AP Police SI Mains 2019 Arithmetic and Reasoning

AP Police SI Main Paper III

Instructions
For the following questions answer them individually

Question 1

If x, y, z are three positive numbers such that (A - x): (A - y): (A - z) = 1: 7: 4 and 2A = x+y+z, then x:y:z=

A 8: 5: 11

B 9: 4: 12

C 11: 5: 8

D 12: 4: 9

Answer: C

Explanation:
Let say,

$A-x=k\,,\ A-y=7k\,and\,A-z=4k.$

So,$2A=2\left(k+x\right)\ ,\ 2A=2\left(7k+y\right)\ and\,2A=2\left(4k+z\right).$

So,$x+y+z=2k+2x\,,\ x+y+z=14k+2y\,and\ \ x+y+z=8k+2z.$.....(1)

or,$3\left(x+y+z\right)=2\left(x+y+z\right)+2k+14k+8k.\ \ \left(by\,adding\,these\,3\,equations\right)$

or,$x+y+z=24k.$

put this value in (1) :

$2x=22k\,or\,x=11k.$

$2y=10k\,or\,y=5k.$

and $2z=16k\,or\,z=8k.$

So,$x:y:z=11:5:8.$

C is correct choice.

Question 2

If x ≠ y ≠ z ≠ 0 , $a^x=b^y=c^z$ **and** $\frac{a}{b}=\frac{b}{c}$**, then** $\frac{y-x}{z-y}$ **=**

A $\frac{x}{z}$

B $\frac{x}{y}$

C $\frac{y}{z}$

D $\frac{x+y}{y+z}$

Answer: A

Explanation:
Let say,

$a^x=b^y=c^z=k.$

or,$a=k^{\frac{1}{x}},\ b=k^{\frac{1}{y}}\,and\,c=k^{\frac{1}{z}}.$

and $\frac{a}{b} = \frac{b}{c}$.

or,$b^2 = ac$.

So,$k^{\frac{2}{y}} = k^{\frac{1}{x}} k^{\frac{1}{y}}$.

or,$k^{\frac{2}{y}} = k^{\frac{1}{x} + \frac{1}{z}}$.

or, $\frac{2}{y} = \frac{1}{x} + \frac{1}{z}$.

or,$2xz = yz + xy$. $(multiply\ both\ side\ by\ xyz)$

or,$yz - xz = xz - xy$.

or,$z\left(y - x\right) = x\left(z - y\right)$.

or, $\frac{(y-x)}{(z-y)} = \frac{x}{z}$.

So, A is correct choice.

Question 3

Two different discounts x% and y% are allowed on two items having same cost price and marked price. If P_1% and P_2% are respectively the profits on them, x - y =20 and $P_2 - P_1$ = 32, then the ratio of their cost price to their marked price is

A 52:12

B 10:18

C 5:8

D 16:5

Answer: C

Explanation:
Let say, cost price=c and marked price=m.

given that , x-y=20.

No, SP_1=m(1-x) and SP_2=m(1-y) .

So,P1 %= (SP_1/c)-1=((m/c)(1-x))-1.

and P2 %=(SP_2/c)-1=((m/c)(1-y))-1.

so,(P2-P1)

=((m/c)(1-y))-1-((m/c)(1-x))+1

=(m/c)(1-y-1+x)

=(m/c)(x-y).

=20m/c.

So,

20m/c=32.(given in question)

or,c/m=20/32

or,c/m=5/8.

So,c:m=5:8.

C is correct choice.

Question 4

If 0 < a < b then, for all x > 0, $\frac{a+x}{b+x}$ >

A x

B $\frac{b}{a}$

C $\frac{a}{b}$

D $\frac{1}{x}$

Answer: C

Explanation:
Let assume any value for a,b and x that satisfy the above conditions.

Let say, a=1 and b=2 and x=5.

Then (a/b)=(1/2)=0.5.

and (a+x)/(b+x)=6/7=0.85.

So,(a+x)/(b+x) >(a/b).

but it is not greater than x or (b/a).

now,(1/x)=1/5=0.2

So,in this case (a+x)/(b+x)>(1/x).

But if we consider x=0.5 :

(a+x)/(b+x)=1.5/2.5=0.6.

but (1/x)=10/5=2.

So, in this case (a+x)/(b+x) is lesser than (1/x).

So, only option C is correct.

Question 5

Four students A, B, C and D are running around a circular playground in a college and they take 1. 5 min, 25min, 35min and 20min respectively to complete one round. If a prize money of Rs. K is divided in the ratio of their speeds, then the student who receives_maximum share is

A A

B B

C C

D D

Answer: A

Explanation:
Let say, distance cover by them in the playground is d.

So, Speed of A,B,C and D are

(d/1.5),(d/25),(d/35) and (d/20).

So,they will receive money in following ratio:

(d/1.5):(d/25):(d/35):(d/20)

=(1/1.5):(1/25):(1/35):(1/20)

=(2100/1.5):(2100/25):(2100/35):(2100/20)

=1400:84:60:105.

So,

A will get=1400K/1649.

B will get=84K/1649.

C will get=60K/1649.

D will get=105K/1649.

So, A will get maximum amount.

A is correct choice.

Question 6

The ratio among the following that will have maximum change in its value when 10 is added to both the antecedent and consequent of that ratio, is

A 5:7

B 2:3

C 4:7

D 3:4

Answer: B

Explanation:
According to given condition:

(15/17)-(5/7)=0.1680.

(12/13)-(2/3)=0.2564.

(14/17)-(4/7)=0.2521.

(13/14)-(3/4)=0.1785.

So, B is correct choice.

Question 7

Distinct number of men, women and children have visited a park in a particular day. The number ofwomen visitors is 7 and the number of children who visited the park is maximum among all the visitors. If the ratio between the number of men and women is the same as the ratio between the number of women and children, then the total number of visitors to the park is

A 49

B 21

C 57

D 45

Answer: C

Explanation:
Number of men ,women and children are distinct number (given).

And number of women is 7.

Again,

number of men/number of women =

number of women/number of children.

So,number of men×number of children

$=(numberofwomen)^2$

$=7^2$

=49.

But, 49 has three different factors 1,7 and 49.

as number of men, women and children are distinct, number of children or men can have either 49 or 1 as their value.

So,Total number of visitors were

=49+7+1=57.

C is correct choice.

Question 8

If a person covers the same distance by walking, by cycling and by running with speeds in the ratio 1: 9: 3 respectively, then the ratio of the ratios of their times and speeds of the three modes of travel is

A 1: 1: 1

B 1: 81: 9

C 81: 1: 9

D 1: 9: 81

Answer: C

Explanation:
Let say ,speed of walking, cycling and running are k,9k and 3k respectively.

Time and speed are inversely proportional when distance is constant.

So,their time taken would be as following:

(1/k),(1/9k) and (1/3k).

So,ratio of time and speed would be :

(1/k)/k ,(1/9k)/9k and (1/3k)/3k

or,$(1/k^2), (1/81k^2) and (1/9k^2)$.

So , required ratio would be ==>

$(1/k^2) : (1/81k^2) : (1/9k^2)$

$=1 : (1/81) : (1/9)$

=81:1:9.

C is correct choice.

Question 9

If the sum of the ratios equivalent to $16\frac{2}{3}$%, $33\frac{1}{3}$%, 5% and 25% is x% of 15, then x =

A $\frac{16}{3}$

B 5

C $\frac{3}{4}$

D $\frac{2}{3}$

Answer: A

Explanation:
$16\frac{2}{3}$%=50/300.

$33\frac{1}{3}$%=100/300.

5%=5/100=15/300.

25%=25/100=75/300.

So, according to question:

(15/100)x=(50/300)+(100/300)+(15/300)+ (75/300).

(15/100)x=(240/300).

or,x=(240×100)/(15×300)=80/15=16/3.

A is correct choice.

Question 10

A student is asked to multiply a number K by 5. But he multiplies K by $\frac{1}{5}$ and gets x% error. Next time he multiplies K by $\frac{1}{25}$ and gets y% error. Then the percentage increase of y over x is

A $3\frac{1}{3}$ %

B $33\frac{1}{3}$ %

C $16\frac{2}{3}$ %

D $24\frac{4}{5}$ %

Answer: A

Explanation:
Originally expected 5K.

but he wrote (1/5)K=0.2K.

first error,x%=(5K-0.2K)/5K=0.96 or 96%.

next time he wrote (1/25)K=0.04K.

second error,y%=(5K0.04K)/5K=0.992 or 99.2%.

so increase of y over x is =

(0.992-0.96)/0.96=0.033333 or 3.33%.

A is correct choice.

Question 11

If there is an increase of 25% and 4% successively in the sales of a car of brand X in two consecutive years, then the net increase in the sales after two years, is

A $\frac{29}{2}$ %

B 29 %

C 100 %

D 30 %

Answer: D

Explanation:
Let say ,initial number of cars were x.

So,after two successive increment in sales of 25% and 4% would be=x×1.25×1.04=1.3x.

So,net increment would be ((1.3x-x)/x)×100

=30%.

D is correct choice.

Question 12

A variable x is proportional to y. If 3 values x_1, x_2, x_3 of x are in the ratio 2:3:4 such that $x_1 + x_2 + x_3$ = 9 and $x_1y_1 + x_2y_2 + x_3y_3$ 29 then the ratio of the increase percentages of x_1y_1, x_2y_2, x_3y_3 over x_1, x_2, x_3respectively is

A 4:9:16

B 1:3:6

C 1:2:3

D 3:4:5

Answer: C

Explanation:

x_1, x_2, x_3 of x are in the ratio 2:3:4.

Let say,$x_1 = 2k, x_2 = 3k, x_3 = 4k$

So,2k+3k+4k=9

or,k=1.

So,$x_1 = 2, x_2 = 3, x_3 = 4$

Now,

$x_1y_1 + x_2y_2 + x_3y_3$ = 29

or,$2y_1 + 3y_2 + 4y_3$ = 29.

By using trial and error, we can say that

$y_1 = 2, y_2 = 3 and y_3 = 4$ can be the values.

so,$x_1y_1 = 4, x_2y_2 = 9, x_3y_3 = 16$.

So, required increments are 100%,200% and 300%.

So, required ratio is 100:200:300=1:2:3.

C is correct choice.

Question 13

A fruit vendor has certain oranges with him. He sells each orange for Rs.5. Three customers A, B, C successively bought 25%, $33\frac{1}{3}$, 50% of the oranges that are left over with the vendor each time. Later a fourth customer D bought 4 oranges. If A and D together paid Rs.140/- to the vendor, then the percentage of oranges left with the vendor is

A 2.5

B $5\frac{2}{7}$

C $20\frac{5}{6}$

D $6\frac{1}{4}$

Answer: C

Explanation:

Let say ,he had x number of oranges initially.

A bought 0.25x.

he left with 0.75x.

B bought (1/3)0.75x.

he left with (2/3)0.75x.

C bought (1/2)(2/3)0.75x.

he left with (1/2)(2/3)0.75x.

D bought 4 oranges.

So, finally he left with ((1/2)(2/3)0.75x-4).

According to question :

(0.25x)×5+4×5=140.

or,x=96.

So,he will be left with=((1/2)(2/3)0.75×96-4)

=20.

So, percentage would be=20/96=20.833%.

C is correct choice.

Question 14

A, B, C and D are four students in a class. A's total score is 20% less than B's total score, C's total score is 25% more than A's total score, D's total score is 20% more than A's total score. If the least total score among the scores is 240, then the ratio of the scores of the four students in the decreasing order is

A 30: 25: 24: 20

B 25: 24: 21: 20

C 25: 25: 24: 20

D 30: 30: 25: 24

Answer: C

Explanation:
Let say A,B,C,D' scores are a,b,c,d respectively.

According to question,

a=0.80b , c=1.25a and d=1.2a

So, we can say that:

c=1.25×0.80b=b

and d=1.2a×0.80b=0.96b.

So,lowest among 0.80b,b,b and 0.96b is 0.80b.

So,0.80b=240

or,b=300.

So,c=300 and d=288.

So, required ratio

300:300:288:240

=25:25:24:20

C is correct choice.

Question 15

A merchant is selling goods by importing from abroad. He gets a discount of $33\frac{1}{3}$% on 3 the catalogue price, pays 20% import duty on the net cost of the goods and sells the goods for a profit of 25%. If the catalogue price of an article is Rs. 3,756, then its selling price (in Rs.) is

A 4,695

B 11,268

C 2,857

D 3,756

Answer: D

Explanation:
Catalogue price 3756 Rs.

after discount price became =(2/3)×3756

=2504 Rs.

After import duty price became=1.2×2504

=3004.8 Rs.

Now he sells it for 25% profit.

So, selling price=1.25×3004.8=3756Rs.

D is correct choice.

Question 16

A dishonest dealer claims to sell his goods for the cost price. If he uses 20% less weight in weighing the goods, his gain % is:

A 20%

B $16\frac{2}{3}$

C 25%

D 30%

Answer: C

Explanation:
Let say ,he was selling 100 weight of products and cost price of the product c.

So,he was actually selling 0.8×100=80 weight of products.

80 unit were selling for c Rs.

1unit was selling for c/80 Rs.

So, 100 units were selling for (100/80)c

=1.25c Rs.

So, his overall gain was=((1.25c-c)/c)×100

=25%.

C is correct choice.

Question 17

If a person sold his watch for Rs.24 with a profit percentage numerically equal to its cost price, then the cost price of the watch is Rs.

A 26

B 18

C 20

D 22

Answer: C

Explanation:
Let say cost price is c.

So, profit percentage=c%.

Selling price=c(1+c/100).

So,

c(1+c/100)=24.

or,$c^2 + 100c - 2400 = 0$

or,$c^2 + 120c - 20c - 2400 = 0$

or,$c(c + 120) - 20(c + 120) = 0$

or,(c+120)(c-20)=0.

so,either c=-120 or c=20.

Cost price cannot be negative value.

so, c =20.

C is correct choice.

Question 18

A shopkeeper offers successive discounts of 20% and 25% on the marked price of an article and gets a profit of 20%. If he wants to make 40% profit, the percentage by which the marked price is to be increased is

A 40

B 45

C $16\frac{2}{3}$

D $33\frac{1}{3}$

Answer: C

Explanation:
Let say,marked price is m and cost price is c.

So,after two successive discount ,he will sell it for = 0.8×0.75m=0.6m Rs.

