



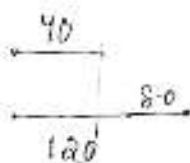
## Mock Test Number: 005

1. A starts riding his with the speed of 20 kmph and B rides at 40 kmph at the same direction. A team starts at 12 'o' clock and B at 11 'o' clocks. What will be the distance at A and B at 2 P.M.?

A. 80km  
B. 40km

C. 60km  
D. 95km

Answer:



Till 2:00pm A rides for 2hrs

Hence distance covered = 40km

Till 2:00pm B rides for 3hrs

Hence distance covered = 120km

Distance at 2:00pm =  $120 - 40 = 80\text{km}$

2. If all the number between 17 and 100 are written on a piece of paper, then how many times 4 will be used??

A. 20 times  
B. 40 times

C. 18 times  
D. 15 times

Answer:

There are 20 occurrence of any digit in 1st 100 numbers except 0.

So total 4 in 1-100 = 20

4 in 1-17 = 2

17-100 18 (Ans)

3. When all the six possible arrangement of the letter of the word 'master' are sorted in alphabetical word. What will be the 49th word??

A. AREMST  
B. ARESTM

C. ARSTME  
D. None of these

Answer:

A  $\rightarrow 15 = 120$  words with A can be formed.

AE  $\rightarrow 14 = 24$  words with AE

AME  $\rightarrow 14 = 24$  words with AM.

So 49th will be AREMST.

4. A balance shows 900gm for 1kg. Find the profit of trader if he marks his goods up by 20% of CP.

- A. 7%  
B. 10%

- C. 11%  
D. 8%

Answer:

$$\begin{aligned}\frac{SP}{CP} &= \left(1 + \frac{\text{Mark-up}}{100}\right) \left(\frac{\text{Reading}}{\text{Actual}}\right) \\ &= \left(1 + \frac{20}{100}\right) \left(\frac{900}{1000}\right) \\ &= 1.2 \times 0.9 = 1.08 \\ \% \text{ age} &= \boxed{8\%}\end{aligned}$$

5. 1. The average of four consecutive numbers is 27. The largest of the numbers is

- A. 24

- C. 26

- B. 30

- D. 28

Answer:

$$\begin{aligned}\text{Let no.s be } (a-3), (a-1), a, (a+1), (a+3) \\ \text{Sum of these could be } &= 27 \times 4 = 108 \\ a-3 + a-1 + a + a+1 + a+3 &= 108 \\ a &= 27 \\ \text{largest} &= a+3 = \boxed{30}\end{aligned}$$

6. Find the no of zeros in the product of  $1^1 \cdot 2^2 \cdot 3^3 \cdot \dots \cdot 49^{49}$

- A. 240

- C. 260

- B. 250

- D. 270

Answer:

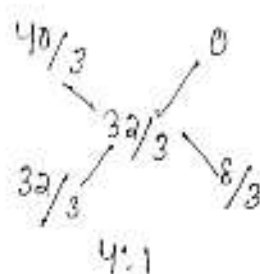
No. of zeroes depend upon no. of 5's & no. of 2's.  
Obviously no of 2's are more in numbers. So will count-  
only no. of 5's which we found in  $5^5, 10^{10}, 15^{15}, 20^{20}, \dots, 45^{45}$   
So no. is  $5+10+15+\dots+45 = \frac{9}{2} \times 50 = 225$   
But  $25^{25}$  will give 25 extra 5's.  
Hence total no. is  $225+25 = 250$  (Ans)

7. How much water must be added to 60 liters of mixture of milk?  $1\frac{1}{2}$  liters of milk for Rs. 20. So as to have a mixture worth Rs.  $\frac{40}{3}$  a liter?

A. 20 liter  
B. 15 liter

C. 25 liter  
D. 22 liter

Answer:



$1\frac{1}{2}$  l for Rs 20 So Rs  $\frac{40}{3}$  / ltr

Cost of Mixture =  $32/3$  ltr

Ratio of Milk : water  
= 4:1

So 60 Ltr of Milk solution mean 15 Ltr of water.

