Mock Test Number: 008

1. Jake is faster than Paul. Jake and Paul each walk 24 km. The sum of their speeds is 7 km/h and the sum of time taken by them is 14 hours. Then Jake's speed is equal to :

A. 7km/hr
B. 3km/hr
C. 5km/hr
D. 4km/hr

Answer: $T_J + T_P = 14 \Rightarrow 24/S_J + 24/S_P = 14$

$S_J > S_P$ Also, $S_J + S_P = 7$ km/hr

But hit and trial, if $S_J = 4$
$S_P = 3$

$24/4 + 24/3 = 6 + 8 = 14$ km/hr

$\boxed{\text{So } S_J = 4 \text{ km/hr}}$

2. A & B starts from their house at 10 am at 20 kmph and 40 kmph respectively. There is a T junction on their path A turned left at 12 noon from T junction .B reaches earlier and turned right. Distance between A and B?

A. 20km
B. 24km
C. 40km
D. 44km

Answer:

If A took two hours to reach T junction, B must have taken 1 hour (as A's speed is half of B's).
So for that 1 hour B must be travelling new path at a speed of 40km/hr.
So distance between them at 12 noon is

$\boxed{40 \text{ km/hr} \times 1 \text{ hr} = 40 \text{ km}}$

3. Find no of ways in which 4 particular persons a,b,c,d and 6 more persons can stand in a queue so that A always stand before B. B always stand before C, And C always stand before D.

A. 11! / 4!
B. 10! / 4!
C. 12! / 4!
D. 22! / 4!

Answer:
Total of 10 persons are there which can be arranged in 10! ways.
A, B, C, D can themselves be arranged in 4! ways.
Of all the 4! arrangements, there is only one that is required. So, total no. of possible arrangements would be $\boxed{\frac{10!}{4!}}$

4. 27th rank of MOTHER in dictionary.

A. EMRHOT
B. EMHRTO
C. EMHROT
D. EMRHTO

Answer: Words begin with EH = E H MOTR = 4! = 24

Then H will be replaced by M followed by H again & then E M H O R T = 2! = 2

26 words.

$\boxed{\text{27th word will be = EMHROT}}$

5. The length and breadth of a field is 300x400ft, if there are 3 ants on average per square inch of field. find the number of ants in field.

A. 54862584
B. 12985472
C. 36529157
D. 51840000

Answer:
Area = [300 x 12] x [400 x 12] (inch)^2

No. of Ants = 3600 x 4800 x 3

$\boxed{= 51840000}$

6. On a 26-question test, five points were deducted for each wrong answer and eight points were added for each correct answer. If all the questions were answered, how many were correct if the score was zero?

A. 11
B. 12
$\boxed{\text{C. } 10}$
D. 19

Answer: Let no. of correct answers = a
Let no. of wrong answers = b

$a+b=26 \times 5 \Rightarrow 5a+5b=130$

$8a-5b=0$

$13a=130$

$a=10$

Solving we get $\boxed{a=10}$ = correct answers.

$b=16$ = wrong

7. Mother, daughter and infant total weight is 74 kg. Mother's weight is 46 kg more than daughter and infant's weight. Infant's weight is 60% less than daughter's weight. Find daughter's weight.

$\boxed{\text{A. } 10 \text{ kg}}$
B. 50 kg
C. 48 kg
D. 44 kg

Answer: $M+D+I=74$ —— (1)

$M=[D+I]+46 \Rightarrow D+I=M-46$ —— (2)

From (1)&(2) $M+[M-46]=74 \Rightarrow M=60$

So $D+I=14$ —— (3)

Also, $I=0.4D$ from (3)

$D+0.4D=14 \Rightarrow \boxed{D=10}$

8. George and Mark can paint 720 boxes in 20 days. Mark and Harry in 24 days and Harry and George in 15 days. George works for 4 days, Mark for 8 days and Harry for 8 days. The total number of boxes painted by them is –

A. 481 boxes
$\boxed{\text{B. } 348 \text{ boxes}}$
C. 520 boxes
D. 110 boxes

Answer: $G+M=720/20=36$ Boxes/day —— (1)

Similarly, $M+H=720/24=30$ Boxes/day —— (2)

$H+G=720/15=48$ Boxes/day —— (3)

$2(G+M+H)=114$ Boxes/day

G + (M+H) = 57 Boxes/day

G = 57 - 30 = 27 Boxes/day

Total Boxes packed = 4G + 8M + 8H = 4G + 8(M+H)

= 4×27 + 8 × 30

= 108 + 240 = $\boxed{\text{348 Boxes}}$

9. How many 6-digit even numbers can be formed from the digits 1,2,3,4,5,6 and 7 so that digits should not repeat and the second last digit is even?