Profit=(0.6m-c) Rs.

So, 0.6m-c=.2c

or,1.2c=0.6m

or, c/m=1/2.

Let say ,c=k and m=2k.

if he wants to profit 40% then selling price would become (1.4×k)=1.4k.

let say marked price should increase by n%.

then, (2k(1+n%)0.8×0.75-k)=0.4k.

or,1.2(1+n%)k=1.4k.

or,1+n%=14/12.

or,1+n%=7/6.

or,n%=1/6.

or,n=100/6=50/3.

C is correct choice.

Question 19

A shopkeeper sells two types of articles A and B for the same price at Rs. 150/-. The cost prices of them are respectively Rs. 120/- and Rs. 200/-. On the first day he sells only one item of A and increases this number by 6 units each day. He sells 50 units of 13 on first day and decreases this number each day by 2 units. The number of days the shopkeeper incurs a net loss continuously is

A 6

B 7

C 8

D 9

Answer: D

Explanation:

Selling price of A and B are 150 Rs.

Cost price of A and B are 120 and 200 Rs.

profit on A=(150-120)=30 Rs.

and Profit on B=(150-200)= -50 Rs(- means loss)

1st day:

Total loss=30×1-50×50=-2470 Rs.

2nd day:

Total loss=30×7-50×48=-2190 Rs.

3rd day:

Total loss=30×13-50×46=-1910 Rs.

4th day:

Total loss=30×19-50×44=-1630 Rs.

5th day:

Total loss=30×25-50×42=-1350 Rs.

6yh day:

Total loss=30×31-50×40=-1070 Rs.

7th day:

Total loss=30×37-50×38=-790 Rs.

8th day:

Total loss=30×43-50×36=-510 Rs.

9th day:

Total loss=30×49-50×34=-230 Rs.

10th day:

Total profit=30×55-50×32=50 Rs.

So, loss will continue for 9 days.

D is correct choice.

Question 20

The following table shows the different number of items a shopkeeper sold with different cost prices and different selling prices. Use this information to match the items of List A with the items of List B.

No.of items sold (volume)	100	200	300	400	500	600	700
S.P of each item	14	12.5	11	10	9	7.5	6.5
C.P of each item	10	9.5	9	8	7.5	7	6

List - A	List - B
i) The volume that gives maximum profit	a) 400
ii) If S.P of each item is increased by Rs.1 then minimum profit is	b) 500
iii) The volume that gives minimum profit	c) 600
	d) 700

The correct match for i, ii, iii is

A a b c

B b c a

C c d a

D a c b

Answer: A

Explanation:
For

100 items. : Profit=(14-10)100=400.

200 items: profit=(12.5-9.5)200=600.

300 items: profit=(11-9)300=600.

400 items: profit=(10-8)400=800.

500 items: profit=(9-7.5)500=750.

600 items: profit=(7.5-7)600=300.

700 items: profit=(6.5-6)700=350.

So, profit for 800 items is maximum.

So, i will go with a.

if selling price is increased by 1 ,then profit for 100 items become=(15-10)100=500.

This is the minimum profit for the ii condition.

So,ii will go with b.

if no conditions are given then,

profit for 600 items will be minimum which incurs only 600(6.5-6)=300.

So, iii will go with c.

So, i,ii and iii will go with a,b and c.

A is correct choice.

Question 21

The average score of 3 students A, B and C is 72. When D joins them the average score of all the four becomes 70. If another student E, whose score is 4 more than that of D replaces A then the average score of B, C, D and E becomes 68. Then the score of A

A 75

B 84

C 80

D 76

Answer: D

Explanation:
Total score of A,B,C is 72×3=216.

after adding D's score total become 70×4=280.

So,D's score=280-216=64.

E's score=64+4=68.

Now ,(A+B+C+D+E)=216+64+68=348.

But total of B,C,D,E is=68×4=272.

So,A's score=348-272=76.

D is correct choice.

Question 22

The first quality of juice costs Rs.15 per litre and the second quality of juice costs Rs.10 per litre. If the mixture of these two qualities is sold at the rate of Rs.14 per litre, then the ratio in which these two qualities of juices are to be mixed in order to get a profit of 20% is

A 1:1

B 1:5

C $\frac{1}{2}$: 1

D $\frac{1}{4}$: 1

Answer: C

Explanation:
Let say, he mixed x of first quality with y of second quality.

Ao,price of x amount of first quality is 15x.

and price of y amount of second quality is 10y.

but he sold (x+y) in 14(x+y).

So,

(15x+10y)1.2=14(x+y)

or,18x+12y=14x+14y.

or,4x=2y.

or,2x=y.

So, x/y=1/2=(1/2)/1.

so,x:y=(1/2):1.

C is correct choice.

Question 23

The average of all the numbers which are the first ten multiples of each of the first ten natural numbers is

A 30.25

B 50.5

C 75.5

D 25.5

Answer: A

Explanation:
10 multiples of

1:1,2,3,4,5,6,7,8,9,10

2:2,4,6,8,10,12,14,16,18,20

And so on but if you observe here,

If 2 is taken out from the series we get,2(1+2+3+4+5+6+7+8+9+10)

Therefore the series comes out to be

S=1(1+2+3+4+.....+10) +2(1+2+3+4+5+6+...+10)+3(1+2+3+4+5+6+...+10)+4(1+2+3+4+5+6+...+10)+5(1+2+3+4+5+6+...+10)+5(1+2+3+4+5+6+...+10)+.....+10(1+2+3+4+5+....+10)

S=(1+2+3+4+5+6+7+8+9+10)(1+2+3+4+5+6+7+8+9+10)

S=((10*11)/2)*((10*11)/2)

S=(110*110)/4

That is the sum comes out to be S

Average is S/100 since there are total 100 numbers

This implies

A=(110*110)/(4*100)

A=121/4=30.25.

A is correct choice.

Question 24

The ratio of copper to zinc in an alloy 'A' of 7kgs is 5:2. The ratio of the same metals in that order in another alloy 'B' of 7kgs is 3:4. If 28kg of alloy is made by mixing A and B in quantities x & y respectively so as to have the ratio of copper and zink in the ratio 1:1, then x : y is

A 1:6

B 2:5

C 3:7

D 1:3

Answer: D

Explanation:
Copper and Zinc ratio in A and B are 5:2 and 3:4.

According to question,

x+y=28.....(1)

in x quantity of A copper and zinc are as following :

copper=(5x/7) and zinc =(2x/7).

in y quantity of B copper and zinc are as following :

copper=3y/7 and zinc=(4y/7).

So,total copper=(5x/7+3y/7)

and total zinc=(2x/7+4y/7).

According to question:

(5x/7+3y/7)=(2x/7+4y/7)

or,5x+3y=2x+4y.

or,3x=y. Now put this value in (1).

4x=28 or, x=7.

So,y=28-7=21.

So,x:y=7:21=1:3.

D is correct choice.

Question 25

A milk vendor generally sells 3 Grades of milk. Grade I is pure milk with no water mixed in it, Grade II is a mixture of milk and water in the ratio 3:2 and Grade III is a mixture of milk and water in the ratio 2:3. On a particular day he has x liters of Grade I and 3 liters of Grade III milk and he got an order to supply 7 liters of Grade II milk. The minimum value ofx (in litres) required to prepare 7 Its of Grade H milk by mixing Grade I milk, Grade III milk and water, is

A 3

B $\frac{21}{5}$

C 2

D 5

Answer: A

Explanation:
He needs to supply 7 ltr of Grade II milk : which contain milk:water in 3:2 ratio.

So, He must need $\left(7 \times \frac{3}{5}\right) = 4.2$ ltr of milk.

But ,if we consider only Grade III mixture ,then we have only $\left(3 \times \frac{2}{5}\right) = 1.2$ltr of milk available.

(as Grade III mixed in 2:3 ratio).

So, minimum amount of Grade I milk needed was (4.2-1.2)=3 ltr ,by which he can make

7 ltr of Grade II milk as well as Grade H milk mixtures by adding water to rest of the mixtures.

A is correct choice.

Question 26

A business man buys two qualities A and B of a product at Rs. 120 per kg and Rs. 60 per kg respectively. He then mixes these two qualities and sells at Rs. 100 per kg. Then the percentage increase in the profit on a certain quantity of the mixture of A and B in the ratio 7:11 on the profit on the same quantity of the mixture of A and B in the ratio 1:1, is

A $\frac{80}{9}$

B $\frac{80}{7}$

C $\frac{75}{8}$

D $\frac{200}{3}$

Answer: D

Explanation:

Business man buys two qualities A and B of a product at Rs. 120 per kg and Rs. 60 per kg respectively.

Let say, When he mixes A and B in 1:1, he produces 2kg of 180 Rs. product.

So, 1kg of mixture cost price 90 Rs.

He sold it at 100 Rs/kg.

So,Profit=100-90=10 Rs/kg.

Again ,

Let say, When he mixes A and B in 7:11, he produces 18 kg of (840+660)=1500 Rs. product.

So, 1 kg of mixture cost price $\frac{1500}{18}$ Rs.

So, profit=$100 - \frac{1500}{18} = \frac{300}{18} = \frac{50}{3}$ Rs/kg.

So, percentage increase in profit= $\frac{\left(\frac{50}{3} - 10\right)}{10} \times 100 = \frac{20}{30} \times 100 = \frac{200}{3}$.

D is correct choice.

Question 27

A jar contains a mixture of 2 liquids A and B in the ratio 4:1. If 10 liters of mixture is taken out and 10 liters of liquid B is poured into the jar, the ratio becomes 2:3. The amount of liquid A contained in the jar initially is

A 12 liters

B 13 liters

C 14 liters

D 16 liters

Answer: D

Explanation:

Let say, liquid A and B in the jar are 4k and k.

if 10 litter of mixture is taken ,then amount of A and B in the jar would be (10×4/5) and (10×1/5) or 8 litter and 2 litter respectively.

So,in the mixture A will be left 4k-8 and B will be left k-2.

Now if we add 10 litter of B ,then new amount of B will be=k-2+10=k+8.

So,

(4k-8)/(k+8)=2/3.

Or,12k-24=2k+16.

or,10k=40.

or,k=4.

So, initially amount of A was 4×4=16 litter.

D is correct choice.

Question 28

The amount of water to be mixed with 32 liters of pure fruit juice so as to get 25% profit on selling the mixture at the cost price of the pure juice, (in liters) is

A 8

B 10

C 16

D 4

Answer: A

Explanation:
Let say ,CP of 32 ltr juice is 100 Rs and x ltr water to be mixed in the juice.

Then (32+x) ltr of juices selling price is $= \frac{100(32+x)}{32}$.

So, $\frac{100(32+x)}{32} = 125.$

or,$100x + 3200 = 4000.$

or,$100x = 800.$

or,$x = 8.$

A is correct choice.

Question 29

A vessel of capacity V liters can be filled by two taps A and B independently in $\frac{1}{4}$ hr and $\frac{1}{6}$ hr respectively. A tap C empties the full tank at the rate of 7 liters per min. If all the 3 taps are opened simultaneously, the full vessel is emptied in 120 min. Then V =

A 45

B 35

C 42

D 40

Answer: D

Explanation:
A can fill tank in(1/4)hr=15 min.

and B can fill tank in (1/6)hr=10 min.

C can empty the 7 litter in 1 min.

So, in 1 min A can fill V/15 part of tank.

in 1 min B can fill V/10 part of tank.

1 min A,B and C can empty (7-V/15-V/10)

=(210-5V)/30.

=(42-V)/6.

=(7-V/6).

in 120 min it will empty (840-20V).

So, (840-20V)=V.

or,21V=840.

or,V=40.

So,D is correct choice.

Question 30

A pipe can fill an empty cistern with water in 5 hours. Due to leakage in its bottom, it takes 6 hours to fill the cistern. When the cistern is full, the time (in hours) in which it is emptied due to leakage is

A 30

B $\frac{6}{5}$

C $\frac{1}{30}$

D $\frac{5}{6}$

Answer: A

Explanation:
Let us call the Pipe A.

Pipe A fills the cistern in 5hrs

so in one hr Pipe A fills 1/5th of the cistern.

However with the leak it takes 6hrs for Pipe A to fill the cistern.

Hence in one hour the cistern will have 1/6th left in.

So the difference between not leaking and leaking is 1/5 - 1/6= 1/30th of the cistern

this is amount of leak per hour.

Hence it will take 30 hours to fully empty the cistern.

A is correct choice.

Question 31

Three pipes A, B, C have flow rates of 2 liters, y liters and 3 liters per minute, (2 < y < 3) respectively. The lowest and the highest flow rates of the pipes are decreased by a constant quantity x. If the reciprocals of the flow rates of A, B, C are in arithmetic progression both before and after the change, then x =

A 2.6

B 2.2

C 2.5

D 2.4

Answer: A

Explanation:
According to 1st condition,

$\left(\frac{1}{y}-\frac{1}{2}\right)=\left(\frac{1}{3}-\frac{1}{y}\right)$.

or, $\frac{2}{y}=\frac{1}{3}+\frac{1}{2}=\frac{5}{6}$.

or,$y=\frac{12}{5}$.

According to second condition,

$\frac{1}{y} - \frac{1}{2-x} = \frac{1}{3-x} - \frac{1}{y}$.

or, $\frac{2}{y} = \frac{1}{3-x} + \frac{1}{2-x}$.

or, $\frac{5}{6} = \frac{3-x+2-x}{(3-x)(2-x)} = \frac{(5-2x)}{(x^2-5x+6)}$.

or, $\left(5x^2 - 25x + 30\right) = 30 - 12x$.

or, $5x^2 = 13x$.

or, $x = 2.6$.

A is correct choice.

Question 32

A swimming pool is fitted with 3 pipes A, B, C to fill the pool. A and B together can fill the pool in half the time that is required for C to fill the pool. B takes 20 hours more than the time required for A and 14 hours more than the time required for C to fill the pool. Then the time (in hours) required for all the 3 pipes together to fill the pool is

A 7

B 15

C 18

D 12

Answer: A

Explanation:
Let say, A,B,C require a,b and c hour to fill the pool.

According to question,

b=20+a and b=c+14.

So, $20 + a = c + 14$.

or, $c - a = 6$.....(1)

Again, A and B together can fill the pool in half the time that is required for C to fill the pool.

So, $\frac{ab}{a+b} = \frac{c}{2}$.

