SP TESTPREP

IBPS RRB

GROUP B MAINS

NUMERICAL ABILITY

IMPORTANT QUESTIONS

FOR ALL COMPETITIVE EXAMS

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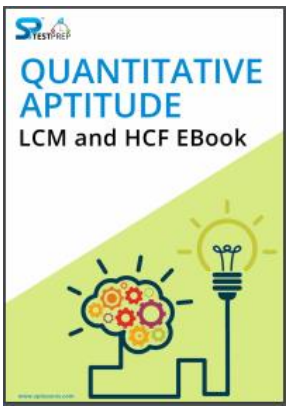
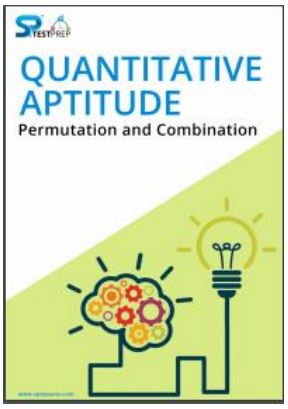
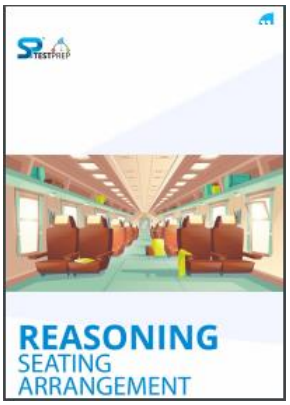
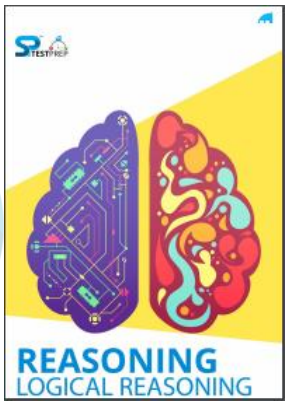
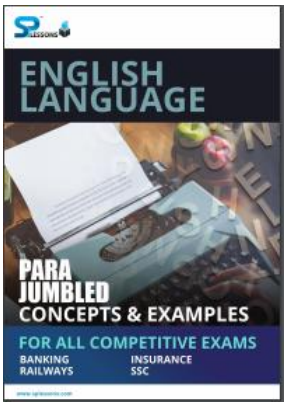
IBPS RRB Group B Mains Numerical Ability Important Questions











IBPS RRB Group B Mains Numerical Ability Important Questions

Direction (1- 3): The following table shows the number of new employees added to different categories of employees in a company and also the number of employees from these categories who left the company every year since the foundation of the Company in 1995.

Year	Managers		Technicians		Operators		Accountants		Peons	
	New	Left	New	Left	New	Left	New	Left	New	Left
1995	760	-	1200	-	880	-	1160	-	820	-
1996	280	120	272	120	256	104	200	100	184	96
1997	179	92	240	128	240	120	224	104	152	88
1998	148	88	236	96	208	100	248	96	196	80
1999	160	72	256	100	192	112	272	88	224	120
2000	193	96	288	112	248	144	260	92	200	104

1. What is the difference between the total number of Technicians added to the Company and the total number of Accountants added to the Company during the years 1996 to 2000?

A. 128
B. 112
C. 96
D. 88

Answer: D

Explanation:

Required difference = (272 + 240 + 236 + 256 + 288) - (200 + 224 + 248 + 272 + 260) = 88.

2. What was the total number of Peons working in the Company in the year 1999?

A. 1312
B. 1192
C. 1088
D. 968

Answer: B

Explanation:

Total number of Peons working in the Company in 1999 = (820 + 184 + 152 + 196 + 224) - (96 + 88 + 80 + 120) = 1192.

3. What is the pooled average of the total number of employees of all categories in the year 1997?

A. 1325

B. 1195
C. 1265
D. 1235

Answer: B

Explanation:

Total number of employees of various categories working in the Company in 1997 are:

Managers = (760 + 280 + 179) - (120 + 92) = 1007.

Technicians = (1200 + 272 + 240) - (120 + 128) = 1464.

Operators = (880 + 256 + 240) - (104 + 120) = 1152.

Accountants = (1160 + 200 + 224) - (100 + 104) = 1380.

Peons = (820 + 184 + 152) - (96 + 88) = 972.

Therefore pooled average of all the five categories of employees working in the Company in 1997

$= \frac{1}{5}$ x (1007 + 1464 + 1152 + 1380 + 972)

$= \frac{1}{5}$x (5975)

= 1195.

Direction (4- 6): The following line graph gives the ratio of the amounts of imports by a company to the amount of exports from that company over the period from 1995 to 2001.