8. when number are written in base b, we have  $12 \times 25 = 333$ , the value of b is

A. 1  
B. 8

C. 7  
D. 3

Answer:

$$(12)_b \times (25)_b = (333)_b \quad \text{Convert to decimal}$$

$$[1 \times b^1 + 2 \times b^0] [2 \times b + 5 \times b^0] = 3 \times b^2 + 3 \times b + 3 \times b^0$$

$$(b+2)(2b+5) = 3b^2 + 3b + 3$$

$$b^2 - 6b - 7 = 0 \Rightarrow (b-7)(b+1) = 0$$

$$b = 7 \text{ or } b = -1$$

9. At the end of 1994 Rohit was half an old as his grandmother. The sum of years in which they were born is 3844. How old Rohit was at the end of 1999.

A. 50  
B. 51

C. 52  
D. 53

Answer:

Let say 1994 Rohit's age is R

Gm age is 2R

Rohit was born in  $1994 - R$

So Gm was born in  $1994 - 2R$

$$3988 - 3R = 3844 \Rightarrow R = 48$$

$$\text{So in 1999 Rohit age} = 48 + 5 = \boxed{53}$$

10. If six fair dice are rolled, what is the probability that each of the six numbers will appear exactly once?

A.  $5/240$

B.  $5/243$

C.  $5/324$

D. None of these

Answer:

$$\begin{aligned} \text{Sample space} &= 6^6 = 36 \times 36 \times 36 \\ (1, 2, 3, 4, 5, 6) &\text{ can be arranged in 16 ways} \\ \frac{16}{36 \times 36 \times 36} &= \frac{720}{36 \times 36 \times 36} = \boxed{5/324} \end{aligned}$$

11. A man can row 6 km/hr in still water. If the speed of stream is 2 km/hr, it takes him 3 hours to row to a place and back. How far is the place?

A. 8

B. 5

C. 6

D. 2

Answer:

$$\begin{aligned} R_D (\text{Downstream}) &= 8 \text{ km/hr} \leftarrow \frac{4x}{8} \\ R_U (\text{Upstream}) &= 4 \text{ km/hr} \rightarrow \frac{x}{8} \\ T_1 = T_D &= x/8 \quad (\text{Time downstream}) \\ T_2 = T_U &= x/4 \quad (\text{Time upstream}) \\ T_1 + T_2 &= 3 \Rightarrow x/8 + x/4 = 3 \Rightarrow \boxed{x = 8} \end{aligned}$$

12. How many vehicle registration plate numbers can be formed with digits 1, 2, 3, 4, 5 (no digits being repeated) if it is given that registration number can have 1 to 5 digits?

A. 205

B. 100

C. 325

D. 105

Answer:

$$\begin{aligned} \text{Total} &= {}^5P_1 + {}^5P_2 + {}^5P_3 + {}^5P_4 + {}^5P_5 \\ &= 5 + 20 + 60 + 120 + 120 \\ &= \boxed{325} \end{aligned}$$

13. P is 30% of q, q is 20% of n and m is 15% of n. finds p/n?

A. 0.008

B. 0.009

C. 0.007

D. None of these

Answer:

$$\begin{aligned} P &= 0.3q \Rightarrow P = 0.3 \times 0.2 \times 0.15n \\ q &= 0.2m \Rightarrow q = 0.2 \times 0.15n \\ m &= 0.15n \\ \frac{P}{n} &= 0.3 \times 0.2 \times 0.15 = \boxed{0.009} \quad (\text{Ans}) \end{aligned}$$

14. Four friends namely Rahul, Ravi, Rajesh and Rohan contested for a dairy milk chocolate. To decide which friend will get the chocolate they decided to throw two dice. Every friend was asked to choose a number and if the sum of the numbers on two dice equals that number, the concerned person will get the chocolate. Rahul's choice was 7, Ravi's choice was 9, Rajesh's choice was 10 and Rohan's choice was 11. Who has the maximum probability of winning the amount?