Putting value from (1) and b=20+a :

$\frac{a(20+a)}{a+20+a} = \frac{a+6}{2}$.

or, $\frac{a(20+a)}{a+10} = \frac{a+6}{1}$.

or, $a^2 + 20a = (a + 6)(a + 10)$.

or, $a^2 + 20a = a^2 + 6a + 10a + 60$.

or, $20a = 16a + 60$.

or, $4a = 60$.

or, $a = 15$.

So,b=35 and c=21.

So,together they will do in 1 hour $\left(\frac{1}{15} + \frac{1}{35} + \frac{1}{21}\right)$ part

or $\frac{1}{15} + \frac{1}{35} + \frac{1}{21} = \frac{7+3+5}{105} = \frac{15}{105} = \frac{1}{7}$ part.

So,they together will complete in 7 hour.

Question 33

Mohan is thrice as efficient as Srinu and completes a work in 40 hours less than the time taken by Srinu. If both of them work together, the time (in hours) required to complete that work is

A 20

B 60

C 15

D 25

Answer: C

Explanation:
Let,Srinu takes x hour to complete work.

then Mohan takes x/3 hour to complete the work.

According to question,

$x - 40 = \frac{x}{3}$.

or,$x - \frac{x}{3} = 40.$

or, $\frac{2x}{3} = 40.$

or,$x = 60.$

Then,they will do in 1 hour $\frac{1}{20} + \frac{1}{60} = \frac{3+1}{60} = \frac{4}{60} = \frac{1'}{15}$ part.

So, they together will complete in 15 hour.

C is correct choice.

Question 34

Two children A and B are playing a game. A can draw a picture in,30 minutes and B can erase it in 40 minutes. If A starts drawing, and if the drawing sheet is passed on to these two alternately for every one minute, then the time (in minutes) required to complete a picture for the first time is

A 240

B 232

C 1200

D 233

Answer: D

Explanation:
A can do full picture in 30 min.

B can erase it in 40 min.

A's rate = $\frac{1}{30}$ per min.

B's rate= $\frac{1}{40}$ per min.

So, 1st min A will do= $\frac{1}{30}$.

2nd min work done after B erase= $\frac{1}{30} - \frac{1}{40} = \frac{40-30}{120} = \frac{10}{120}$.

3rd min,work done= $\frac{10}{120} + \frac{1}{30}\ \frac{10+4}{120} = \frac{14}{120}$.

4th min= $\frac{14}{120} - \frac{1}{40} = \frac{14-3}{120} = \frac{11}{120}$.

5th min= $\frac{11}{120} + \frac{1}{30} = \frac{11+4}{120} = \frac{15}{120}$.

6thmin= $\frac{15}{120} - \frac{1}{40} = \frac{15-3}{120} = \frac{12}{120}$.

So, every even number minutes it gain by 1 unit of work.

So, 2,4,6,.....,232nd min it will complete ==> 10,11,12,.....,116th part of work.

But in 233rd min it will complete $\frac{116}{120} + \frac{1}{30} = \frac{116+4}{120} = \frac{120}{120} = 1.$

So, full job will done in 233 min.

D is correct choice.

Question 35

18 men and 12 women can complete a work in 18 days. A women takes twice as much time as a man to complete that work. Then the number of days required for 8 men to complete the same work is

A 48

B 54

C 45

D 52

Answer: B

Explanation:
18m+12w=>18days.

2w=1m.

18m+6m=>18days.

So,24 man can do the task in 18 days.

So,8men can do it in=(24×18)/8=54 days.

B is correct choice.

Question 36

A boy, a man and a woman can do a work independently in 72, 12 and 48 days respectively. The number of women required to assist 6 boys and a man to complete that work in 2 days is

A 12

B 16

C 18

D 8

Answer: B

Explanation:
A boy can do in 1 day (1/72) part of work.

A man can do in 1 day (1/12) part of work.

A women can do in 1 day (1/48)part of work.

6 boys can do in 1 day (6/72)=1/12 part of work.

let say ,x number of women needed.

So,6 boys,1 man and x women can do work in 1 day=(1/12+1/12+x/48) unit.

so, in 2 days they will do=(1/6+1/6+x/24).

So,(1/3+x/24)=1.

or,x/24=1-1/3=2/3.

or, x=16.

B is correct choice.

Question 37

64 men working 8 hours a day plan to complete a piece of work in 9 days. After 5 days, they were able to complete only 40% of the work. The number of hours they should work per day so as to complete the remaining work in 4 more days is

A 10

B 12

C 14

D 15

Answer: D

Explanation:

We know ,unit of work=M×D×H

M=number of men

H=number of hour

D=number of days.

if 64 men complete 40% of work in 5 days,

then work done=64×5×8=2560 unit.

so,40% work=2560 units.

so,60% work=2560(60/40)=3840 units.

let say, to complete the work in 4 days they need to work for x hour per day .

So,64×4×x=3840

or, x=15.

D is correct choice.

Question 38

Two friends A and B working together can complete a piece of work in 16 days. A alone can do the same work in 32 days. If A and B work on alternate days, starting with B, the time (days) in which the work can be completed is

A 64

B 16

C 72

D 32

Answer: D

Explanation:

A and B together can do the work in 16 days.

So, in 1 day they together can do (1/16) part of the work.

A can do (1/32) part of work in 1 day.

So,B can do $(1/16 - 1/32) = 1/32$ part of work in 1 day.

So,if B do work in alternative days then they together have to work for 32 days i.e.

$32 \times (1/32) = 1.$

D is correct choice.

Question 39

The LCM of 96,144 and N is 576. If their HCF is 48, then a possible value of N is

A 64

B 96

C 244

D 192

Answer: D

Explanation:
Factors of the number are

$576 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 3 = 2^6 \times 3^2$

$96 = 2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 3 = 2^5 \times 3$

$144 = 2 \times 2 \times 2 \times 2 \times 3 \times 3 = 2^4 \times 3^2$

LCM of 96,144 and n is 576.

i.e.

$n = 2^6 \times k = 64k$
....(1)

HCF is 48.

$HCF(96, 144, 64k) = 2^4 \times 3$

$48 = 2^4 \times 3$

This only happen if k=3

So, substituting k=3 in (1),

$n = 64 \times 3 = 192.$

D is correct choice.

Question 40

The number of zeros at the end of the product $1003 \times 1001 \times 999 \times ... \times 123$ is

A 225

B 213

C 0

D 1

Answer: C

Explanation:

To produce a 0 ,we need at least one 5 and at least one 2 .

But in the given question, all the numbers are odd number ,so there is no 2 exist in the product.

So, the above product can not produce any number of 0's.

C is correct choice.

Question 41

If A = $2^{352}5^{411}3^{152}$; B = $2^{352}5^{410}3^{153}$; C = $2^{350}5^{412}3^{149}$, and D = $2^{353}5^{409}3^{150}$ then the descending order of A, B, C, D is

A A,B,C,D

B D,C,B,A

C A,D,C,B

D A,C,B,D

Answer: A

Explanation:

Let us say,$k = 2^{350} \times 5^{409} \times 3^{149}$

So,$A = 4 \times 25 \times 27k = 2700k.$

$B = 4 \times 5 \times 81k = 1620k.$

$C = 4 \times 125 \times 1k = 500k.$

$D = 8 \times 1 \times 3k = 24k.$

So,$A > B > C > D$

A is correct choice.

Question 42

The smallest 5 digit number which when divided by 7,11 and 21 leaves the remainder 3 in each case is

A 12,234

B 10,167

C 11,580

D 10,233

Answer: B

Explanation:

We know that -

Dividend=divisor*quotient+remainder

For our question dividend must be of 5 digit.Let dividend be x.

Divisor=LCM(7,11,21)=231.

Let quotient be y.

Remainder is 3.

Substitute above values in equation-

x=231*y+3

Now we need to substitute different value of y(y=1,2,3…) in order to find smallest 5 digit x.

When y=1 then x=234

.

.

.

When y=43 then x=9936

When y=44 then x=10167

When y=45 then x=10398

So least 5 digit number(10167) is obtained at y=44.

The 5 digit number when divided by 7,11,21 which gives remainder 3 is 10167.

So,Option B is correct choice.

Question 43

If 937x8y7 is exactly divisible by 11, then the maximum value of x + y is:

A 6

B 28

C 11

D 17

Answer: D

Explanation:
As per divisibility rule of 11,

$9+7+8+7=3+x+y$

or,$31=3+x+y$

or,$x+y=28$

but ,x and y are single digit number they can take a maximum value of 9 .

if both the digits are 9 then it can't be divisible.

So,either x or y is equal to 9 or 8.

So, the maximum value of x+y is 17.

D is correct choice.

Question 44

If the number obtained after subtracting x from 2035 leaves the same remainder 5 when it is divided by 9,10 and 15, then the smallest possible x is

A 50

B 55

C 150

D 220

Answer: A

Explanation:
If we substract 50 from 2035 it will become

1085.

Now when 1085 is divided by 9,10 and 15 they will give a remainder of 5 each.

A is correct choice.

Question 45

$1.27 + 0.94$

A 2.21

B 2.2

C 1.2794

D $\frac{219}{53}$

Answer: B

Explanation:
Let say,

$x = .27\ and\ y = .94$.

So,we can rewrite it as,

$x = .2727\ \ and\ \ y = .9494$.

or,$100x = 27.27\ \ and\ \ 100y = 94.94$.

or,$100x = 27 + .27\ \ and\ \ 100y = 94 + .94$.

or,$100x = 27 + x\ and\ \ 100y = 94 + y$. (as $x = .27\ \ and\ \ y = .94$.)

or,$99x = 27\ and\ 99y = 94.$

or,$x = \frac{27}{99}\ and\ \ y = \frac{94}{99}$.

So,$1.27\ + .94\ = 1 + x + y.$

or,$1.27\ + .94\ = 1 + \frac{27}{99}\ + \frac{94}{99}$.

or,$1.27\ + .94\ = \frac{220}{99}\ = 2.22222222..... = 2.2$.

B is correct choice.

Question 46

Let A = {(a, b, c)/ $c^2 = a^2 + b^2$ }. If (3, 5, x), (y, 3, 7), (1, z, 5) are three elements of the set 'A' and the LCM of x^2, y^2, z^2 is $p_1^{\alpha_1}\ p_2^{\alpha_2}\ p_3^{\alpha_3}\ p_4^{\alpha_4}$ where p_1, p_2, p_3, p_4 are primes, then $\frac{p_1+p_2+p_3+p_4}{\alpha_1+\alpha_2+\alpha_3+\alpha_4}$ =

A $\frac{9}{2}$

B $\frac{7}{9}$

C $\frac{26}{8}$

D $\frac{9}{5}$

Answer: A

Explanation:
It is given that ,$c^2 = a^2 + b^2$.

Now,if you compare set(a,b,c) with set(3,5,X) then we can say that a=3,b=5 & c=x.

So,$x^2 = 3^2 + 5^2$

or,x=√(9+25)=√34.

Similarly,

$y = \sqrt{(49-9)} = \sqrt{40}$ and

$z = \sqrt{(25-1)} = \sqrt{24}$

so,$LCM(x^2, y^2, z^2) = LCM(34, 40, 24)$

$= 2^3 \times 17 \times 5 \times 3.$

so,$p1 + P2 + P3 + p4 = 2 + 17 + 5 + 3 = 27.$

and $a1 + a2 + a3 + a4 = 3 + 1 + 1 + 1 = 6$

so,ratio would be$= 27/6 = 9/2.$

A is correct choice.

Question 47

If the number of numbers between 100 and 1000 that are divisible by 11 is x, then the number of total divisors of x is

A 81

B 5

C 3

D 4

Answer: B

Explanation:
Between 100 and 1000 there are 81 numbers present which are divisible by 11.

81 can be divisible by 1,3,9,27 & 81.

So, value of x is 5 .

B is correct choice.

Question 48

Match the items of the following lists.

List - A	List - B
a) a, b are prime numbers	i) LCM of $a, b \leq ab$
b) a, b are composite numbers	ii) Conjugate surds
c) $1.34\ 54$	iii) Irrational numbers
d) $(\sqrt[3]{2} + 3\sqrt{5})(\sqrt[3]{2} - 3\sqrt{5})$	iv) Rational numbers
	v) Co-prime numbers

Correct answer for a, b, c, d is

A i v iii ii

B i ii iv iii

C v i iv iii

D v i iii ii

Answer: C

Explanation:

a) a,b are prime numbers then it will go with option(v).

b) if a and b are composite number the their multiplication shall be greater than their LCM.so,it will go with (i).

c) c will definitely go with (iv).

and d) with (iii) .

C is correct choice.

Question 49

Let p_1, p_2, p_3 be prime numbers and α, β, γ be positive integers. If $p_1^{\alpha} p_2^{\beta} p_3^{\gamma}$ is a divisor of 34864764 lying between 100 and 200, then ($p_1 + p_2 + p_3)(\alpha + \beta + \gamma)$ =

A 64

B 35

C 72

D 88

Answer: A

Explanation:

$34864764 = 2^2 \times 3 \times 11 \times 264127.$

So,p_1, p_2, p_3 *could have values* $2, 3, 11.$ and α , β , γ *could have values of* $2, 1, 1.$

So,$(p_1 + p_2 + p_3)\,(\alpha\ + \beta\ + \gamma\ ) = (2 + 3 + 11)\,(2 + 1 + 1) = 16 \times 4 = 64.$

A is correct choice.

Question 50

If x = $2+^{\frac{1}{2+}\,^{\frac{1}{2+}\,^{\frac{1}{2+\ldots\ldots\infty}}}}$ **then x =**

A $\frac{\sqrt{2}-1}{2}$

B $\frac{\sqrt{2}+1}{2}$

C $\sqrt{2}-1$

D $-1-\sqrt{2}$

Answer: C

Explanation:

From the given question we can say that,

$x = \frac{1}{2+x}\ (as\ the\ series\ reapeted\ from\ the\ same\ position)$.

or,$x^2 + 2x = 1.$

or,$x^2 + 2x - 1 = 0.$

or,$x^2 + 2x + 1 - 2 = 0.$

or,$(x + 1)^2 = 2.$

or,$x + 1 = \sqrt{2}$.

or,$x = \left(\sqrt{2} - 1\right)$.

So, C is correct choice.