4. The imports were minimum proportionate to the exports of the company in the year?

- **A.** 1995
- **B.** 1996
- **C.** 1997
- **D.** 2000

Answer: C

Explanation:

The imports are minimum proportionate to the exports implies that the ratio of the value of imports to exports has the minimum value.

Now, this ratio has a minimum value 0.35 in 1997, i.e., the imports are minimum proportionate to the exports in 1997.

5. What was the percentage increase in imports from 1997 to 1998?

- **A.** 72
- **B.** 56
- **C.** 28
- **D.** Data inadequate

Answer: D

Explanation: The graph gives only the ratio of imports to exports for different years. To find the percentage increase in imports from 1997 to 1998, we require more details such as the value of imports or exports during these years.

Hence, the data is inadequate to answer this question.

6. In how many of the given years were the exports more than the imports?

- **A.** 1
- **B.** 2
- **C.** 3
- **D.** 4

Answer: D

Explanation:

The exports are more than the imports imply that the ratio of value of imports to exports is less than 1.

Now, this ratio is less than 1 in years 1995, 1996, 1997 and 2000.

Thus, there are four such years.

7. In how many different ways can the letters of the word 'MATHEMATICS' be arranged so that the vowels always come together?

- **A.** 10080
- **B.** 4989600
- **C.** 120960
- **D.** None of these

Answer: C

Explanation:

In the word 'MATHEMATICS', we treat the vowels AEAI as one letter.

Thus, we have MTHMTCS (AEAI).

Now, we have to arrange 8 letters, out of which M occurs twice, T occurs twice and the rest are different.

Number of ways of arranging these letters $=\frac{8!}{(2!)(2!)}$ = 10080.

Now, AEAI has 4 letters in which A occurs 2 times and the rest are different.

Number of ways of arranging these letters $=\frac{4!}{2!}$= 12.

Required number of words = (10080 x 12) = 120960.

8. In how many different ways can the letters of the word 'OPTICAL' be arranged so that the vowels always come together?

- **A.** 120
- **B.** 720
- **C.** 4320
- **D.** 2160

Answer: B

Explanation:

The word 'OPTICAL' contains 7 different letters.

When the vowels OIA are always together, they can be supposed to form one letter.

Then, we have to arrange the letters PTCL (OIA).

Now, 5 letters can be arranged in 5! = 120 ways.

The vowels (OIA) can be arranged among themselves in 3! = 6 ways.

Required number of ways = (120 x 6) = 720.

9. Can you find the answer for the below equation

$89 + 95 \times 91 - \frac{93}{97}$

- **A.** 8739.04
- **B.** 8730.04
- **C.** 8733.04
- **D.** 8737.04

Answer: C

Explanation:

Given Question is $89 + 95 \times 91 - \frac{93}{97}$

When we apply BODMAS RULE to the above question, we get (Bracket Of Division) $89 + 95 \times 91 - \frac{93}{97}$ = $89 + 95 \times 91 - 0.95 = 8733.04$

10. Can you find the answer for the below equation

$101 + 93 - \frac{105}{94} \times 92$

- **A.** 97.23
- **B.** 88.23
- **C.** 95.23
- **D.** 91.23

Answer: D

Explanation:

Given Question is $101 + 93 - \frac{105}{94} \times 92$

When we apply BODMAS RULE to the above question, we get (Bracket Of Division) $101 + 93 - \frac{105}{94} \times 92$ = $101 + 93 - 1.11 \times 92 = 91.23$

11. The fourth proportional to 5, 8, and 15 is:

- **A.** 18

B. 24
C. 19
D. 20

Answer: B

Explanation: Let the fourth proportional to 5, 8, 15 be x.

Then, 5: 8: 15: x

5x = (8 x 15)

x = $\frac{(8\ x\ 15)}{5}$ = 24.

12. Two number are in the ratio 3: 5. If 9 is subtracted from each, the new numbers are in the ratio 12 :23. The smaller number is:

A. 27
B. 33
C. 49
D. 55

Answer: B

Explanation:

Let the numbers be 3x and 5x.

Then, $\frac{3x-9}{5x-9} = \frac{12}{23}$

23(3x - 9) = 12(5x - 9)

9x = 99

x = 11.

The smaller number = (3 x 11) = 33.

13. Which of the following has most number of divisors?

A. 99
B. 101
C. 176
D. 182

Answer: C

Explanation:

Divisors of 99=1, 3, 9,11,33,99

Divisors of 101=1,101

Divisors of 176=1, 2, 4,8,11,22,44,88,176

Divisors of 182=1, 2,7,13,14,26,91,182

Therefore 176 has most number of divisors.