A. 620
B. 320
C. 720
D. 820

Answer: Even nos = 2, 4, 6

odd nos = 1, 3, 5, 7

Last two digits must be Even for the no.s given

2 × 3 × 4 × 5 × 2 × 3

Any 1 of 4 digits left · Any 1 of 5 digits left · 2 even digits left · Any of 2, 4, 6

$\boxed{= 720}$

Read from here

10. A lies on mon, tues, wed and speak truths on other days, B lies on Thurs, Fri, Sat and speaks truths on other days. One day a said I lied yesterday and B said I too lied yesterday. What is the day?

A. Monday
B. Thursday
C. Friday
D. Wednesday

Answer:

THURSDAY

11. A mother has 3 babies – Usha, Nisha and Eesha. If Usha is sleeping, Eesha is drinking milk. If Nisha is not sleeping, Eesha is not drinking. It never happens that both Usha and Nisha are sleeping. Father concludes that Usha never sleeps. Mother concludes that Nisha never sleeps. Nurse concludes that Eesha always drinks. Who has made a correct deduction? [DCRU]

A. Only Father and Mother
B. Only Father
C. Only Nurse and Mother
D. Only Nurse

Answer: Both Usha & Nisha don't sleep at same time. consider three scenarios.

S1: Usha is sleeping & Nisha is not sleeping.

Esha is drinking milk ! Esha not drinking milk.

S_2: Nisha is sleeping & Usha is not sleeping

↓

Esha may or may not be drinking. | Esha may or maynot be drinking.

In conclusive

S_3: Nisha not sleeping & Usha not sleeping.

↓

Esha not drinking   Esha may or maynot drinking

Esha not drinking satisfies both the above conclusion.

∴ S_3 is correct & hence answer is $\boxed{\text{option A}}$

12. Ashok, Eesha, Farookh, and Gowri ran a race. Ashok said, "I did not finish 1st or 4th ".Eesha said, "I did not finish 4th". Farookh said, "I finished 1st ". Gowri said, "I finished 4th". There were no ties in the competition, and exactly three of the children told the truth. Who finished 4th?

A. Farookh
B. Eesha
C. Gowri
D. Ashok

Answer: A's statement can't be false (as the converse of it is true → A is 1st & 4th → not possible)

E's statement can't be false as if it is E stood 4th. Also G's st. will become true & G also will become 4th → Not possible.

→ F's statement (st.) is false is possible as if it is, we have other 3 statements true to using that, we get

1	2	3	4
E	F/A	A/F	G

∴ Gowri is the answer.

13. In a country 60% of the male citizen and 70% of the female citizen are eligible to vote.70% of the male citizens are eligible to vote voted and 60% of female citizens are eligible to vote voted. What fraction of the citizens voted during the election?

A. 44%
B. 21%
C. $\boxed{\text{42\%}}$
D. 22%

Answer:

Let Male & female citizens are there

Eligible are 0.6M & 0.7F

People voted = $0.7 \times 0.6M + 0.6 \times 0.7M$

$= 0.42(M+F)$

% of people voted = $\frac{0.42(M+F)}{(M+F)} \times 100 = \boxed{42\%}$

14. One card is lost out of 52 cards. two cards are drawn randomly. They are spade. What is the probability that the lost card is also spade?

A. 12/20
B. $\boxed{\text{11/50}}$
C. 20/10
D. 60/18

Answer:

P(Lost card is spade / 2 cards drawn are spade)

$= \frac{\text{P(Lost card is spade \& 2 cards drawn are spade)}}{\text{P(2 cards drawn are spade)}}$

$= \frac{\text{P(Lost cards is spade)} \times \text{P(2 cards are spade)}}{\text{P(2 cards are spade)}}$

$= \frac{(13/52) \times \left(\frac{12C_2}{51C_2}\right)}{13C_2/52C_2} = \boxed{11/50}$

15. A man has 7 friend among them 4 are female and 3 are male. And his wife has 7 friend among them 4 are male and 3 are female. 6 person were invited for party…what is the probability that there were 3 female ,3 male ,3 female friends of man and 3 male friends of his wife?