Question 51

The value of $\frac{1}{1^2.3^2} + \frac{2}{3^2.5^2} + \frac{3}{5^2.7^2} + \frac{4}{7^2.9^2} + ... + \frac{15}{29^2.31^2}$ **is**

A $\frac{30\times32}{961}$

B $\frac{120}{961}$

C $\frac{1}{961}$

D $\frac{70}{961}$

Answer: B

Explanation:

from given series we can say that,

$T_n = \frac{n}{(2n-1)^2(2n+1)^2} = \frac{1}{8}\left(\frac{1}{(2n-1)^2} - \frac{1}{(2n+1)^2}\right), where\ n = 1, 2, 3, ..., 15.$

So,$S_n =$

$T_1 + T_2 + ... + T_{15}$

$= \frac{1}{8}\left(\frac{1}{1^2} - \frac{1}{3^2}\right) + \frac{1}{8}\left(\frac{1}{3^2} - \frac{1}{5^2}\right) + ... + \frac{1}{8}\left(\frac{1}{29^2} - \frac{1}{31^2}\right).$

$= \frac{1}{8}\left(1 - \frac{1}{31^2}\right).$

$= \frac{1}{8}\left(\frac{961-1}{961}\right).$

$= \frac{1}{8}\left(\frac{960}{961}\right).$

$= \frac{120}{961}.$

B is correct choice.

Question 52

If $x = \frac{3+\sqrt{6}}{5\sqrt{3}-2\sqrt{12}-\sqrt{32}+\sqrt{50}}$**, then** $\frac{x^4-1}{x^4+1}$ **=**

A 1

B $\frac{2}{5}$

C $\frac{4}{5}$

D $\frac{3}{4}$

Answer: C

Explanation:

$5\sqrt{3} - 2\sqrt{12} - \sqrt{32} + \sqrt{50} = 5\sqrt{3} - 4\sqrt{3} - 4\sqrt{2} + 5\sqrt{2} = \sqrt{3} + \sqrt{2}.$

$3 + \sqrt{6} = \sqrt{3}\left(\sqrt{3} + \sqrt{2}\right).$

So,$x = \sqrt{3}.$

So, $\frac{x^4-1}{x^4+1} = \frac{9-1}{9+1} = \frac{8}{10} = \frac{4}{5}.$

C is correct choice.

Question 53

Each mango costs Rs.5 and each orange costs Rs.7. If a person spends Rs.38 on these two varieties of fruits, then the sum of the number of mangos and oranges purchased by that person is

A 6

B 8

C 12

D 3

Answer: A

Explanation:
Person buys 2 mangoes and 4 oranges ,Total worth of $= 2 \times 5 + 4 \times 7 = 38.$

A is correct choice.

Question 54

If $x = \frac{1}{\sqrt{13}-3}, y = \frac{1}{\sqrt{7}-\sqrt{3}}, z = \frac{1}{\sqrt{2}(\sqrt{3}-1)}$, then

A x < y < z

B y < z < x

C z < y < x

D x < z < y

Answer: C

Explanation:
$x = \frac{1}{\sqrt{13}-3} = \frac{\sqrt{13}+3}{13-9} = \frac{\sqrt{13}+3}{4} = 1.65.$

$y = \frac{1}{\sqrt{7}-\sqrt{3}} = \frac{\sqrt{7}+\sqrt{3}}{7-3} = 1.09.$

$z = \frac{1}{\sqrt{6}-\sqrt{2}} = \frac{\sqrt{6}+\sqrt{2}}{4} = 0.96.$

So, $x > y > z.$

C is correct choice.

Question 55

The smallest of the differences between the perfect squares lying on either side of the least positive integer that is divisible by 3, 4, 5, 6, 8 is

A 25

B 35

C 15

D 21

Answer: D

Explanation:
LCM(3,4,5,6,8)=120.

So, Smallest number that is divisible by 3,4,5,6,8 is 120.

Now, Smallest square numbers ,which are present on both side of 121, that can produce smallest difference are 100 (10^2) and 121 (11^2).

So, Smallest difference is (121-100)=21.

D is correct choice.

Question 56

If $x = \sqrt{2} + \sqrt[3]{5}$ and y is such that xy is rational, then a value of y is

A $(\sqrt[3]{5} - \sqrt{2})(4 + 2\sqrt[3]{25} + 5\sqrt[3]{5})$

B $(\sqrt[3]{5} - \sqrt{2})$

C $(\sqrt[3]{5} - \sqrt{2})(2\sqrt[3]{25} + 5\sqrt[3]{5} - 4)$

D $(\sqrt[3]{5} - \sqrt{2})(4 - 2\sqrt[3]{25} + 5\sqrt[3]{5})$

Answer: A

Explanation:
If x is rational number then 1/x is also a rational number.

A is correct choice.

Question 57

If the mean proportional of b, c and the 4^{th} proportional of a, b, c are both equal to 8, then abc =

A 2^9

B 2^7

C 2^5

D 2^8

Answer: A

Explanation:
mean proportion of b,c is $\sqrt{bc} = 8.$

or,$bc = 64.$

And, $a : b = c : 8.$

then,$a = \frac{bc}{8} = \frac{64}{8} = 8.$

So,$abc = 8 \times 64 = 2^9.$

A is correct choice.

Question 58

The greatest number that exactly divides 513, 1134 and 1215 is

A 9

B 54

C 27

D 81

Answer: C

Explanation:
HCF of 513,1134 and 1215 is 27.

So, C is correct choice.

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Question 59

If $x = 1 + \frac{1}{2^2} + \frac{1}{2^3} + ...\infty$ **and** $y = x + \frac{1}{2} + \frac{x}{9} + \frac{1}{18} + \frac{x}{81} + \frac{1}{162} + ...\infty$**, then**

A $x = y$

B $x = y^2$

C $y = x^2$

D $x + y < 1$

Answer: C

Explanation:
for an infinite series , SUM$= \frac{a}{(1-r)}$.

So, $y = \frac{x}{(1-\frac{1}{9})} + \frac{\frac{1}{2}}{(1-\frac{1}{9})}$.

or,$y = \frac{\frac{x}{8}}{\frac{9}{9}} + \frac{\frac{1}{2}}{\frac{8}{9}}$.

or,$y = \frac{9x}{8} + \frac{9}{16}$.

Again,

$x = \frac{\frac{1}{2^2}}{(1-\frac{1}{2})} + 1$.

or,$x = \frac{3}{2}$.

So,$y = \frac{27}{16} + \frac{9}{16} = \frac{36}{16} = \frac{9}{4} = x^2$.

C is correct choice.

Question 60

The number of ordered pairs (x,y) of positive integers satisfying the inequality 5x + 3y $\leq$ 15 is

A 4

B 5

C 6

D 7

Answer: A

Explanation:
possible values are (1,1),(1,2),(1,3) and (2,1).

So, A is correct choice.

Question 61

In a class, the number of boys who can swim is one more than the number of girls who can swim. The number of girls who cannot swim is one more than the number of boys that cannot swim. The difference between number of boys who can swim and number of girls who cannot swim is two. Then which of the following is true?

A The number of girls in that class is 2 less than the number of boys

B The number of boys in that class is one more than the number of girls

C The number of boys and girls in that class is each equal to 2

D The difference between the number of girls who can swim and the number of boys who can't swim is 2

Answer: D

Explanation:
Let say,

number of boys who can swim is a and who cant is b.

And number of girls who can swim is c and who cant is d.

The number of boys who can swim is one more than the number of girls who can swim a = c+1

The number of girls who cannot swim is one more than the number of boys that cannot swim => d = b+1

The difference between number of boys who can swim and number of girls who cannot swim is two => a - d = 2

=> Substituting a and d values in the above equation we get
c+1 - (b+1) = 2
c+1-b-1 = 2
=> c-b = 2

Question 62

A book costs Rs.35 and a pen costs Rs.20. A person has purchased less number of books than the number of pens by spending maximum amount out of Rs. 350, that he has. The amount left unspent (in rupees) is

A 0

B 5

C 10

D 15

Answer: A

Explanation:
Let say,he bought x number of pens and y number of books.

each pen cost 20 rs.and each book cost 35 rs.

So,it will cost a total of $(20x + 35y)$rs.

So, According to the question,

$350 \geq (20x + 35y)$.

by using trial and error method,

if we put x=10 and y=4 then,

$20x + 35y = 200 + 140 = 340$

which is less than 350.

But if we put x=14 and y=2 then,

$20x + 35y = 280 + 70 = 350.$

So, we can utilize the 350 Rs. full only when he purchase 14 number of pen and 2 number of books.

So, no rupees will left with him.

A is correct choice.

Question 63

Which one of the following point does not lie in the region bounded by x + y < 5, 2x - 4y >1 and x < y is

A $(-1.5, -1\frac{1}{8})$

B $(-\frac{3}{2}, -\frac{5}{4})$

C $(-\frac{1}{10}, +\frac{1}{10})$

D (-3, -2)

Answer: C

Explanation:

if we put $(-\frac{1}{10}, +\frac{1}{10})$ in $2x - 4y > 1$,it does not satisfy the equation.

So, C is correct choice.

Question 64

If A gives Rs.30 to B, then B will have twice the money left with A. If B gives Rs.10 to A, then A will have thrice as much money as is left with B. Then the amount A has initially (in rupees) is

A 90

B 32

C 62

D 60

Answer: C

Explanation:

Let say, initially A had a Rs and B had b Rs.

from condition 1 :

$B + 30 = 2 \times (A - 30).$

or,$2A - B = 90.$

from condition 2:

$A + 10 = 3 \times (B - 10).$

or,$3B - A = 40.$

By solving these 2 equations we get,

$A = 62$ and $B = 34.$

So, C is correct choice.

Question 65

The number of leap years in between the years 2018 and 2126 is

A 25

B 27

C 26

D 23

Answer: B

Explanation:
Here first term ,a$= 2020$ and common difference, d$= 4$.

and last term$= 2124$.

So,$a + (n - 1)d = l$

or,$2020 + (n - 1)4 = 2124$

or,$(n - 1)4 = 104$

or,$n = 27$.

So,B is correct choice.

Question 66

If 15^{th} January was Monday in the year 1952, then the last day of that year was

A Sunday

B Monday

C Tuesday

D Wednesday

Answer: C

Explanation:
If we consider a 7 day cycle then next day should be a Monday.

Here 15th of January is Monday.

But 1952 is a leap year .

So there would be one extra day

Which should be next day of the week.

So Tuesday is the answer.

C is correct choice.

Question 67

Which one of the following is not true?

A The calendar for the year 2003 will serve for the year 2014

B 14^{th} December 1998 was Monday

C 1^{st} February 2012, was Wednesday

D December 31^{st} of the year 1600 was Saturday

Answer: D

Explanation:
Formula to calculate day :

(year code+Month code+Century code+Date Number-Leap year code) mod 7.

Year code:

$(YY + (YY \div 4))mod7$

Here,for 1600th year,

$(00 + (00/4))mod7$=00.

year code is 0.

Month code:

from January to December the month codes are as : 033614625035(we know it).

here month code is 5.

Century Code:

Century code for 1600 years is 6.

So, required date would be at=(0+5+6+31-0)mod 7=0(as 1600 is a leap year and month is not in January or February so we will subtract 0).

So, it will be Sunday not Saturday.

D is correct choice.

Question 68

In 12 hours, how many times the hours and minutes hands of a clock will coincide with- each other?

A 10

B 11

C 12

D 13

Answer: B

Explanation:
Hour hand covers 360° in 12 hour or 720 minutes.

Also, Minute hand covers 360° in 60 minutes.

So, hour hand covers (1/2)° in 1 minute.

and minute hand covers 6° in 1 minute.

Let say, time in the clock when they coincide : hour hand moved H hour and minute hand moved M minutes.

So,

Angle between hands of a clock

When the minute hand is behind the hour hand, the angle between the two hands at M minutes past HH 'o clock

$= (30H - 6M) + (M/2)^\circ$

$= (30H - (11M/2))^\circ$

When the minute hand is ahead of the hour hand, the angle between the two hands at M minutes past HH 'o clock

$= ((6M - 30H) - M/2)^\circ$

$= ((11M/2) - 30H)^\circ$

So, taking mod:

$|60H - 11M| = 2\theta$.....(1)

So, hour hand and minute hand will coincide 11 times :

between 1 and 2 , 2 and 3 , 3 and 4, 4 and 5 , 5 and 6, 6 and 7 , 7 and 8 , 8 and 9, 9 and 10, 10 and 11, 11 and 12.

1 and 2 :

between 1 and 2 hour hand will pass 1 O'clock,

So,H=1 and angle should be 0.

using equation (1):$60 \times \ 1 - 11M = 0 \ or \ M = 60 \div 11 = 5\frac{5}{11}$.

So,between 1 and 2 , hour hand and minute hand will coincide at $5\frac{5}{11}$ minutes past 1.

2 and 3:

$60 \times 2 - 11M = 0 \ or \ M = 120 \div 11 = 10\frac{10}{11}$.

They will coincide $10\frac{10}{11}$ minutes past 2.

3 and 4:

$60 \times 3 - 11M = 0 \ or \ M = \frac{180}{11} = 16\frac{4}{11}$.

They will coincide $16\frac{4}{11}$ minutes past 3.

4 and 5:

$60 \times 4 - 11M = 0 \ or \ M = \frac{240}{11} = 21\frac{9}{11}$.

They will coincide $21\frac{9}{11}$ minutes past 4.

5 and 6:

$60 \times 5 - 11M = 0 \ or \ M = \frac{300}{11} = 27\frac{3}{11}$.

They will coincide $27\frac{3}{11}$ minutes past 5.

6 and 7:

$60 \times 6 - 11M = 0 \ or \ M = \frac{360}{11} = 32\frac{8}{11}$.

They will coincide $32\frac{8}{11}$ minutes past 6.

7 and 8:

$60 \times 7 - 11M = 0 \ or \ M = \frac{420}{11} = 38\frac{2}{11}$.

They will coincide $38\frac{2}{11}$ minutes past 7.

8 and 9:

$60 \times 8 - 11M = 0 \ or \ M = \frac{480}{11} = 43\frac{7}{11}$.

They will coincide $43\frac{7}{11}$ minutes past 8.

9 and 10:

$9 \times 60 - 11M = 0 \ or \ M = \frac{540}{11} = 49\frac{1}{11}$.

They will coincide $49\frac{1}{11}$ minutes past 9.