14. A girl wrote all the numbers from 100 to 200. Then she started counting the number of one's that has been used while writing all these numbers. What is the number that she got?

- **A.** 111
- **B.** 119
- **C.** 120
- **D.** 121

Answer: C

Explanation:

From 100 to 200 there are 101 numbers.

There are 100, 1's in the hundred place.

10, 1's in tens place and10, 1's in unit place.

Thus, the answer is 100+10+10= 120.

15. How many five digit multiples of 11 are there, if the five digits are 3, 4, 5, 6 and 7?

Repetition of digits is now allowed?

- **A.** 10
- **B.** 11
- **C.** 12
- **D.** 13

Answer: C

Explanation:

A number is divisible by 11, if the difference between the sum of digits at even places and odd places is either 0 or divisible by 11.

Numbers 5,3,6,4,7 is a multiple of 11

∵(5+6+7)−(3+4)=11, which is a multiple of 11

The number at odd places 5,6,7 can be arranged in 3! ways and 3,4 can be arranged in 2! ways.

Therefore, the total number of ways of such numbers =3!×2!=12

16. On selling 17 balls at Rs. 720, there is a loss equal to the cost price of 5 balls. The cost price of a ball is:

- **A.** Rs. 45
- **B.** Rs. 50
- **C.** Rs. 55
- **D.** Rs. 60

Answer: D

Explanation:

(C.P. of 17 balls) - (S.P. of 17 balls) = (C.P. of 5 balls)

C.P. of 12 balls = S.P. of 17 balls = Rs.720.

C.P. of 1 ball = Rs.$[\frac{720}{12}]$= Rs. 60.

17. When a plot is sold for Rs. 18,700, the owner loses 15%. At what price must that plot be sold in order to gain 15%?

- **A.** Rs. 21,000
- **B.** Rs. 22,500
- **C.** Rs. 25,300
- **D.** Rs. 25,800

Answer: C

Explanation: 85: 18700 = 115 : x

x = $[\frac{18700\ x\ 115}{85}]$ = 25300.

Hence, S.P. = Rs. 25,300.

18. A takes twice as much time as B or thrice as much time as C to finish a piece of work. Working together, they can finish the work in 2 days. B can do the work alone in:

- **A.** 4 days

B. 6 days
C. 8 days
D. 12 days

Answer: B

Explanation:

Suppose A, B and C take x, $\frac{X}{2}$ and $\frac{X}{3}$ days respectively to finish the work.

Then, $\frac{1}{X} + \frac{2}{X} + \frac{3}{X} = \frac{1}{2}$

$\frac{6}{X} = \frac{1}{2}$

x = 12.

So, B takes $\frac{12}{2}$ = 6 days to finish the work.

19. A works twice as fast as B. If B can complete a work in 12 days independently, the number of days in which A and B can together finish the work in:

A. 4 days
B. 6 days
C. 8 days
D. 18 days

Answer: A

Explanation:

Ratio of rates of working of A and B = 2 : 1.

So, ratio of times taken = 1: 2.

B's 1 day's work $=\frac{1}{2}$.

Therefore A's 1 day's work = $\frac{1}{6}$; (2 times of B's work)

(A + B)'s 1 day's work = ($\frac{1}{6}$; + $\frac{1}{12}$) $=\frac{3}{12}=\frac{1}{4}$.

So, A and B together can finish the work in 4 days.

20. In covering a distance of 30 km, Abhay takes 2 hours more than Sameer. If Abhay doubles his speed, then he would take 1 hour less than Sameer. Abhay's speed is:

A. 5 kmph
B. 6 kmph
C. 6.25 kmph
D. 7.5 kmph

Answer: A

Explanation: Let Abhay's speed be x km/hr.

Then, $\frac{30}{X} - \frac{30}{2X} = 3$

6x = 30

x = 5 km/hr.

21. Robert is travelling on his cycle and has calculated to reach point A at 2 P.M. if he travels at 10 kmph, he will reach there at 12 noon if he travels at 15 kmph. At what speed must he travel to reach A at 1 P.M.?

A. 8 kmph
B. 11 kmph
C. 12 kmph
D. 14 kmph

Answer: C

Explanation:

Let the distance travelled by x km.

Then, $\frac{X}{10} - \frac{2}{15} = 2$

3x - 2x = 60

x = 60 km.

Time taken to travel 60 km at 10 km/hr = $[\frac{60}{10}]$hrs = 6 hrs.