A. $4c_3 * 4c_3/4c_6$
B. $4c_3 * 4c_3/24c_6$
C. $\boxed{4c_3 * 4c_3/14c_6}$
D. None of these

Answer:

Female friends of husband → $\frac{4C_3 \times 4C_3}{14C_6}$ ← Male friends of wife can be selected from 4 friends.

$14C_6$ ↓ Total no. of ways of inviting 6 friends to the party out of 14.

16. What is the total number of divisor of 600(including 1 and 600)?

$\boxed{\text{A. 24}}$ C. 16
B. 40 D. 20

Answer:

$600 = 6 \times 100 = 2 \times 3 \times 2^2 \times 5^2 = 2^3 \times 3^1 \times 5^2$

No. of factors $= (3+1)(1+1)(2+1)$
$= 24$

(Adding 1 to the powers of prime no.s & multiplying the same).

17. What is the sum of the squares of the first 20 natural numbers (1 to 20)?

$\boxed{\text{A. 2870}}$ C. 565
B. 2000 D. 44100

Answer:

$1^2 + 2^2 + 3^2 + \cdots + 20^2 = \frac{20 \times 21 \times 41}{6} = 2870$

$[1^2 + 2^2 + \cdots + n^2] = \frac{n(n+1)(2n+1)}{6}$ put $n = 20$ above

18. A call center agent has a list of 305 phone numbers of people in alphabetic order names (but she does not have any of the names). She needs to quickly contact D Sharma to convey a message to him. If each call takes 2 minutes to complete, an every call is answered, what is the minimum amount of time in which she can guarantee to deliver the message to Mr. Sharma?

A. 18 minutes C. 206 minutes
$\boxed{\text{B. 610 minutes}}$ D. 34 minutes

Answer:

There is a possibility that D Sharma is last on the list

so, time taken $= 305 \times 2 = \boxed{610 \text{ min}}$

19. The times taken by a phone operator to complete a call are 2, 9,3,1,5 minutes respectively. What is the average time per call?

$\boxed{\text{A. 4 minutes}}$ C. 1 minutes
B. 7 minutes D. 5 minutes

Answer:

$\frac{2+9+3+1+5}{5} = \boxed{4}$

20. The times taken by a phone operator to complete a call are 2, 9,3,1,5 minutes respectively. What is the median time per call?

A. 5 minutes
B. 3 minutes
C. 1 minutes
D. 4 minutes

Answer:

Arrange in ascending order, 1,2 3 5 9

The middle ~~other~~ value $\boxed{3 \text{ mins}}$ is the answer.

21. Eric throws two dice, and his score is the sum of the values shown. Sandra throws die, and her score is the square of the value shown. What is the probability that Sandra's score will be strictly higher than Eric's score?

A. 137/216
B. 17/36
C. 173/216
D. 5/6

Answer:

If Sandra's score is 1 → $1^2 = 1$ → possible scores of Eric so that it is less than Sandra's → 0 ways

if score is 2 → $2^2 = 4$ (1,1), (1,2), (2,1)
= 3 ways [as possible scores are 2 2 3]

if score is 3 → $3^2 = 9$ → [As possible scores are 2, 3, 4, 5, 6, 7, 8]

For 2 we have 1 ways
3 2 ways
4 3 ways
5 4 ways
6 5 ways
7 6 ways
8 5 ways

Total ways of achieving the way is
0 + 3 + 26 + 36 × 3 = 137

Total possible out comes = 137 --

$\boxed{\text{probability} = 137/216}$

22. What is the largest integer that divides all three numbers 23400,272304,205248 without leaving a remainder?

A. 48

$\boxed{\text{B. 24}}$

C. 96

D. 72

Answer:

HCF of all nos given

Ans. will be 24

Hint: Go by options

23. Of the 38 people in my office, 10 like to drink chocolate, 15 are cricket fans, and 20 neither like chocolate nor like cricket. How many people like both cricket and chocolate?