10 and 11:

$60 \times 10 - 11M = 0 \ or \ M = \frac{600}{11} = 54\frac{6}{11}$.

They will coincide $54\frac{6}{11}$ minutes past 10.

11 and 12:

$60 \times 11 - 11M = 0 \ or \ M = \frac{660}{11} = 60.$

So, last time they will coincide 60 minutes past 11O'clock which means at 12 noon.

So, Total 11 times they will coincide.

B is correct choice.

Question 69

At what time between 3 O'clock and 4 O'clock will the hands of a clock lie on a straight line but do not coincide?

A 3 hrs 49m 5sec

B 3 hrs 43m 38sec

C 3 hrs 45m 12sec

D 3 hrs 55m 53sec

Answer: A

Explanation:
At the time 3:00 O'clock hour hand is 15 minutes away from centre.

But , minutes hand gain 5 minutes in every 60 minutes.So,to be in staright line it should cover $(15-5)=10minutes$ away from 4 O'clock hand.

and in 60 seconds it will gain 55 seconds.

So, They will be in a straight line at

$4O'clock-10minutes-55seconds$

at 3:49:05.

A is correct choice.

Question 70

A clock is set right at 8AM on 1.1.2018. The clock gains 15min in 24hours. The time on the clock when the actual time is 10 AM on 4.1.2018, is (nearly)

A 10.45 a.m.

B 11 a.m.

C 10.46 a.m.

D 11.05 a.m.

Answer: C

Explanation:
It gain 15 minutes in 24 hour or 1440 minutes.

or,in 60 minutes it gain 0.625 minutes.

so,From 8AM of 1.1.2018 to 8AM 4.1.2018, the 3 days have been covered .

So,$(15\times 3)=45minutes$ shall count.

Now from 8AM to 10AM ,it is 2 hour.

So,the clock will gain $(0.625\times 2)=1.25$ minutes.

So,it will show 10:46 AM in the clock.

C is correct choice.

Question 71

A well of 4m diameter and 35m deep is dugout and the excavated soil is transported in a rectangular parallelopiped shaped truck with dimensions $5m \times 2m \times 0.5m$. To avoid over during transportation only 80% of its capacity is filled. If the loose soil occupies 20% more space while filling into the truck, then the number of trips required to transport the soil completely away from the place of digging is

A 528

B 75

C 64

D 132

Answer: D

Explanation:

Volume of well$= \pi 2^2 \times 35 = 440m^3$.

Volume of truck$= 5 \times 2 \times 0.5 = 5m^3$.

but the truck is only able to fill its 80% of capacity to fill the space.

So, effective amount was$= 0.8 \times 5 = 4m^3$.

So,20% of wasted amount is

$= 0.2 \times 440 = 88m^3$.

So, number of trips required are

$= (440/4) + (88/4) = 110 + 22 = 132$.

D is correct choice.

Question 72

If the volumes of a sphere and a cube are in the ratio 9π : 2, then the ratio of the radius of the sphere to the edge of the cube is

A 2:3

B 3:2

C 1:1

D Latek 1

Answer: B

Explanation:

Let say, Volume of sphere$= 9\pi k$. and Volume of cube$= 2k$.

So,$(4/3)\pi r^3 = 9\pi k$

or,$r = 3k/2^{(}2/3)$.

and edge of cube$= k2^{(}1/3)$.

So, required ratio would be$= 3 : 2$.

B is correct choice.

Question 73

The dimensions of a rectangular plot is $40m \times 20m$. A path is formed across the plot along the length and breadth with a uniform width of 2 meters. If the cot of forming, the path is Rs. 500 per sq.meter, the cost of laying that path (in Rs.) is

A 58,000

B 56,400

C 60,000

D 62,000

Answer: A

Explanation:
According to the question,

length of the path would be 40m and width of the path would be 2m by the length side(area of that path is $= 40 \times 2 = 80m^2$).

And ,length of the path would be 20m and width of the path would be 2m by the breadth side(area $= 20 \times 2 = 40m^2$).

If it cost 500 Rs. to laying the path, total cost of laying the path would be

$= 80 \times 500 + 40 \times 500 = 60000.$

But,in corner a reapetated cost is taken during the path ,whose length and breadth would be of 2m respectively.

So,area of that portion is$= 2 \times 2 = 4m^2.$

So,cost of that path$= 4 \times 500 = 2000Rs.$

So,Total cost$= 60000 - 2000 = 58000.$

A is correct choice.

Question 74

A person packs sweets boxes of dimensions $15cm \times 15cm \times 15cm$ in a basket of size $120cm \times 120cm \times 120cm$. If he now wants to carry the maximum number of cubical boxes having the maximum integer dimensions but less than the dimensions of the earlier boxes without leaving any space unused, the number of such boxes he can carry is

A 1,72,8000

B 512

C 3375

D 14,400

Answer: C

Explanation:
He can carry maximum number of boxes ,only if he put one box over another .

So, maximum number boxes he can carry is

$= 15 \times 15 \times 15 = 3375.$

C is correct choice.

Question 75

From a circle of radius 12cm centered at O, a sector OAB of are length 8π cm is cut and from it a cone is formed by joining OA and OB. If the volume of the cone is V cubic cm and its lateral surface area is S square cm, then V:S =

A $4\sqrt{2} : 3$

B $9\sqrt{2} : 8$

C $8\sqrt{2} : 9$

D $3\sqrt{2} : 8$

Answer: C

Explanation:

Length of the arc is $= 8\pi$.

So, perimeter of the base of cone is $2\pi r$.

So,$2\pi r = 8\pi$.

or,$r = 4$.

radius of the circle is 12 cm.

So,slant height of the cone is 12 cm.

So, height of the cone$= \sqrt{(12^2 - 4^2)}$

$= \sqrt{128} = 8\sqrt{2}$.

So,V$= (1/3)\pi 4^2 \times 8\sqrt{2}$.

and S$= \pi \times 4 \times \sqrt{(h^2 + r^2)} = 4\pi \times 12$.

So,V:S$= 8\sqrt{2} : 9$.

C is correct choice.

Question 76

A solid sphere of radius r is melted and with that material a solid cone and twenty two identical solid cubes were made. If the height of cone and edge of each cube are each equal 9 to half the radius of the sphere, then the ratio of the radius of the cone to its height is

A 11:1

B $\sqrt{11} : 1$

C $\sqrt{3} : 1$

D 3:1

Answer: B

Explanation:

Volume of the sphere is

$= (4/3)\pi r^3$.

height of cone r/2.

let say radius of cone is a.

So, volume of cone is

$= (1/6)\pi a^2 r$.

side of cube is $= r/2$.

volume of cube$= r^3/8$.

So,$(4/3)\pi r^3 = (1/3)\pi a^2 r + r^3/8$.

So,$a = (\sqrt{11}/2)r$.

So, height: radius$= \sqrt{11} : 1$.

B is correct choice.

Question 77

What is the area (in sq. cms) of the shaded portion of the following diagram in which each side of the triangle is 14 cms and its vertices being the centres of three mutually touching circles?

A 7.3

B 77

C 308

D 154

Answer: D

Explanation:

Radius of circle is$= 14/2 = 7cm.$

From the picture we can say that area of the shaded region is$= (1/3) \times 3 \times area.$

So, required area$= \pi \times 7^2 = 154.$

D is correct choice.

Question 78

Let $\triangle$ be the area of the circumcircle of a right angled triangle ABC with $\angle B$ = 90°. Let $\triangle_1 and \triangle_2$ be areas of the two circle with diameters BC and BA respectively. Then

A $\triangle^2 = \triangle_1^2 + \triangle_2^2$

B $\triangle = \triangle_1 \triangle_2$

C $\triangle = \triangle_1 + \triangle_2$

D $\frac{\triangle_1}{\triangle_2} = \triangle$

Answer: C

Explanation:

Let say ,a be the length of the side conjugate to the right angle .

so,length of the diameter of the circle is

$= \sqrt{2}a.$

so,radius$= (\sqrt{2}/2)a.$

so,$\Delta = \pi a^2/2.$

Now,Δ1=Δ2=

$\pi(a/2)^2 = \pi a^2/4.$

So,Δ1+Δ2=$\pi a^2/2.$

So,Δ=Δ1+Δ2.

C is correct choice.

Question 79

From each of the corners of a rectangular sheet of dimensions $36cm \times 24cm$, a small square of dimensions $4cm \times 4cm$ is removed. If the edges on the four sides are folded and a box is formed then the volume of the box so formed (in cm3)

A 1792

B 2234

C 2560

D 2460

Answer: A

Explanation:
If 4 squares of 4×4 is removed from each corner then length of the rectangle become

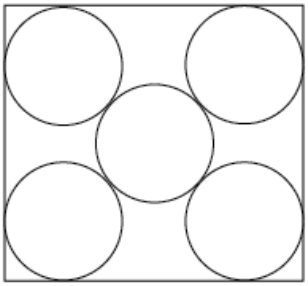
$36 - 4 - 4 = 28cm$, breadth of the rectangle become $= 24 - 4 - 4 = 16cm$ and height of the box is 4 cm.

So,volume of box is $= 28 \times 16 \times 4 = 1792.$

A is correct choice.

Question 80

In a square of side 8 cm, 5 identical circles are placed as shown in the figure. Then the radius (in cms) of each of the circle is



A $8\sqrt{2}$

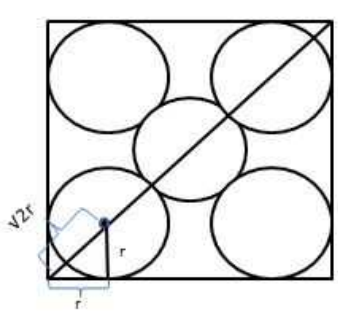
B $8\sqrt{2} - 2$

C $4(\sqrt{2} - 1)$

D $4(\sqrt{2} + 1)^2$

Answer: C

Explanation:



Let say radius of each circle is r and side length of square is a.

So,length of the diagonal of the square= $\sqrt{2}r + \sqrt{2}r + (4 \times r) = \left(4r + 2\sqrt{2}r\right)$cm.

But ,diagonal of Square=$\sqrt{a^2 + a^2} = \sqrt{2}a$=$8\sqrt{2}$.(square of side 8 cm)

So,

$8\sqrt{2} = 4r + 2\sqrt{2}r.$

or,$r = \frac{8\sqrt{2}}{4+2\sqrt{2}}$.

or,$r = \frac{8\sqrt{2}(4-2\sqrt{2})}{16-8} = \sqrt{2}\left(2\left(2-\sqrt{2}\right)\right) = 2\left(2\sqrt{2}-2\right) = 4\left(\sqrt{2}-1\right).$

C is correct choice.

Question 81

Two identical circles intersect such that their centers and their points of intersection, form a square of side 4cm. Then the area (in sq.cms) of the portion that is common to the two circles is

A $8(\pi - 2)$

B 8π

C $8\pi - 4$

D $\frac{\pi^2}{4} - \frac{\pi}{2}$

Answer: A

Explanation:
Side of the square is 4 cm.

So,radii of the two circles are also 4 cms.

So, area of the one of the arc is

$(\pi \times 4^2/4) = 4\pi.$

Area of the square is$= 4 \times 4 = 16cm^2.$

clearly the common sector have the half of square common to it.

So,area of one arc is

$4\pi - 16/2 = 4\pi - 8cm^2$

So,Total area of the arc is$8\pi - 16$

$= 8(\pi - 2).$

A is correct choice.

Question 82

The number of Positive integers x such that 2018, 1998 and x are the sides of a triangle is

A 3998

B 3996

C 4001

D 3995

Answer: D

Explanation:
As 2018,1998 and x are the side of triangle.

Then sum of two sides should be greater than the third side.

So,$2018 + 1998 > x$

or,$4016 > x.$

revesely,$1998 + x > 2018.$

So, minimum value of X should be 21 .

And maximum value of X should be 4016.

So,x can take$(4016 - 21) = 3995$ values.

D is correct choice.

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Question 83

An equilateral triangular plate is completely cut into n number of identical small equilateral triangular plates. Which one of the following can be a possible value for n

A 206

B 216

C 256

D 296

Answer: C

Explanation:
Minimum no. of identical small equilateral triangles that can be cut is 4. (1 at the top, 3 at the bottom). These 4 can be cut into 4 small triangles each.
Hence, the next value is 4*4 = 16 Hence, the number of identical small triangles that can be cut is of the form $4^n.256 = 4^4$

C is correct choice.

Question 84

The maximum of the distance between any two points of a unit cube is, in proper units

A $\sqrt{2} + 1$

B $\sqrt{3} + \sqrt{2}$

C $\sqrt{2}$

D $\sqrt{3}$

Answer: D

Explanation:
Largest distanc in a cube is the diagonal of the cube.

if we consider a square of unit side then the diagonal of that square is

$= \sqrt{(1^2 + 1^2)} = \sqrt{2}.$

so,value of largest diagonal is

$= \sqrt{(1^2 + (\sqrt{2})^2)} = \sqrt{3}.$

D is correct choice.

Question 85

A train started at 9AM from a station A with a speed of 72 km/hr. Another train after tvvo hours started from the station B towards A with a speed of 90 km/ph. The two trains are expected to cross each other at 1.30 PM. At 12 noon because of the signals both the trains reduced their speeds by the same quantity and they crossed each other at 4.30 PM. The speed of the train, after 12 noon, that started from the station A, is

A 54

B 36

C 18

D 40

Answer: C

Explanation:
The train which started from station A traveled 144 km in first 2 hours.

The train from station A and station B had speed of 72 km/h and 90 km/h respectively.

And they expected to be meet in 1:30 PM.

But from 11:00 AM they started to travel towards eachother.It means that they expected to meet eachother by 2.5 hours from 11:00AM.

Their relative velocity is=(72+90)=162 km/h.

So, in 2.5 hours they should travel=2.5×162=405 km. So they were 405 km apart from eachother at 11:00 AM.

Let say, due to signal,they reduced their speed by x km/h.

So,train from station A and station B will have (72-x) km/h and (90-x) km/h as their respective speed.

But,they shifted their speed to this reduced speed at 12 noon, which means that they travel for more 1 hour from 11:00AM at their previous speeds.

So,in that 1 hour they travel for more 72 km and 90 km further towards eachother.

Which in turn reduced their total journey of 405 km by (72+90)=162 km by this 1 hour.