☐ A. Rahul  
☐ B. Ravi

C. Rajesh  
D. Rohan

Answer:

$$\text{Sample Space} = 6 \times 6 = 36$$

$$\text{Number of times 7 occurs} = 6 \quad P(\text{Rahul}) = \frac{6}{36} = \frac{1}{6}$$

$$\text{Number of times 9 occurs} = 4 \quad P(\text{Ravi}) = \frac{4}{36} = \frac{1}{9}$$

$$\text{Number of times 10 occurs} = 3 \quad P(\text{Rajesh}) = \frac{3}{36} = \frac{1}{12}$$

$$\text{Number of times 11 occurs} = 2 \quad P(\text{Rohan}) = \frac{2}{36} = \frac{1}{18}$$

15. Messrs. Siva Constructions, leading agents in Chennai prepared models of their lands in the shape of a rectangle and triangle. They made models having same area. The length and width of rectangle model are 24 inches and 8 inches respectively. The base of the triangle model is 16 inches. What is the altitude of triangle model from the base to the top?

☐ A. 24 inches  
☐ B. 18 inches

C. 20 inches  
D. 32 inches

Answer:

$$\text{Area of triangle} = \text{Area of rectangle}$$

$$\frac{1}{2} \times B \times H = 24 \times 8$$

$$H = 24$$

16. Anita make cube with dimension  $5 \times 5 \times 5$  using  $1 \times 1 \times 1$  cubes. Find no. Of cubes to make it hollow of same shape

A. 90

☐ B. 98

C. 92

D. None of these

Answer:



$$N = \frac{\text{Side of BC}}{\text{Side of ABC}} = \frac{5}{1} = 5$$

$$N^3 - (N-2)^3$$

$$5^3 - (5-2)^3$$

$$\Rightarrow 125 - 27$$

$$= 98 \text{ cubes will be required.}$$

17. A Grocer bought 24 kg coffee beans at price X per kg. After a while one third of stock got spoiled so he sold the rest for \$200 per kg and made a total profit of twice the cost. What must be the price of X?

A. \$33 1/3  
B. 66 2/3

C. 44 4/9  
D. 50 1/3

Answer:

$$\begin{aligned}\text{Total cost} &= 24x \\ \frac{1}{3} \text{ is destroyed so } \frac{2}{3} &= 16 \text{ kg is left} \\ \text{SP} &= 3200 - \text{CP} = 2(24x) \\ \Rightarrow 3200 - 24x &= (24x) 2 \\ \Rightarrow 3200 &= 3(24x) \Rightarrow x = \frac{3200}{3 \times 24} = \boxed{66 \frac{2}{3}}\end{aligned}$$

18. MOTHER + DAUGHTER + INFANT AGE IS 74. MOTHER AGE IS 46 MORE THEN DAUGHTER AND INFANT. AND INFANT AGE IS 0.4 OF DAUGHTER. FIND DAUGHTERS AGE.

A. 10  
B. 22

C. 45  
D. 12

Answer:

$$\begin{aligned}M + D + I &= 74 \\ M &= 46 + (D + I) \quad \text{also } I = 0.4D \\ 46 + D + I + D + I &= 74 \\ 2(D + I) &= 28 \\ D + I &= 14 \Rightarrow D + 0.4D = 14 \\ \Rightarrow \boxed{D = 10, I = 4, M = 40}\end{aligned}$$

19. A father purchases dress for his three daughters. The dresses are of same color but of different size. the dress is kept in dark room. What is the probability that all the three will not choose their own dress...

