GRE

Quant Reasoning Assessment

Stats and DI

Answer Explanations

SECTION: I- STATISTICS

1. **Correct answer: A & D**
   Explanation:
   Let the two numbers be x & Y
   (x+y)/2=5 and sqrt(xy)=4
   x+y=5*2 and xy=4^2=16
   Put x=10-y in xy=16
   (10-y)y=16
   10y-y^2=16
   y^2-10y+16=0
   y^2-8y-2y+16=0
   y(y-8)-2(y-8)=0
   (y-2)(y-8)=0
   The numbers are 2 & 4
   Options A & D are true

2. **Correct answer: A: 85**
3. Since mean is 4:
   a+b+c+d+e=20

   Since mode is 1, at least 2 numbers must be 1 (let's say a=1, b=1), and no other numbers must repeat.

   median is 5, meaning:
   1, 1, 5, d, e

   1+1+5+d+e=20, so d+e=13, and both d and e must be greater than 5. This is true for d=6 and e=7, thus the answer:

   1, 1, 5, 6, 7
4. The correct Answer is **23 1/3** and the correct **Choice is (C)**.

   Explanatory Answer
   The average of x and y = 30.

   i.e., $\dfrac{x+y}{2}$ = 30

   Hence, x + y = 60

   If z = 10, then x + y + z = 60 + 10 = 70.

   Therefore, the average of x, y and z = $\dfrac{x+y+z}{3} = \dfrac{70}{3} = 23\dfrac{1}{3}$

5. **Correct answer: E**

Standard deviation means the number is deviated twice from the mean. So the number is value of the number +/- 2* standard deviation. There is +/- because the number can be deviated to the left (for-) or to the right (for+) from the mean

it could be 5 or 12
because Mean +/-2 (Standard deviation)
X=7+2(2.5)
  =12
or 7-2(2.5)
= 5
Since 5 is not there in the option so the answer is 1212

6. Column A is greater. The standard deviation is S for the new sample also. It is =sqrt (1/N)* summation (x-mean)^2]. The mean also decreases by 5 so all the components within the square root remain the same hence here also we get S only.

7. **Correct answer: C**

   Now let's apply the above knowledge towards this problem.
   1. We need the mean - 43200/600 = 72
   2. 84 - 72 = 12, which by no surprise is in fact the st. dev.
   Therefore we need to find how many people weight more than 1 st. dev. above the average.
3. By the properties stated above - 68% of the values lie WITHIN 1 st.dev. Notice, that our problem requires us to find how many lie OUTSIDE.
   100% - 68% = 32%
   Therefore 32% of the values have a distance greater than 1 st. dev. away of the mean.
   In other words 32% of the values have the following property |x-72| > 12
   4. But we need all values with the property x-72 > 12, that is, all values 'x' north of 84. Since the normal distribution is symmetrical with respect to the mean (by the above properties) we divide 32%/2 or 16% of all people weight more than 84.5. 16% of 600 = 96

8. **Correct answer : D**
   Mean = 10 and Standard Deviation, S.D = 0.3
   1 S.D. of the mean = 1 * 0.3 = 0.3
   Mean - S.D = 10 - 0.3 = 9.7, which is the lower limit
   Mean + S.D. = 10 + 0.3 = 10.3, which is upper limit
   We can see that only 6 out of the 8 given numbers, lie between 9.7 and 10.3.
   So, percent of the 8 numbers that are within 1 standard deviation of the mean = (6/8) * 100 = 75%

9. **Correct Answer : A**
   Solution :
   So, the mean equals:
   (5 + 7 + 6 + 5 + 7)/5
   = 6
   The median, if found by rearranging the numbers in the data set as shown, is {5, 5, 6, 7, 7}. Therefore, the median is 6.

The mode is the most frequently occurring
number. In this data set, there are two
numbers that appear most frequently: {5, 7}.
This implies Choice A is correct:
Hence, mean = median, because 6 = 6

DATA INTERPRETATION: ANSWER EXPLANATIONS

10. 9% of 119 which is approximately 11 (C)

11. 15:11:48 Approx 3:2:10. (consider them as multiples of 5)   (E)

12. Number of students in sports medicine = 18. Fraction of females = 1/3. So approximately 6 students.   (A)

13. number of red wine cases in 2002 = 380. Price per case = 138. Total price = 52440

Number of red wine cases in 2003 = 370. Price per case = 148. Total price = 54760.