So,they traveled only (405-162)=243 km in (12 noon-4:30 PM)= 4.5 hours.

But their new relative velocity is (162-2x) km/h.

So, they will take (243/(162-2x)) hours to cross eachother.

So,

$(243/(162 - 2x)) = 4.5$

or,$54 = 162 - 2x$

or,$2x = 108$

or,$x = 54.$

So, the train ,which left from station A,have reduced its speed to (72-54)=18 km/h.

C is correct choice.

Question 86

A left his house for school t min late from normal time and travelled with $\frac{4}{3}$ of his usual speed and reached the school in t minutes early. Next day he left home, t minutes early than the previous day and travelled with $\frac{8}{11}$ of his usual speed. He reached his school in

A t minutes late

B 3t minutes late

C Exactly on time

D $\frac{t}{10}$ minutes late

Answer: B

Question 87

Two points A and B lie along a line at a distance of 120km apart. P and Q start at the same time from A and B with speeds 40km/h and 60km/h respectively. They travel towards each other and after their meeting for the first time, they then go in reverse directions and also interchange their speeds. These speeds are continued in their further journey. After reaching their respective starting points, they reverse their directions of travel and proceed towards each other again. The time taken by them to meet each other 2nd time is

A 4 hours

B 3 hours 36min

C 3 hours

D 3 hours 54 min

Answer: B

Explanation:

First they go in opposite direction .

So, relative velocity of them is (40+60) km/h or 100 km/h.

So, time taken by them to meet for first time is =(120/100) h= 1.2 hours.

So,in their first meeting P travels =(1.2×40)=48 km and Q travels=(1.2×60)=72 km.

But,after first meeting P and Q reversed their speeds into 60 km/h and 40 km/h respectively.

Now,P will take (48/60)=0.8 hours to reach point A and Q will take (72/40)=1.8 hours to reach point B.

But in the mean time, P will move 60 km further from point A towards point B in next 1 hour when Q was traveling towards B.

So far ,after first meeting they traveled for 1.8 hours to get a head on move towards eachother.

So,for their second meeting they had to travel for only (120-60)=60 km.(as P already moved 60 km from point A)

So,100 km/h would be their relative velocity.

So,they will take (60/100)=0.6 hours to meet for the second time.

So,Total time taken by them to meet for the second time is=(1.2+1.8+0.6)=3.6 hours.

B is correct choice.

Question 88

A person rows a distance of 12 kms in down stream and returns to the starting point. The difference between the times taken to travel in down stream and that of upstream is 6 hours. If he doubles his speed throughout the above trip, then the difference between the times taken to cover in down stream and upstream is 1 hour. Then the speed of the current in km per hour is

A $2\frac{2}{3}$

B $2\frac{1}{3}$

C $2\frac{1}{2}$

D $2\frac{3}{4}$

Answer: A

Explanation:

Let say, speed of the boat is b km/h and speed of the current is c km/h.

So, in downstream speed is (b+c) km/h and in upstream speed is (b-c) km/h.

Time taken in downstream=(12/(b+c)) h.

and time taken in upstream=(12/(b-c)) h.

So, according to question:

$(12/(b-c)) - (12/(b+c)) = 6.$

or,$(b+c-b+c)/(b^2-c^2) = (1/2).$

$b^2 - c^2 = 4c.$

$b^2 = c^2 + 4c$.....(1)

if speed of speed is doubled ,then speed in downstream =(2b+c) km/h .

and speed in upstream=(2b-c) km/h.

So, time taken in downstream 12/(2b+c) h.

And time taken in upstream 12/(2b-c) h.

So,

$12/(2b-c) - 12/(2b+c) = 1$

or,$(2b+c-2b+c)/(4b^2-c^2) = (1/12)$

or,$24c = 4b^2 - c^2$

or,$b^2 = (c^2+24c)/4$.....(2)

So,from (1) & (2) :

$(c^2+24c)/4 = c^2 + 4c.$

or,$c^2 + 24c = 4c^2 + 16c$

or,$3c^2 = 8c$

or,$c = 8/3$

So,speed of current is 8/3 km/h.

A is correct choice.

Question 89

Certain amount is divided into 3 parts such that those parts yields the equal interest after 1, 2 and 3 years respectively at 4% simple interest per annum. Then the ratio between the three parts respectively is

A 6:3:2

B 3:2:1

C 6:5:4

D 9:5:3

Answer: A

Explanation:
Let say,

p,q and r are the three parts.

So,Then the simple interest would be

$(p \times 0.04 \times 1) = (q \times 0.04 \times 2) = (r \times 0.04 \times 3)$

$= k(letsay).$

$p = 25k, q = 12.5kandr = (25/3)k.$

So,

$p : q : r = 25k : 12.5k : (25/3)k$

$= k : 0.5k : (k/3)$

$= 6 : 3 : 2.$

A is correct choice.

Question 90

A man borrows Rs. 5000 at the rate of 10% compound interest per annurn• At the end of each year he pays back Rs. 1500 for the first 2 years. The am ount he should pay at the end of 3rd year to clear the loan (in Rs.) is

A 3290

B 3190

C 4790

D 4290

Answer: B

Explanation:
At the end of first year

$= 5000 \times 1.1 = 5500$Rs would be paid.

After 1500 payment,he would be left with

$5500 - 1500 = 4000.$

At the end of second year

$4000 \times 1.1 = 4400.$

After 1500 payment,he would be left with

$4400 - 1500 = 2900.$

So,at the end of third year the amount would become $= 2900 \times 1.1 = 3190.$

B is correct choice.

Question 91

The equal annual installment which clears the debt of Rs.7620 due in 3 years at $16\frac{2}{3}$% per annum compounded is (in Rs.)

A 3430

B 2540

C 2700

D 2600

Answer: A

Explanation:
Let say ,x is the equal installment to be paid.

So,

$7620(1+1/6)^3 = x(1+1/6)^2$

+x(1+1/6)+x.

or,$x = 3430(approx).$

So,A is correct choice.

Question 92

A tree is growing in height at the rate of 10% per annum. The present height of the tree is 1815 cm. The height of the tree 3 years back was (approximately) in cms

A 1524

B 1364

C 1325

D 1532

Answer: B

Explanation:
Let say, 3 years back height of the tree was p.

So,$p \times (1.1)^3 = 1815.$

or,$p = 1363.66$

or approximately 1364 cms.

So, B is correct choice.

Question 93

Two partners invested Rs.1,25,000 and Rs.85,000 respectively in a business. They agreed to share 60% of the profit equally and the remaining profit as interest on their respective capitals. If one partner gets Rs.300 more than the other partner, the profit on the business is (in Rs)

A 4572.50

B 4012.75

C 3825.75

D 3937.50

Answer: D

Explanation:
Let say ,total profit earned is k.

So,they will divide 0.60k equally among them ; each will get 0.30k.

And rest of the profit, i.e.0.40k will divide in the ratio of $125000 : 85000 = 25 : 17.$

So,one will get $0.40k \times (25/42)$ and other one will get $0.40k \times (17/42).$

So,$0.40k(25/42 - 17/42) = 300.$

or,$(8/42)k = 750.$

or,$k = 3937.50$

So, D is correct choice.

Question 94

Let A and B enter into a partnership with capitals in the ratio 5:6 and at the end of 8 months A withdrew from the business. If they shared the profits in the ratio 5:9, the number of months B's capital remained in the business is

A 15

B 14

C 4

D 12

Answer: D

Explanation:
Let say capital invested by A and B are 5k and 6k respectively.

So,profit ratio would be

$= 5k \times 8 : 6k \times 12$

$= 5 : 9.$

So, B's amount remained in the business for 12 months.

D is correct choice.

Question 95

A, B and C enter into a partnership by pooling the capital. A advances one-third of the capital for one third of the time. B advances half of the capital for half of the time. C advances the remaining part of the capital for whole the period. The ratio in which they divide the profit obtained in the business is

A 3:2:7

B 4:16:9

C 4:9:6

D 6:9:11

Answer: C

Explanation:
Let say,total capital is C and total time is T.

A invested$= C/3.$ for T/3 period of time.

B invested$= C/2.$ for T/2 period of time.

C invested$= C - C/2 - C/3 = C/6.$ for T period of time.

Their profit ratio should be as follows:

$(C/3)(T/3) : (C/2)(T/2) : (C/6)T$

$= (1/9) : (1/4) : (1/6)$

$= 4 : 9 : 6.$

So, C is correct choice.

Question 96

A, B, C started a business by investing Rs.6500, Rs.8400 and 10,000 respectively. As working partner A takes 5% of the profit as his salary. A withdraws his capital after 6 months, B after 5 months and C after 3 months from the begining. If the profit earned was Rs.7400, then the total amount received by A is (in Rs.)

A 2400

B 2760

C 2840

D 2655

Answer: C

Explanation:
A,B,C will take the profit in following ratio

$= 6500 \times 6 : 8400 \times 5 : 10000 \times 3$

$= 39000 : 42000 : 30000$

$= 39 : 42 : 30$

$= 13 : 14 : 10.$

Total profit$= 7400.$

5% of 7400$= 370.$

rest of profit$= 7400 - 370 = 7030.$

A will get$= 7030 \times (13/37) = 2470.$ of rest of the profit.

So,Total profit part of A$= 2470 + 370.$

$= 2840.$

So,C is correct choice.

Question 97

If the difference between the simple interest and compound interest for two years on a certain sum at the rate of 10% per annum when compounded half yearly is Rs. 124.05 then the sum is (in Rs.)

A 8000

B 6000

C 12,000

D 12,400

Answer: A

Explanation:
Let say Amount is P.

Compound interest

$= P(1 + r/n)^{nt} - P$

and

Simple interest

$= Pnr.$

So,CI$= P(1 + 0.10/2)^4 - P = 0.21550625P.$

And SI$= P \times 2 \times 0.10 = 0.2P.$

So,$0.21550625P - 0.2P = 124.05$

or,$P = 8000.$

So,A is correct choice.

Question 98

If an amount doubles in 5 years at compound interest, then the number of years required to make it eight times at the same rate of compound interest is

A 20

B 12

C 18

D 15

Answer: D

Explanation:

Let say,$Amount = P$ and

$rateofinterest = rpercent$

So, according to the question,

$P(1 + r/100)^5 = 2 \times P.$

$or, (1 + r/100)^5 = 2$

So,$r = 14.86percent$

let say ,in x years it will become 8 times.

So,

$P(1 + r/100)^x = 8P$

or,$(1 + r/100)^x = 2^{(15/5)}$

or,$(1 + r/100)^x = (1 + r/100)^15$

So, x=15.

D is correct choice.

Question 99

A person invested his money in the three schemes P, Q and R. The am_ ount invested it scheme R was 150% of the amount invested in a scheme P and 240% of the amount invest; in scheme Q. The rate of interest he gets from schemes P, Q and R are respectively ioZ 12% and 15% per annum. If the total interest accumulated is Rs.3200 for an year, investment in scheme Q is (in Rs.)

A 12,000

B 5000

C 8000

D 20,000

Answer: B

Explanation:
Let say he invested in scheme P,Q and R is p,q,r respectively.

So,$r = 1.5p\, and\, r = 2.4q$

so,$1.5p = 2.4q$

or,$p/q = 24/15 = 8/5$

Let say, $p = 8k\, and\, q = 5k$

So,$r = 12k.$

So,

$(8k \times 0.10 + 5k \times 0.12 + 12k \times 0.15) = 3200$

$or, (0.8k + 0.6k + 1.8k) = 3200.$

or,$3.2k = 3200$

or,$k = 1000.$

So,amount invested in scheme Q was

$= 5 \times 1000 = 5000.$

B is correct choice.

Question 100

A person invest certain amounts in two banks in such a way that the simple interest fro one bank at 10% per annum for 5 years is equal to that from another bank at 9% per annul/ for 6 years, then the ratio between the two amounts

A 10:9

B 9:10

C 27:25

D 25:26

Answer: C

Explanation:
Simple interest from 10% interest rate for 5 years is$= a \times 0.10 \times 5 = 0.50a.$(a is the principal amount).

Simple interest from 9% interest rate for 6 years is$= b \times 0.09 \times 6 = 0.54b.$(b is the amount invested in this case)

According to the question,

$0.50a = 0.54b$

or,$a/b = 54/50 = 27/25.$

So, C is correct choice.

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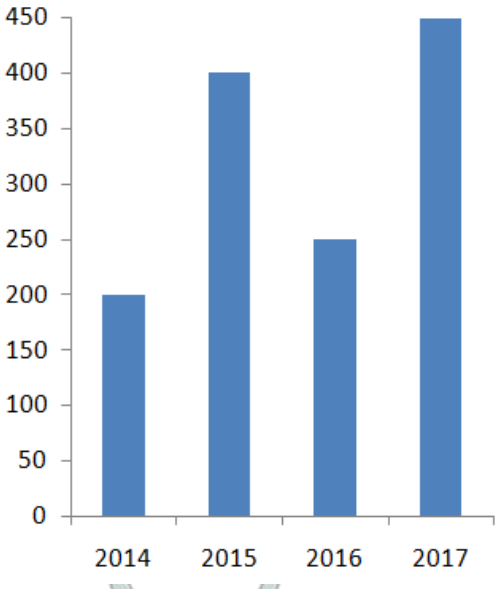
Instructions

Read the following graph and answer the questions below
The diagram below shows the enrolment of students in a school in different years, from 2014 to 2017.



Question 101

The total number of students enrolled in the years 2014, 2016, 2017 put together is

A 800

B 850

C 900

D 950

Answer: C

Explanation:
Total number of students in 2014,2016&2017 put together is

$= 200 + 250 + 450 = 900.$

C is correct choice.

Question 102

The percentage increase in the enrolment of students in the year 2017 over the year 2016.

A 80

B 100

C 160

D 200

Answer: A

Explanation:
In the year 2016 & 2017 ,number of students was 250&450 respectively.

So, percentage increased

$= (450 - 250)/250 = 80 percent.$

A is correct choice.

Question 103

The ratio of enrolment of students in the year 2015 to that in the years 2014 and 2016 together is

A 4:5

B 8:9

C 5:4

D 9:8

Answer: B

Explanation:
In the year 2015 , number of students was 400.

In the year 2014 & 2016 , number of students was 200&250 respectively.

So, required ratio is$= 400 : (200 + 250).$

$= 400 : 450 = 8 : 9.$

B is correct choice.