$\boxed{\text{A. 7}}$

B. 10

C. 15

D. 20

Answer:

If 20 don't like anything ⇒ 18 like atleast one of the two.

$n(A \cup B) = 18$

$n(A) = 10$

$n(B) = 15$

$n(A \cap B) = x$

If 20 don't like anything

$\Rightarrow n(A \cup B) = n(A) + n(B) - n(A \cap B)$

$\Rightarrow 18 = 10 + 15 - x$

$\Rightarrow \boxed{x = 7}$

24. If f(x) = 2x+2 what is f(f(3))?

$\boxed{\text{A. 18}}$

B. 8

C. 64

D. 16

Answer:

$f(3) = 2 \times 3 + 2 = 8$

$f(f(3)) = f(8) = 2 \times 8 + 2 \boxed{= 18}$

25. If f(x) = 7x+12. What is f-1(x) (the inverse function)?

$\boxed{\text{A. (x-12)/7}}$

B. 7x+12

C. 1/(7x+12)

D. No inverse exist

Answer:

Let $f(x) = y = 7x + 12 \Rightarrow x = \frac{y-12}{7}$

Also, $x = f^{-1}(y) = \frac{y-12}{7}$

$\therefore f^{-1}(y) = (y-12)/7$

$f^{-1}(x) = (x-12)/7$

26. A permutation is often represented by the cycles it has. For example, if we permute the numbers in the natural order to 2 3 1 5 4, this is represented as (1 3 2) (5 4). In this the (132) says that the first number has gone to the position 3, the third number has gone to the position 2, and the second number has gone to position 1, and (5 4)

means that the fifth number has gone to position 4 and the fourth number has gone to position 5. The numbers with brackets are to be read cyclically. If a number has not changed position, it is kept as a single cycle. Thus 5 2 1 3 4 is represented as (1345) (2).

We may apply permutations on itself If we apply the permutation (132) (54) once, we get 2 3 1 5 4. If we apply it again, we get 3 1 2 4 5 , or (1 2 3) (4) (5)

If we consider the permutation of 7 numbers (1457) (263) . What is its order (how many times must it be applied before the numbers appear in their original order)?

A. 12 | C. 7!
B. 7 | D. 14

Answer:

Solved at last page.

27. What is the maximum value of x3y3 + 3 x*y when x+y =8?

A. 4144 | C. 8192
B. 256 | D. 104

Answer:

x^3y^3+3xy will be maximum when xy will be maximum.

If Sum of variables is constant, product of variables is maximum when they have equal values.

$x+y=8$, for max^m value of $x\cdot y$, $x=y$

$2x=8 \Rightarrow x=4$

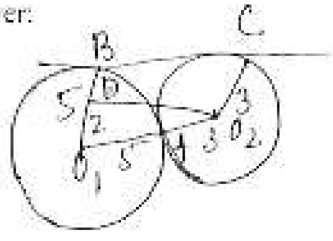
$x^3y^3+3xy = x^3\cdot x^3+3x\cdot x = 4^3\times4^3+3\times4\times4$

$\boxed{=4144}$

28. Two circles of radii 5 cm and 3 cm touch each other at A and also touch a line at B and C. The distance BC in cms is?

$\boxed{\text{A. } \sqrt{60}}$ B. $\sqrt{62}$ C. $\sqrt{68}$ D. $\sqrt{64}$

Answer:



$O_1A = 5$ $O_1B = 5$

$O_2A = 3$ $O_1C = 3$

$O_1O_2 = 5+3 = 8$ $O_1D = 5-3 = 2$

[$BC \parallel OD$ & $D_2C = DB$

$\therefore$ In triangle O_1DO_2,

$(O_1O_2)^2 = (O_1D)^2 + (O_2D)^2$

$8^2 = 2^2 + (O_2D)^2 \Rightarrow O_2D = \sqrt{60} = BC$

29. In Goa beach, there are three small picnic tables. Tables 1 and 2 each seat three people. Table 3 seats only one person, since two of its seats are broken. Akash, Babu, Chitra, David, Eesha, Farooq, and Govinda all sit at seats at these picnic tables. Who sits with whom and at which table are determined by the following constraints:

i. Chitra does not sit at the same table as Govinda
ii. Eesha does not sit at the same table as Govinda.
iii. Farooq does not sit at the same table as Chitra.
iv. Akash does not sit at the same table as Babu.
v. Govinda does not sit at the same table as Farooq.