A. 2/3  
B. 1/3

C. 1/6  
D. 1/9

Answer:

$$\begin{aligned}\text{No. of ways of choosing dress} &= {}^3C_1 \times {}^2C_1 \times {}^1C_1 = 6 \\ \text{No. of ways of choosing wrong dress} \\ &= 13 \left( 1 - \left( \frac{1}{11} + \frac{1}{12} + \frac{1}{13} \right) \right) = 2 \\ \text{Probability} &= \frac{2}{6} = \boxed{\frac{1}{3}}.\end{aligned}$$

20. What is the distance between the z-intercept from x-intercept in the eqn  $ax+by+cz+d=0$

A.  $d\sqrt{1/a^2 + 1/c^2}$

B.  $d\sqrt{1/b^2 + 1/c^2}$

C.  $d\sqrt{1/a^2 + 1/b^2}$

D. none of these

Answer:

In z-intercept,  $x$  &  $y$  are 0, so put  $x$  &  $y=0$ .

$$a \cdot 0 + b \cdot 0 + c \cdot z + d = 0, \quad z = -d/c$$

x-intercept  $y$  &  $z = 0$ , so  $x = -d/a$

$$\text{Distance} = \sqrt{(-d/a)^2 + 0^2 + (-d/c)^2} = d\sqrt{1/a^2 + 1/c^2}$$

21. Leena cuts small cubes of 3 cubic cm each. She joined it to make a cuboid of length 10 cm, width 3 cm, and depth 3 cm. How many more cubes does she need to make a perfect cube?

A. 910

B. 250

C. 750

D. 650

Answer:

$$\text{Volume of cuboid} = 10 \times 3 \times 3 = 90$$

$$\text{Volume of perfect cube} = 10^3 = 1000$$

$$\text{Additional volume} = 1000 - 90 = 910$$

$$\text{Vol. of } S_c = 1$$

$$\text{No. of cubes required} = \frac{910}{1} = 910$$

22. An empty tank be filled with an inlet pipe 'A' in 42 minutes. After 12 minutes an outlet pipe 'B' is opened which can empty the tank in 30 minutes. After 6 minutes another inlet pipe 'C' opened into the same tank, which can fill the tank in 35 minutes and the tank is filled find the time taken to fill the tank?

A. 42.5

B. 85.2

C. 40.25

D. 40.75

Answer:

$$A(+), B(-), C(+), \text{ LCM } (42, 30, 35) = 420$$

$$42 \quad 30 \quad 35$$

$$\text{For first 12 min A works & fills} = 12 \times 10 = 120$$

$$P/p \quad 10 \quad 14 \quad 12$$

$$\text{For next 6 min B works & empties} = -4 \times 6 = -24$$

All work together

$$\text{So when C was opened } 98 \text{ parts were filled } 420 - 98 = 322 \text{ parts were to be filled. It will take } 322/8 = 40.25 \text{ min}$$

23. The milk and water in two vessels A and B are in the ratio 4 : 3 and 2 : 3 respectively. In what ratio, the liquids in both the vessels are mixed to obtain a new mixture in vessel C containing half milk and half water?

A. 4:2

B. 7:5

C. 6:5

D. None of these

Answer:

$$A \rightarrow M:N = 4:3$$

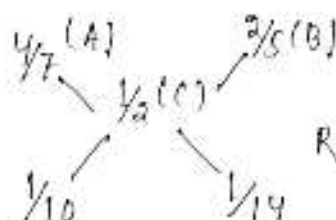
Proportion of milk =  $\frac{4}{5}$

$$B \rightarrow M:N = 2:3$$

Proportion of milk =  $\frac{2}{5}$

$$\text{Resolvent} = 1:1$$

$$\text{Proportion milk} = \frac{1}{2}$$



$$\text{Ratio is } 14:10 = \boxed{7:5}$$

24. How many kgs. Of wheat costing Rs. 4.8 per kg must be mixed with 66 kg of rice costing Rs. 6.40 per kg so that 20% gain may be obtained by selling the mixture at Rs. 7.20 per kg?