So, Robert started 6 hours before 2 P.M. i.e., at 8 A.M.

Required speed = $\frac{60}{5}$kmph. = 12 kmph.

22. A sum of money at simple interest amounts to Rs. 815 in 3 years and to Rs. 854 in 4 years. The sum is:

A. Rs. 650
B. Rs. 690
C. Rs. 698
D. Rs. 700

Answer: C

Explanation:

S.I. for 1 year = Rs. (854 - 815) = Rs. 39.

S.I. for 3 years = Rs.(39 x 3) = Rs. 117.

Principal = Rs. (815 - 117) = Rs. 698.

23. How much time will it take for an amount of Rs. 450 to yield Rs. 81 as interest at 4.5% per annum of simple interest?

A. 3.5 years
B. 4 years
C. 4.5 years
D. 5 years

Answer: B

Explanation:

Time = $[\frac{100x\ 81}{450\times4.5}]$years = 4 years

24. Find out the next term in the series 7, 11, 13, 17, 19, ...

A. 21
B. 23
C. 27
D. None of these

Answer: B

Explanation: Given series is a consecutive prime number series. Therefore, the next term will be 23.

25. Find the missing term 6, ?, 21, 33, 48

A. 14
B. 20
C. 12
D. 18

Answer: C

Explanation:

Series Pattern

+6, +9, +12, +15....

∴ Missing term = 6 + 6 = 12

26. How much sugar at Rs. 9.5 a kg should be added to 17 kg of tea at Rs. 20 a kg so that the mixture be worth Rs. 13 a kg.?

- **A.** 11 kg
- **B.** 17 kg
- **C.** 21 kg
- **D.** 34 kg

Answer: D

Explanation:

Ratio in which tea and sugar should be mixed

= 20 – 13: 13 – 9.5 = 7: 3.5 ⇒ 7: 3.5 ⇒ 2:1.

Let x be quantity at 9.5/kg. ∴ 2: 1 = x: 17, hence x = 34 kg.

27. A hospital uses a mixture of salt and water at Rs. 7.62/litre. This mixture contains 5 % salt. Another mixture containing 75 % water costs Rs. 7.82/litre. How much does the patient pay if he buys 5 litres of mixture containing 18% salt?

- **A.** Rs. 83.75
- **B.** Rs. 73.85
- **C.** Rs. 37.85
- **D.** Rs. 38.75

Answer: D

Explanation:

1st mixture contains 5 % salt. 2nd mixture contains 75 % water i.e. 25 % salt.

Required % of salt = 18 %.

∴ Required ratio = 25 – 18: 18 – 5 = 7: 13 and required price of the mixture = 7.82 – x : x – 7.62 = 7 : 13 ⇒ x = 7.75/ liter.

Hence price of 5 liters of this mixture = 7.75 x 5 = Rs. 38.75.

28. The greatest possible length which can be used to measure exactly the lengths 7 m, 3 m 85 cm, 12 m 95 cm is:

- **A.** 15 cm
- **B.** 25 cm
- **C.** 35 cm
- **D.** 42 cm

Answer: C

Explanation:

Required length = H.C.F. of 700 cm, 385 cm and 1295 cm = 35 cm.

29. Three numbers which are co-prime to each other are such that the product of the first two is 551 and that of the last two is 1073. The sum of the three numbers is:

- **A.** 75
- **B.** 81
- **C.** 85
- **D.** 89

Answer: C

Explanation:

Since the numbers are co-prime, they contain only 1 as the common factor.

Also, the given two products have the middle number in common.

So, middle number = H.C.F. of 551 and 1073 = 29;

First number = $[\frac{551}{29}]$ = 19; Third number = $[\frac{1073}{29}]$ = 37.

Required sum = (19 + 29 + 37) = 85.

30. The sum of ages of 5 children born at the intervals of 3 years each is 50 years. What is the age of the youngest child?

- **A.** 4 years
- **B.** 8 years
- **C.** 10 years
- **D.** None of these

Answer: A

Explanation:

Let the ages of children be x, (x + 3), (x + 6), (x + 9) and (x + 12) years.

Then, x + (x + 3) + (x + 6) + (x + 9) + (x + 12) = 50

5x = 20

x = 4.

Age of the youngest child = x = 4 years.

31. A father said to his son, "I was as old as you are at the present at the time of your birth". If the father's age is 38 years now, the son's age five years back was:

- **A.** 14 years
- **B.** 19 years
- **C.** 33 years
- **D.** 38 years

Answer: A

Explanation:

Let the son's present age be x years. Then, (38 - x) = x

2x = 38.

x = 19.