Question 104

The percentage increase in the enrolment of students during the given period is

A 80

B 100

C 150

D 125

Answer: D

Explanation:
In the year 2014 number of students was 200 & In the year 2017 number of students was 450.

So, percentage increase is

$= ((450 - 200)/200) \times 100 = 125percent$

So, D is correct choice.

Question 105

The average of the number of students admitted per year during the given period is

A 250

B 275

C 300

D 325

Answer: D

Explanation:
In the year 2014,2015,2016 & 2017 number of students was 200,400,250 & 450 respectively.

So, average number of students was

$= (200 + 400 + 250 + 450)/4 = 325.$

So,D is correct choice.

Instructions

Read the following Table and answer the questions below
The following table shows the sales of cars of different models by a company during the years 2013 to 2017.

Year / Model	A	B	C	D	E	Total
2013	88	166	211	44	255	764
2014	200	108	176	65	185	734
2015	168	146	165	102	194	775
2016	175	120	138	207	145	785
2017	212	194	130	164	305	1005

Question 106

In the year 2016, what is the approximate percentage of sales of cars of type 'C' in the total number of cars sold in that year?

A 16

B 16.5

C 17

D 17.6

Answer: D

Explanation:

Required percentage$= (138/785) \times 100$

$= 17.57 percent.$

D is correct choice.

Question 107

During the given period, the car model that has registered highest growth percent in sales is

A A

B B

C D

D E

Answer: C

Explanation:

D has the highest growth percent during the period which is $= (164 - 44)/44 = 2.72.$

C is correct choice.

Question 108

The year in which cars of model 'D' registered highest growth percent in the sales, over the previous year is

A 2014

B 2015

C 2016

D 2017

Answer: C

Explanation:
In the year 2016 the company sale was 207 which was 102 in 2015 for D.

So in the year it attains over 100 percent growth in the year 2016.

So, option C is correct choice.

Question 109

The year in which the company registered highest growth percent in the total sales of cars, over its previous year is

A 2017

B 2016

C 2015

D 2014

Answer: A

Explanation:
In the year 2014 company occurs a loss in total sales.

In the year 2015 company gained

$= (775 - 734)/734 = 5.58 percent.$

In the year 2016 company gained

$(785 - 775)/775 = 1.29 percent.$

In the year 2017 company gained

$= (1005 - 785)/785 = 28.02 percent.$

So, in 2017 company gained highest percentage.

So, A is correct choice.

Question 110

The approximate percentage increase in the sales of Cars of models A and D put together in the year 2016 over the year 2013 is

A 295

B 240

C 189

D 150

Answer: C

Explanation:
In the year 2013 total sales of A and D was $= 88 + 44 = 132.$

In the year 2016 total sales of A and D was $= 207 + 175 = 382.$

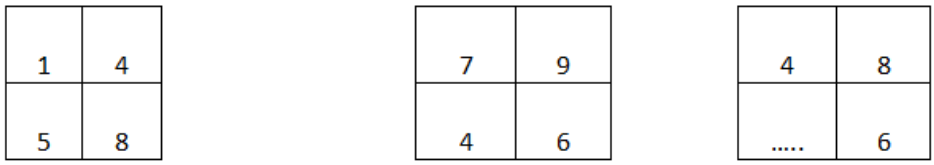
percentage change during the period was $= (382 - 132)/132 = 1.89$ or 189 percent.

So, C is correct choice.

Instructions

Fill in the blanks with suitable positive integer in each of the questions.

Question 111



A 1

B 2

C 3

D 4

Answer: B

Explanation:
Pattern is as follows:

$(4 - 1) = 3, (8 - 5) = 3.$

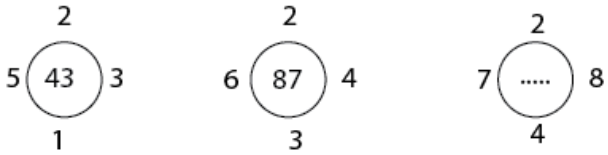
$(9 - 7) = 2, (6 - 4) = 2.$

Similarly,

$(8 - 4) = 4, (6 - 2) = 4.$

B is correct choice.

Question 112



A 133

B 155

C 173

D 185

Answer: D

Explanation:
Given series follows following pattern:

$5^2 + 3^2 + 2^3 + 1^3 = 43.$

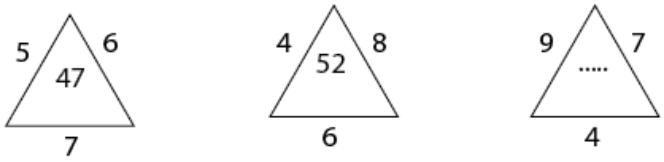
$6^2 + 4^2 + 2^3 + 3^3 = 87.$

Similarly,

$7^2 + 8^2 + 2^3 + 4^3 = 185.$

So, D is correct choice.

Question 113



A 37

B 43

C 67

D 252

Answer: A

Explanation:
Series follows following pattern:

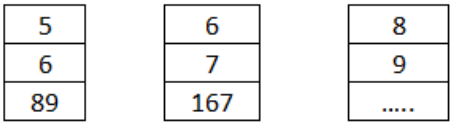
$7 \times 6 + 5 = 47$

$8 \times 6 + 4 = 52$

So, $7 \times 4 + 9 = 37.$

A is correct choice.

Question 114



A 341

B 431

C 561

D 591

Answer: B

Explanation:
Series follows following pattern:

$5^3 - 6^2 = 89$

$6^3 - 7^2 = 167$

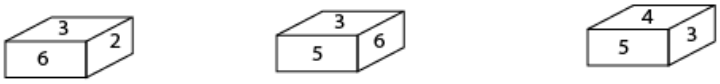
So, $8^3 - 9^2 = 431.$

So, B is correct choice.

Instructions
For the following questions answer them individually

Question 115

Digits 1 to 6 are marked one each on the faces of a die. 3 different positions of a die are 3 given below. The combination of digits on the faces opposite to each other are.



A (2, 5), (1, 4), (3, 6)

B (1, 4), (2, 6), (5, 3)

C (2, 5), (1, 3), (4, 6)

D (4, 6), (2, 3), (5, 1)

Answer: C

Explanation:
2 is adjacent to 6&3 and 5 is adjacent to 6&3 ,which indicates that 2 is opposite to 5.

Now 4 is adjacent to 3&5 ,so , 4 is definitely opposite to 6..Then 3 is opposite to 1.

C is correct choice.

Question 116

All the faces of a cuboid arc painted. It is cut by planes parallel to its faces to form unit cubes. If the number of cubes having all unpainted faces is 1001, then the dimensions of , the cuboid are

A $13 \times 9 \times 15$

B $9 \times 5 \times 11$

C $77 \times 91 \times 143$

D $26 \times 18 \times 30$

Answer: A

Explanation:
Option A is correct choice.

Because ,if we cut the cube by $13 \times 9 \times 15$ dimensions,then all the faces with the color will be out side faces of the cuboid.

So, uncolored face will stay only inside the cuboid with $(13-2) \times (9-2) \times (15-2)$ or $11 \times 7 \times 13$ or 1001 number of small cuboid.

A is correct choice.

Question 117

The minimum number of different colours required to paint the surfaces of a cuboid so that no two adjacent faces are painted with same colour, is

A 6

B 5

C 2

D 3

Answer: D

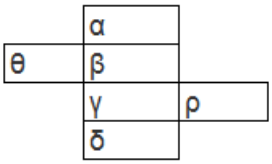
Explanation:
If we want to color a cuboid with minimum number of colours then opposite faces of the cuboid should colored by same color.

So,a minimum of 3 different colour needed.

D is correct choice.

Question 118

In the following figure, each cell marked with a symbol is a face of a cube. If the surfaces are folded to form a cube, then the faces that are adjacent to the face labelled θ are



A $\alpha, \beta, \gamma, \delta$

B $\beta, \gamma, \delta, \rho$

C $\gamma, \delta, \rho, \alpha$

D $\delta, \rho, \alpha, \beta$

Answer: A

Explanation:
If we fold the image then θ will be definitely opposite to ρ sign. It means that alpha,beta,Gama and delta would be adjacent to theta.

Option A is correct choice.

Instructions

Read the following information and answer the quetions below.
The principal of a college scheduled the following week, starting from Monday to Sunday.
i) Management skills six lecture
ii) Decision making
iii) Motivation
iv) Soft skills
v) Faculty development
vi) Quality circles
It is decided to organise the lecture on Motivation immediatly after Faculty development. The lecture on Quality circles is to be scheduled on Wednesday and it should be followed by Soft skills. The lecture on Decision making should be organised on Friday. The lecture on Management skills and the lecture on Soft skills are to be scheduled with a gap of two days M which no lecture is to be scheduled on one day (Saturday is not that day) just after the lecture day on Soft skills.

Question 119

On which day, no lecture is arranged in a week?

A Tuesday

B Sunday

C Monday

D Wednesday

Answer: A

Explanation:

From first clue :

Motivation comes immediately after Faculty Development.

So,

Faculty Development
Motivation

Quality Circles and Decision Making should be scheduled on Wednesday and Friday respectively.

So,

Monday	
Tuesday	
Wednesday	Quality Circle
Thursday	
Friday	Decision Making
Saturday	
Sunday	

But Quality Circles should be followed by Soft Skills .

So, Soft skills can be scheduled on either Monday or Tuesday.

But there should be one day gap after Soft skills.

So,Soft Skills should scheduled on Monday.

Monday	Soft Skills
Tuesday	
Wednesday	Quality Circle
Thursday	
Friday	Decision Making
Saturday	
Sunday	

Now, there is a gap of two days between Soft Skills and Management Skills.

So,Management Skills should scheduled on Thursday.

And FD & Motivation are scheduled on consecutive days ,therefore these two subjects should scheduled on Saturday & Sunday i.e. one after another.

So,Final arrangement would be :

Monday	Soft Skills
Tuesday	No subject
Wednesday	Quality Circle
Thursday	Management Skills
Friday	Decision making
Saturday	Faculty Development
Sunday	Motivation

After arrangements we get above chart.

A is correct choice.

Question 120

How many lectures were organised between Quality circles and Motivation?

A One

B Two

C Three

D Four

Answer: C

Explanation:

From first clue :

Motivation comes immediately after Faculty Development.

So,

Faculty Development
Motivation

Quality Circles and Decision Making should be scheduled on Wednesday and Friday respectively.

So,

Monday	
Tuesday	
Wednesday	Quality Circle
Thursday	
Friday	Decision Making
Saturday	
Sunday	

But Quality Circles should be followed by Soft Skills .

So, Soft skills can be scheduled on either Monday or Tuesday.

But there should be one day gap after Soft skills.

So,Soft Skills should scheduled on Monday.

Monday	Soft Skills
Tuesday	
Wednesday	Quality Circle
Thursday	
Friday	Decision Making
Saturday	
Sunday	

Now, there is a gap of two days between Soft Skills and Management Skills.

So,Management Skills should scheduled on Thursday.

And FD & Motivation are scheduled on consecutive days ,therefore these two subjects should scheduled on Saturday & Sunday i.e. one after another.

So,Final arrangement would be :

Monday	Soft Skills
Tuesday	No subject
Wednesday	Quality Circle
Thursday	Management Skills
Friday	Decision making
Saturday	Faculty Development
Sunday	Motivation

After arrangements we get above chart.

C is correct choice.

Question 121

The lecture on Management skills is to be organised on

A Friday

B Tuesday

C Saturday

D Thursday

Answer: D

Explanation:
From first clue :

Motivation comes immediately after Faculty Development.

So,

Faculty Development
Motivation

Quality Circles and Decision Making should be scheduled on Wednesday and Friday respectively.

So,

Monday	
Tuesday	
Wednesday	Quality Circle
Thursday	
Friday	Decision Making
Saturday	
Sunday	

But Quality Circles should be followed by Soft Skills .

So, Soft skills can be scheduled on either Monday or Tuesday.

But there should be one day gap after Soft skills.

So,Soft Skills should scheduled on Monday.

Monday	Soft Skills
Tuesday	
Wednesday	Quality Circle
Thursday	
Friday	Decision Making
Saturday	
Sunday	

Now, there is a gap of two days between Soft Skills and Management Skills.

So,Management Skills should scheduled on Thursday.

And FD & Motivation are scheduled on consecutive days ,therefore these two subjects should scheduled on Saturday & Sunday i.e. one after another.

So,Final arrangement would be :

Monday	Soft Skills
Tuesday	No subject
Wednesday	Quality Circle
Thursday	Management Skills
Friday	Decision making
Saturday	Faculty Development
Sunday	Motivation

After arrangements we get above chart.

D is correct choice.

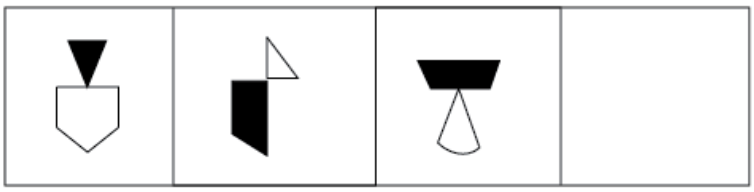
Instructions

For the following questions answer them individually

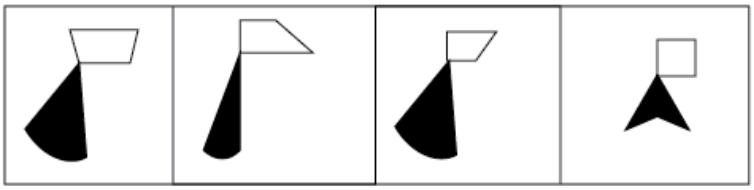
Question 122

The second figure in the first pair of problem figures bears a certain relationship to the first figure. Similarly, one of the figures in the answer figures bears the same relationship to the first figure, in the second pair of the problem figures. You have to locate the figure which would fit into the blank space and give it as your answer.

Problem Figures



Answer Figures



(A) (B) (C) (D)

A B

B C

C A

D D

Answer: B

Explanation:

If we compare part A and C in problem figure,

there is a white colored shape with 4 side in the base on which a black colored base is placed with 3 side.