Which of the following is a list of people who could sit together at table 2?

A. Govinda,Eesha,Akasha
B. Babu,Farooq,Chitra
C. Chitra,Govinda,David
$\boxed{\text{D. Farooq,David,Eesha}}$

Answer:

Option A is not possible because of (ii),

option B is not possible because of (iii).

Option C is not possible because of (i).

So, only (d) is possible.

30. There are a number of chocolates in a bag. If they were to be equally divided among 14 children, there are 10 chocolates left. If they were to be equally divided among 15 children, there are 15 8 chocolates left. Obviously, this can be satisfied if any multiple of 210 chocolates are added to the bag. What is the remainder when the minimum feasible number of chocolates in the bag is divided by 9?

$\boxed{\text{A. 2}}$ C. 4
B. 5 D. 6

Answer:

Number of chocolates, $C = 14a + 10$ (as 10 is the remainder) — ①

$C = 15b + 8$ (as 8 is the remainder) — ②

From ①

$a = 1$ $C = 24$, but it doesn't satisfy ②

$a = 2$ $C = 38$ it satisfies ② as $b = 2$

So minimum value of chocolates $= 38$

when 38 is divided by 9. $\boxed{\text{Remainder} = 2}$

31. Let f(m,n) =45*m +36*n, where m and n are integers (positive or negative) What is the minimum positive value for f(m,n) for all values of m,n (this may be achieved for various values of m and n)?

$\boxed{\text{A. 9}}$ C. 5
B. 6 D. 18

Answer:

So if $m = 1$ & $n = -1$

$45m + 36n = 45 - 36 = \boxed{9}$

32. What is the largest number that will divide 90207, 232585 and 127986 without leaving a remainder?

$\boxed{\text{A. 257}}$ C. 351
B. 905 D. 498

Answer:

Finding the HCF of three given no.s given which is 257.

33. We have an equal arms two pan balance and need to weigh objects with integral weights in the range 1 to 40 kilograms. We have a set of standard weights and can place the weights in any pan. (i.e) some weights can be in a pan with objects and some weights can be in the other pan. The minimum number of standard weights required is:

A. 4 B. 10

C. '5

D. 6

Answer:

6 values $\longrightarrow 2^0, 2^1, 2^2, 2^3, 2^4, 2^5$

Sum of all the above values = 63.

we can measure any integral value between 1 & 63 with the help of above denominations.

So answer is 6.

34. A white cube(with six faces) is painted red on two different faces. How many different ways can this be done (two paintings are considered same if on a suitable rotation of the cube one paintings can be carried to the other)?

A. '2

B. 15

C. 4

D. 30

Answer:

Either two red faces will be opposite or they will be opposite or they will be adjacent. Only 2 ways of painting exist. So answer is $\boxed{2}$.

35. In the polynomial f(x) = x^5 + a*x^3 + b*x^4 + c*x +d, all coefficients a, b, c, d are integers. If 3 +sqrt (7) is a root, which of the following must be also a root?(Note that x^n denotes the x raised to the power n, or x multiplied by itself n times. Also sqrt (u) denotes the square root of u, or the number which when multiplied by itself, gives the number u)?

A. 3-sqrt(7)

B. 3-sqrt(21)

C. 5

D. sqrt(7)-9

Answer: Irrational & complex roots always exist in conjugate pairs.

So, if $3+\sqrt{7}$ is one root, $3-\sqrt{7}$ will be the other root out of 5 roots of the polynomial.

$f(x) = x^5 + ax^3 + bx^4 + cx + d$ [5 roots as degree of $f(x)$ is 5].

Q.No. 6

Consider the cycle (1 4 5 7). If this is applied four times, the numbers 1, 4, 5 and 7 will be back in their original positions.

The same will be true if you apply it eight, twelve, sixteen or any multiple of four times.

For (2 6 3) this happens after three, six, nine etc. applications.

All seven numbers will be in their original positions if you apply the permutation (1 4 5 7) (2 6 3) a number of times that is a common multiple of 3 & 4.

The lowest common multiple of 3 & 4 is $\boxed{12}$.