who know how to dance are to be selected, the teacher just has to select 6 girls out of 12.

This can be done in ${}^{12}C_6$ ways

$$= \frac{12 \times 11 \times 10 \times 9 \times 8 \times 7}{720}$$

$$= 924$$

Hence, **option d.**