A. 45 kg

B. 22 kg

C. 42 kg

D. 89 kg

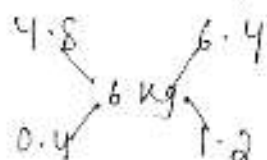
Answer:

$$A \rightarrow 4.8 \text{ kg}$$

$$SP = 7.2 \quad \text{PRY.} = 20\%$$

$$B \rightarrow 6.4 \text{ kg}$$

$$CP = \frac{7.2}{1.2} = 6$$



$$\begin{aligned} A:B \\ 0.4 : 1.2 \\ 1 : 3 \\ 22 : 66 \end{aligned}$$

$$\rightarrow \boxed{22 \text{ kg}} \text{ (Ans)}$$

25. A dog takes four leaps for every five leaps of hare but three leaps of the dog is equal to four leaps of the hare. Compare speed?

A. 15:8

B. 16:15

C. 2:3

D. 12:5

Answer:

$$\text{Let the dogs leap} = 1m$$

$$\therefore 4 \text{ Dog Leap} = 4m$$

$$\text{But } 3 \text{ Dog Leap} = 4 \text{ Hare Leap} \rightarrow 3m = 4 \text{ Hare Leap}$$

$$1 \text{ Hare Leap} = \left(\frac{3}{4}\right)m$$

Dog takes 4 for every 3 of hare.

$$4 \times 1m \text{ for every } 3 \times \frac{3}{4}m.$$

$$\text{Ratio} = 4 : \frac{9}{4} = \boxed{16:9}$$



26. Length of minute hand is 5.4 cm, area covered by this in 10 min is?

- A. 50.97  
B. 57.23

- C. 55.45  
D. 15.206

Answer:

$$\begin{aligned} \text{Area} &= \frac{1}{6} \pi r^2 \\ &= \frac{1}{6} \times 3.14 \times (5.4)^2 \\ &= 15.206 \text{ cm}^2 \end{aligned}$$

27. From 52 cards 3 cards drawn randomly prob of getting 1 spade, 1 red queen and 1 black king??

A.  ${}^{2c_1} \cdot {}^{2c_1} \cdot {}^{12c_1} / {}^{52c_3}$

C.  ${}^{2c_1} \cdot {}^{2c_1} \cdot {}^{12c_1} / {}^{54c_3}$

B.  ${}^{2c_1} \cdot {}^{2c_1} \cdot {}^{12c_1} / {}^{53c_3}$

D. None of these

Answer:

Spade =  ${}^{13c_1}$

Red Queen =  ${}^{2c_1}$

Black King =  ${}^{2c_1}$

Spade - Black card = 12 cards

Probability =  $\frac{{}^{2c_1} \times {}^{2c_1} \times {}^{12c_1}}{{}^{52c_3}}$

28.  $(2^{1096} + 2^{2248} + 2^{2n})$  find the value of n so that the value will be perfect square

A. 1699

C. 2010

B. 2012

D. 2008

Answer:

$2^{1096} + 2^{2248} + 2^{2n}$

Convert equation to  $(2^{548})^2 + 2 \times 2^{548} \times (2^{1699})^2$

Now  $2^{2n} = (2^{1699})^2$

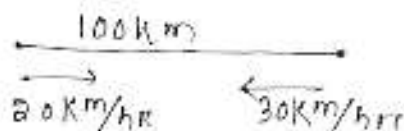
$n = 1699$

29. Two points r there two people from A running to same direction with speed 20 km/hr & 15/hr respectively and from other end another person running to opposite direction with 30 km/hr? Distance by them 100 km?? At what time they will meet?

- A. 5 hr  
B. 6 hr

- C. 2 hr  
D. 10 hr

Answer:



$T = \frac{100}{20+30} = 100/50 = 2 \text{ hr}$

30. If the sum of the roots of the equation  $ax^2 + bx + c = 0$  is equal to the sum of the squares of their reciprocals then  $a/c, b/a, c/b$  are in