Difference = 2320   (E)

14. Avg cost of white wine = 115+125+135+145+159(10% rise) = 679/5 = 135.8 (B)

15. total cases sold over the 4 yr period = 260+380+360+280+370+320+280+380+360+280+340+370= 3980

Number of rose bottles = 1100

Percent = 27.6% (B)

16. From the second graph, we can determine that 8 boxes have almost 25 coins. So 2 boxes have 30 coins. We can also see that 5 boxes have at least 25 coins. Out of those 5, 2 boxes have 30 coins. So three boxes have 25 coins. 4 boxes have almost 15 coins. 2 boxes have 30, 3 boxes have 25, 4 boxes have almost 15, so just 1 box left with 20 coins. (D)

17. since all 5 boxes have a different number of coins, total coins= 12+15+20+25+30 = 102   (A)

18. we know the exact number of coins for 6 of the 10 boxes

30+30+25+25+25+20 = 155.

The remaining 4 could have atmost 15. We know that one out of these has 12 (because all 5 black boxes have a different number of coins so one of them has 12 coins).The remaining 3 boxes could have 15*3 = 45.So maximum possible number of coins = 212 (C)

19. there are 2 white boxes and both have a different number of coins

5 black boxes…number of coins 12,15,20,25,30 1 pink box…30coins.

We have two boxes with 25 coins and 2 boxes with either 12 or 15 coins.

Out of the two boxes with 25 coins, one is definitely white

So the other white box could have 12 or 15 coins.

Total coins 37 or 40.

40 is not in the options so just 37. (B)

20. The number of boxes that are colored Pink, Yellow, White and Black is 1, 2, 2 and 5 respectively. It is also given that no two boxes that are colored with the same color have equal number of

coins.
It is also given that the number of coins in each of the ten boxes is 12, 15, 20, 25 or 30.

Also, since there are five boxes that are colored, the number of coins in the boxes are 12, 15, 20, 25 and 30.

Number of Coins	Number of Boxes
12	1 - 3
15	1 - 3
20	1
25	3
30	2

Given that the total number of coins in the boxes that are
colored Yellow is maximum possible, which means that, the total number of coins in the boxes that are colored Yellow is:
25+30=55

Also, since the total number of coins in all the boxes is least,
which means that the number of boxes in which there are 15 coins and 12 coins is 1 and 3 respectively.

So, the only possibility that is left is the box that is colored Pink has 12 coins and the two boxes that are colored White have 25 and **12** coins. (D)

21. Answer: Option **D**

Explanation:

Let the expenditure in 1996 = x.

Also, let the incomes in 1996 and 1999 be I1 and I2 respectively.

Then, for the year 1996, we have:

$$55 = \frac{I_1 - x}{x} \times 100 \implies \frac{55}{100} = \frac{I_1}{x} - 1 \implies I_1 = \frac{155x}{100} \quad \text{... (i)}$$

$$70 = \frac{I_2 - x}{x} \times 100 \implies \frac{70}{100} = \frac{I_2}{x} - 1 \implies I_2 = \frac{170x}{100} \quad \text{... (ii)}$$

From (i) and (ii), we get:

$$\frac{I1}{I2} = \frac{\left(\frac{155x}{100}\right)}{\left(\frac{170x}{100}\right)} = \frac{155}{170} \approx \frac{0.91}{1} \approx 9:10.$$

22. Answer: Option **C**

Explanation:

Let the expenditure is 1998 be Rs. x crores.

Then, $65 = \dfrac{264 - x}{x} \times 100$

$\Rightarrow \dfrac{65}{100} = \dfrac{264}{x} - 1$

$\Rightarrow x = \dfrac{264 \times 100}{165} = 160.$

∵ Expenditure in 1998 = Rs. 160 crores.

23. Answer: Option **B**

Explanation:

Average percent profit earned for the given years

$= \dfrac{1}{6} \times [40 + 55 + 45 + 65 + 70 + 60] = \dfrac{335}{6} = 55\dfrac{5}{6}.$

Next graph

24. Answer: Option D
Explanation:
Required difference
= (272 + 240 + 236 + 256 + 288) - (200 + 224 + 248 + 272 + 260)
= 88.