Son's age 5 years back (19 - 5) = 14 years.

32. The average age of husband, wife and their child 3 years ago was 27 years and that of wife and the child 5 years ago was 20 years. The present age of the husband is:

- **A.** 35 years
- **B.** 40 years
- **C.** 50 years
- **D.** None of these

Answer: B

Explanation:

Sum of the present ages of husband, wife and child = (27 x 3 + 3 x 3) years = 90 years.

Sum of the present ages of wife and child = (20 x 2 + 5 x 2) years = 50 years.

Husband's present age = (90 - 50) years = 40 years.

33. In Arun's opinion, his weight is greater than 65 kg but less than 72 kg. His brother doest not agree with Arun and he thinks that Arun's weight is greater than 60 kg but less than 70 kg. His mother's view is that his weight cannot be greater than 68 kg. If all are them are correct in their estimation, what is the average of different probable weights of Arun?

- **A.** 67 kg.
- **B.** 68 kg.
- **C.** 69 kg.
- **D.** Data inadequate

Answer: A

Explanation:

Let Arun's weight by X kg.

According to Arun, 65 < X < 72

According to Arun's brother, 60 < X < 70.

According to Arun's mother, X <= 68

The values satisfying all the above conditions are 66, 67 and 68.

Required average $=[\frac{66+67+68}{3}]=[\frac{201}{3}]=67$

34. A cistern of capacity 8000 litres measures externally 3.3 m by 2.6 m by 1.1 m and its walls are 5 cm thick. The thickness of the bottom is:

- **A.** 90 cm
- **B.** 1 dm
- **C.** 1 m
- **D.** 1.1 cm

Answer: B

Explanation:

Let the thickness of the bottom be x cm.

Then, [(330 - 10) x (260 - 10) x (110 - x)] = 8000 x 1000

320 x 250 x (110 - x) = 8000 x 1000

(110 - x) $= \frac{8000x\ 1000}{320\ x\ 250}$ = 100

x = 10 cm = 1 dm.

35. How many bricks, each measuring 25 cm x 11.25 cm x 6 cm, will be needed to build a wall of 8 m x 6 m x 22.5 cm?

- **A.** 5600
- **B.** 6000
- **C.** 6400
- **D.** 7200

Answer: C

Explanation:

Number of bricks $= \frac{Volume\ of\ the\ wall}{Volume\ of\ 1\ brick} = \frac{800\ x\ 600\ x\ 22.5}{25\ x\ 11.25}$ = 6400.

36. 2, 15, 41, 80,

- **A.** 111
- **B.** 120
- **C.** 121
- **D.** 132

Answer: D

Explanation:

The pattern is + 13, + 26, + 39,

So, missing term = 80 + 52 = 132.

37. 6, 11, 21, 36, 56, ?

- **A.** 42
- **B.** 51
- **C.** 81
- **D.** 91

Answer: C

Explanation:

The pattern is + 5, + 10, + 15, + 20, ...

So, missing term = 56 + 25 = 81.

38. Two students appeared at an examination. One of them secured 9 marks more than the other and his marks was 56% of the sum of their marks. The marks obtained by them are:

- **A.** 39, 30
- **B.** 41, 32
- **C.** 42, 33
- **D.** 43, 34

Answer: C

Explanation:

Let their marks be (x + 9) and x.

Then, x + 9 = $\frac{56}{100}$(x + 9 + x)

25(x + 9) = 14(2x + 9)

3x = 99

x = 33

So, their marks are 42 and 33

39. If 20% of a = b, then b% of 20 is the same as:

- **A.** 4% of a
- **B.** 6% of a
- **C.** 8% of a
- **D.** 10% of a

Answer: A

Explanation:

20% of a = b

=>[$\frac{20}{100}$] ×a = b

b% of 20 = $\frac{b}{100}$ x 20 = [$\frac{(\frac{20a}{100}}{100}$] x 20= $\frac{4a}{100}$ = 4% of a.

40. The perimeter of a square is equal to twice the perimeter of a rectangle of length 10 cm and breadth 4 cm. What is the circumference of a semi-circle whose diameter is equal to the side of the square?

- **A.** 38 cm

B. 36 cm
C. 35 cm
D. 48 cm

Answer: B

Explanation:

Perimeter of square = 2(l + b)

= 2 ×2(10 + 4) = 2 × 28 = 56 cm

Side of square = $\frac{56}{4}$= 14 cm

Radius of semi circle = $\frac{14}{2}$= 7cm

Circumference of the semi-circle = $\frac{22}{7}$ × 7+ 14 = 36 cm

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