- A. AP  
B. GP

C. HP  
D. none

Answer:

$$\alpha + \beta = \frac{1}{\alpha^2} + \frac{1}{\beta^2} \Rightarrow \frac{-b}{a} = \frac{(-b/a)^2 - 2c/a}{(c/a)^2}$$

$$\alpha + \beta = \frac{(\alpha + \beta)^2 - 2\alpha\beta}{\alpha^2\beta^2}$$

$$\Rightarrow ab^2 + bc^2 = 2a^2c$$

$$\frac{b}{c} + \frac{c}{a} = 2\frac{a}{b}$$

$$\text{If } \frac{a}{c} = x \quad \frac{b}{a} = y \quad \frac{c}{b} = z$$

$$\frac{1}{2} + \frac{1}{x} = \frac{2}{y} \Rightarrow \frac{1}{x} - \frac{1}{y} = \frac{1}{y} - \frac{1}{z} \Rightarrow x, y, z \text{ are in H.P.}$$

31.  $P(x) = (x^{2012} + x^{2011} + x^{2010} + \dots + x + 1)^2 - x^{2012}$

$Q(x) = x^{2011} + x^{2010} + \dots + x + 1$

The remainder when  $P(x)$  is divided by  $Q(x)$  is ?

- A. 1  
B.  $x+1$

C. 0  
D.  $x-1$

Answer:

Take  $x = 2, 3, 4$  instead of taking exponents 2012, 2011

$$P(x) = P(2) = (2^3 + 2^2 + 2^1 + 1^2)^2 - 2^3 = 225 - 8 = 217$$

$$Q(x) = Q(2) = 2^2 + 2^1 + 1 = 7$$

$$\frac{P(x)}{Q(x)} = \frac{217}{7} = \boxed{0 \text{ Remainder}}$$

$$P(x) = P(3) = (3^3 + 3^2 + 3 + 1)^2 - 3^3 = 1573$$

$$Q(x) = Q(3) = 3^2 + 3 + 1 = 13$$

$$\boxed{\frac{1573}{13} = 0 \text{ Remainder}}$$

32. A student can select one of 6 different math book, one of 3 different chemistry book and one of 4 different science books. In how many different ways student can select book of math's, chemistry and science?

- A. 14  
B. 12

- C. 72  
D. 76

Answer:

$$6C_1 \times 3C_1 \times 4C_1 = 72$$

33. At what time between 6 and 7 are the hands of the clock coincide?

- A. 6:13  
B. 6:36

- C. 6:32  $\frac{8}{11}$   
D. 6:35  $\frac{8}{11}$

Answer:

At 6 o'clock angle between hands = 180  
So hands will coincide at

$$\frac{180}{11/2} \text{ min past 6}$$

$$\text{or } 6:32 \frac{8}{11}$$

34. 1, 4, 2, 8, 6, 24, 22, 88, \_\_\_\_

- A. 352  
B. 78

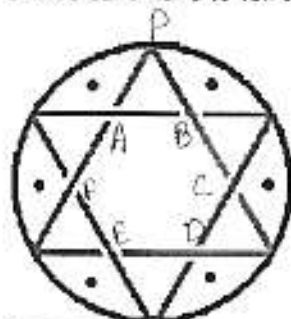
- C. 84  
D. 86

Answer:

$$1 \quad 4 \quad 2 \quad 8 \quad 6 \quad 24 \quad 22 \quad 88 \quad 86$$

$$\times 4 \quad -2 \quad \times 4 \quad -2 \quad \times 4 \quad -2 \quad \times 4 \quad -2$$

35. There is a circle with 2 triangles inscribed in it, in opposite direction making a star. The triangle is equilateral of side 12. u have to tell the area of the remaining portion of the circle



- A.  $48\sqrt{3}$   
B.  $44$

- C.  $67$   
D.  $44$

Answer:

The middle figure is a regular hexagon with side 12.

$$\text{Area of } ABCDEF = 6 \times \frac{\sqrt{3}}{4} (4)^2 \text{ --- (1)}$$

As Area of remaining A will be 6 times

$$\text{area of } \triangle APB = 6 \times \frac{\sqrt{3}}{4} (4)^2 \text{ --- (1)}$$

$$\text{Total area} = A+B = 3\sqrt{3} + 16 = 48\sqrt{3}$$