25. Answer: Option 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
= 1/5 x (1007 + 1464 + 1152 + 1380 + 972)
= 1/5 x (5975)
= 1195

26. Answer: Option D
Explanation:
Total number of Operators who left the Company during 1995 - 2000
= (104 + 120 + 100 + 112 + 144)
= 580.

Total number of Operators who joined the Company during 1995 - 2000
= (880 + 256 + 240 + 208 + 192 + 248
= 2024.
Therefore Required Percentage
= (580/2024)x100% = 28.66% ~= 29%.

27. constitute 18% of $200,000. Don't go to the calculator for such a straightforward percent question!

0.018*200000 = {18/100}*200000 = 18*2000 = $36000

Answer = D

28. From the bar chart, prepared meals account for about $18,000 in sales. This $18,000 is what percent of $200,000? Again, please don't jump to the calculator for this.

percent = {part/whole} * 100% = {18000/200000} * 100% = {18/200} * 100% = 18/2 % = 9%

Answer = B

29. This is a tricky question, because there's a tempting wrong answer. The bakery accounts for 6% of the total sales in first quarter, so if you triple that, it's 18%, right? Wrong! The new amount would be 18% of the total sales in the first quarter, but we want to know what percent would it be of the total sales in the second quarter? That's a new total because, even though everything else stayed the same, bakery sales increased.

We don't need to consider the actual numbers: we can just work with the percents. Bakery sales triple from 6% to 18% — that's the new "part." Since the bakery goes up 12% from 6% to 18%, and all other sales stay the same, the new total is 112% — that's the new "whole."

percent = {part/whole} * 100% = {18/112} * 100% = 16.0714%

 You can use the calculator if you like, although you could also approximate that the answer will not be 18% but rather something a little below 18%, because the "whole" has increased a bit. Either way, the answer = C.

30. The IQR is the distance from Q1 to Q3. From the boxplot, we read that Q1 = 9 and Q3 = 56, and the difference between them is 56 – 9 = 47. Answer = B

31. From the boxplot, we read that 25 RBIs is the median, so that number divides the list in half. There are 280 hitters on this list: half must be above the median, and half below. Therefore, there are 140 hitters above the median value of 25 RBIs. Answer = E.

32. Upton, at 78 RBIs, is the 90th percentile. From the boxplot, we read that 56 RBIs, is Q3, i.e. the 75th percentile. Between the 75th percentile and the 90th percentile is 15% of the list. There are 280 hitters on the list, so 15% of 280 = 0.15*280 = 42. There are 42 hitters between 56 RBIs and 78 RBIs. Answer = E.

33. B. 750

34. Answer : B

 Explanation :

 100 times as sweet as glucose = 74. Let x be the number of grams of sucrose to be added to saccharin. 1 gram of saccharin = 675. If x grams of sucrose is added to 1 gram of saccharin, then the sweetness of the mixture=(Sweetness/number of grams) = (x(1.00) + 675)/(1 + x) and we need it to be equal to 74. Therefore x + 675 = 74 + 74x Therefore x - 74x = 74 - 675 Therefore - 73x = - 601 Therefore x = (601/73) = 8.2 grams. It is nearest to 8 grams.

35. Answer : A

Explanation :

Obviously we must use less of the glucose than Lactose to get 0.32, since glucose is sweeter than lactose. In the given choices the least proportion of glucose to lactose is 8 : 21. Therefore the answer is (A). Or Suppose the ratio is x:y. Assume x+y=1. Then x(0.74)+(1-x)(0.16)=0.32 implies x(0.74-0.16)=0.32-0.16 implies x(0.58)=0.16 implies x=(16/58)=(8/29). y=(1-x)=(21/29) Therefore the ratio is 8:21.

36. Answer : E

Interest on bonds = (b/100)*Amount invested in bonds

x = (b/100)* Amount invested in bonds

Amount invested in bonds = 100x/b

If you observe the graph, you will find that amount invested in mortgages is twice the amount invested in bonds

Hence the answer, 200x/b