So, similarly, image in part B should exchange with (C)image in answer figure,

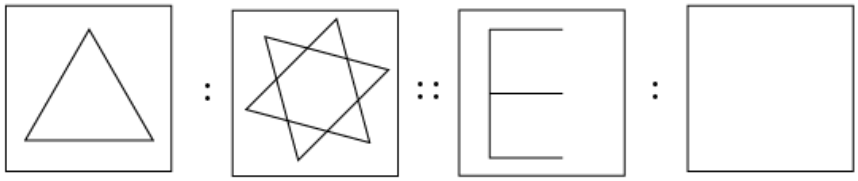
where base part should be 3 side shape with black color on which a white color shape with 4 side should place.

B is correct choice.

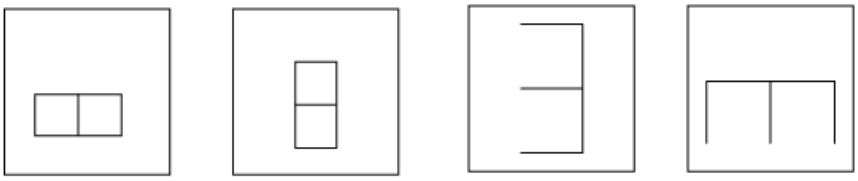
Question 123

Select the related figure from the answer figures that fits with the blank space of the following analogy, and give it as your answer.

Problem Figures



Answer Figures



A B

B C

C A

D D

Answer: C

Explanation:
In the given series,

2 triangles are concatenated one over another by rotating in reverse manner. Similarly,

if we add 2 shape by rotating then the diagram in Answer figure A will appear as the picture in the given series.

So, Option C is correct choice.

Instructions

Based on following sequence of numbers, letters and symbols, answer the questions

α * S A 3 β 7 C 5 @ L $ P 4 ↑ Q M 2 L B & 4 9 D E I X Y # 6

Question 124

The number of letters of English alphabet that are immediately followed by a number or immediately peceeded by a symbol is

A 5

B 7

C 9

D 10

Answer: B

Explanation:
S,A,C,L,P,Q and M are the 7 letters satisfy the given condition.

So, B is correct choice.

Question 125

The number of symbols either preceeded or followed by a number is

A 4

B 5

C 8

D 7

Answer: B

Explanation:
Beta,@,upper arrow,& and # are 5 symbols are ther in the sequence which validate the given condition.

So, B is correct choice.

Question 126

If all symbols are removed from the above sequence then tha entry in 9th position from right is

A B

B P

C 4

D L

Answer: A

Explanation:
If all symbols are removed from the sequence then from right side two symbols will be removed between the last letter and B.

So, B will become the 9th letter from right hand side .

So, Option A is correct choice.

Question 127

The difference between the number of letters of English alphabet and the numbr of numerals in the sequence is

A 4

B 6

C 8

D 12

Answer: B

Explanation:
Number of english alphabets in the series is 14.

And Number of numerals is 8.

Difference between them is 6.

B is correct choice.

Question 128

The 14th element to the left of the 6th element lying to the right of 'B' is

A β

B C

C @

D $

Answer: D

Explanation:
6th element to the right of B is "I".

And 14th element to the left of I is "$".

D is correct choice.

Instructions

A sequence of numbers or alphabets following a specific pattern is given. Fill in the blanks with suitable entry from the options that follows the same pattern.

Question 129

10, 30, 68, 130, ...

A 192

B 198

C 212

D 222

Answer: D

Explanation:
Given series is in the following form,

$2^3+2, 3^3+3, 4^4+4, 5^5+5, 6^6+6$

D is correct choice.

Question 130

3, 14, 39, 84, ...

A 165

B 159

C 155

D 134

Answer: C

Explanation:
Given series is in the pattern of $\left(n+n^2+n^3\right)$.

So,

$n = 1 \longrightarrow 1 + 1^2 + 1^3 = 3.$

$n = 2 \longrightarrow 2 + 2^2 + 2^3 = 14.$

$n = 3 \longrightarrow 3 + 3^2 + 3^3 = 39.$

$n = 4 \longrightarrow 4 + 4^2 + 4^3 = 84.$

$n = 5 \longrightarrow 5 + 5^2 + 5^3 = 155.$

So, C is correct choice.

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Question 131

$1\frac{1}{7}, 3\frac{6}{7}, 9\frac{1}{7}, 17\frac{6}{7}, \ldots\ldots\ldots$

A $28\frac{3}{7}$

B $30\frac{6}{7}$

C $31\frac{5}{7}$

D $32\frac{3}{7}$

Answer: B

Explanation:

$1\frac{1}{7} = \frac{8}{7} = \frac{2^3}{7}.$

$3\frac{6}{7} = \frac{27}{7} = \frac{3^3}{7}.$

$9\frac{1}{7} = \frac{64}{7} = \frac{4^3}{7}.$

$17\frac{6}{7} = \frac{125}{7} = \frac{5^3}{7}.$

$30\frac{6}{7} = \frac{216}{7} = \frac{6^3}{7}.$

So, B is correct choice.

Question 132

14, 78, 252, 620, ...

A 1290

B 1080

C 960

D 740

Answer: A

Explanation:

$2^4 - 2 = 14.$

$3^4 - 3 = 78.$

$4^4 - 4 = 252.$

$5^4 - 5 = 620.$

$6^4 - 6 = 1290.$

So, A is correct choice.

Question 133

1, 4, 10, 20, ...

A 42

B 35

C 28

D 37

Answer: B

Explanation:

f(n)= $\frac{n(n+1)(n+2)}{6}$.

So,$f(1) = 1$

$f(2) = 4$

$f(3) = 10$

$f(4) = 20$

$f(5) = 35$

So,B is correct choice.

Question 134

ABC, BDF, CFI, DHL, ...

A EJO

B EJN

C EKP

D EKO

Answer: A

Explanation:

$ABC \longrightarrow$ has no gap between letters.

$BDF \longrightarrow$ has one letter gap.

$CFI \longrightarrow$ has two letters gap between them.

$DHL \longrightarrow$ has three letters gap between them.

So, next word in the series is EJO(each letter has 4 gaps between them).

A is correct choice.

Question 135

B, C, E, G, ...

A I

B J

C K

D L

Answer: C

Explanation:
next letter of B is C.

After one letter of C is E.

So,4 letter after G is K.

So,C is correct choice.

Question 136

AZ, CW, FR, JK, ...

A PD

B OB

C NC

D MA

Answer: B

Explanation:
Using conversion table,

$AZ = 1 + 26 = 27.$

$CW = 3 + 23 = 26.$

$FR = 6 + 18 = 24.$

$JK = 10 + 11 = 21.$

So,27,26,24,21 are in difference of 1,2,3 respectively.

So,next number should be 17.

$OB = 15 + 2 = 17.$

So, B is correct choice.

Question 137

BCE, CEG, EGK, GKM, ...

A KMN

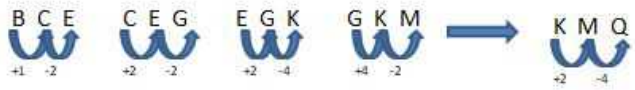
B KMO

C KMP

D KMQ

Answer: D

Explanation:



So, D is correct choice.

Question 138

A, D, I, P, ...

A Y

B W

C T

D R

Answer: A

Explanation:

$A+3=D,\ D+5=I,\ I+7=P,\ P+9=Y$.(using english alphabets system)

A is correct choice.

Instructions

Select the suitable entry from the given options that fills the blank in the following analogies.

Question 139

AFHE: IKMO:: ..... :UDFA

A GJKO

B LPRU

C IPRO

D ATVY

Answer: C

Explanation:

Using English alphabet conversion table ,difference between total of each word is same in given series.

So,IPRO is correct choice.

Question 140

3265 : 4376 :: 4673 : .....

A 5784

B 5487

C 6478

D 5362

Answer: A

Explanation:

3265:4376--->

$32 + 11 = 43 and 65 + 11 = 76.$

Similarly,

4673--> $46 + 11 = 57 and 73 + 11 = 84.$

So, required number is 5784.

A is correct choice.

Question 141

IMPLICATE : INCRIMINATION :: EXONERATE : .....

A FRAUD

B CRIME

C CHARGING

D ACQUITAL

Answer: D

Explanation:
IMPLICATE and INCRIMINATION are similar words.

EXONERATE and ACQUITAL are similar words.

So,D is correct choice.

Question 142

216 : 625 :: ..... : 4096

A 343

B 729

C 2187

D 3246

Answer: B

Explanation:
Given series is as follows:

$6^3 : 5^4 :: 9^3 : 8^4$

implies that

$216 : 625 :: 729 : 4096.$

So, B is correct choice.

Question 143

LIGHT : CANDLE :: ..... : .....

A EXERCISE : STRENGHTH

B ENERGY : COIL

C AUTOMOBILE : ENGINE

D POWER : BATTERY

Answer: D

Explanation:
CANDLE is the source of LIGHT.

Similarly, BATTERY is the source of POWER.

So,D is correct choice.

Instructions

In each of the questions, a question is followed by two statements I and II. Give your answer

Question 144

Who is the youngest among A, B, C?
I. The difference between the ages of A and B is 3 years.
II. A is 4 years younger to C.

A if the statement I alone can give the answer to the question.

B if the statement II alone can give the answer to the question.

C if the statements I and II together are necessary to give the answer to the question.

D if the statements I and II both are not sufficient to answer the question and additional information is necessary

Answer: D

Explanation:
Difference between the age of A and B is 3.

so we can't say anything about the value of A and B.A and B can take any integer values.

From statement 2 we can say that C is elder than A.

So,from both the statements together we are not able to find the youngest value among A,B and C.

So, D is correct choice.

Question 145

If numbers x, y, z are all less than 40, how many of them are positive?
I. x + y = 46
II. x + y + z = 80

A if the statement I alone can give the answer to the question.

B if the statement II alone can give the answer to the question.

C if the statements I and II together are necessary to give the answer to the question.

D if the statements I and II both are not sufficient to answer the question and additional information is necessary

Answer: B

Explanation:
From statement I we can derive that maximum value of X or Y can have 39 and minimum value of X or Y can have 7.

So,they both are positive but we can't say anything about the value of Z.

From statement II ,we can say that any two of X,Y,Z can have maximum value of 39 then other variable will achieve minimum value of 2.

So,they all are definitely positive.

So, Option B is correct choice.

Question 146

What is the value of ab?
I. a + b = 9
II. | a - b | = 5

A if the statement I alone can give the answer to the question.

B if the statement II alone can give the answer to the question.

C if the statements I and II together are necessary to give the answer to the question.

D if the statements I and II both are not sufficient to answer the question and additional information is necessary

Answer: C

Explanation:
$|a-b|=5$ have two equations.

1. $(a-b)=5$

and

2. $(b-a)=5$

So, either $a=7, b=2$ or $a=2, b=7$.

So both the statements are required to answer the question.

C is correct choice.

Question 147

What is the volume of the cone?
I. The base radius of the cone is numerically equal to the perimeter of the square ABCD.
II. Length of the side of the square is 4 cm.

A if the statement I alone can give the answer to the question.

B if the statement II alone can give the answer to the question.

C if the statements I and II together are necessary to give the answer to the question.

D if the statements I and II both are not sufficient to answer the question and additional information is necessary

Answer: D

Explanation:
Volume of cone$=(1/3)\pi r^2 h.$

from statement I and II radius of the cone can be found but we can't get the value of height of the cone.

So,Option D is correct choice.

Question 148

What is the angle of the sector at the centre of a circle?
I. The perimeter of the sector is 16 cm
II. Arc length of that sector is 10 cm

A if the statement I alone can give the answer to the question.

B if the statement II alone can give the answer to the question.

C if the statements I and II together are necessary to give the answer to the question.

D if the statements I and II both are not sufficient to answer the question and additional information is necessary

Answer: C

Explanation:
Perimeter of a sector is

$= 2r + lengthofarc.$

So both the statements require to get the value of angle.

c is correct choice.

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Question 149

Is the perimeter of the rectangular plot more than 65 cms?
I. Its length is less than 16 cm
II. Its breadth is more than 10 cm

A if the statement I alone can give the answer to the question.

B if the statement II alone can give the answer to the question.

C if the statements I and II together are necessary to give the answer to the question.

D if the statements I and II both are not sufficient to answer the question and additional information is necessary

Answer: A

Explanation:
Perimeter of rectangle is$2(l + b)$.

and we also know that length of rectangle is greater than its breadth.

if$2(l + b) = 65$

means $(l + b) = 32.5$

if $l = 15$ then $b = 17.5$

So, whatever the value length(less than 16) takes,value of breadth is greater than length,which violates the property of a rectangle.

So, statement I is derives that such rectangle can not be possible.

So, statement I is enough to prove.

But if breadth is greater than 10 ,it can take any value between 10 and 16.

So,we can't say anything about it's perimeter.

So,Option A is correct choice.

Question 150

Is the slope of the straight line equal to $\frac{3}{5}$?
I. The straight line is passing through the point (3,5)
II. The straight line perpendicular to 5x - 3y + 4 = 0

A if the statement I alone can give the answer to the question.

B if the statement II alone can give the answer to the question.

C if the statements I and II together are necessary to give the answer to the question.

D if the statements I and II both are not sufficient to answer the question and additional information is necessary

Answer: B

Explanation:
To find the **slope**, you divide the difference of the y-coordinates of 2 points on

a **line** by the difference of the x-coordinates of those same 2 points.

In statement I no coordinates are given for line.

II.

$5x - 3y + 4 = 0.$

or,$5x + 4 = 3y.$

or, $\frac{5}{3}x + \frac{4}{3} = y.$

The slope of the line perpendicular to this one will have a slope equal to the negative reciprocal.

The perpendicular slope is $-\frac{3}{5}$.

Plug the new slope and the given point into the slope-intercept form to find the y-intercept.

$5 = -\frac{3}{5} \times 3 + b$

or, $\frac{34}{5} = b.$

$y = -\frac{3}{5}x + \frac{34}{5}$.

So, Option B is correct choice.

Question 151

What is the sum of the first 21 terms of the AP?
I. The common difference of the A.P. is 3
II. The 11^{th} term of the A.P. is 31.

A if the statement I alone can give the answer to the question.

B if the statement II alone can give the answer to the question.

C if the statements I and II together are necessary to give the answer to the question.

D if the statements I and II both are not sufficient to answer the question and additional information is necessary

Answer: B

Explanation:
If a is first term and d is common difference of an AP.

Then nth term of that AP is$= a + (n-1)d.$

Sum of n terms of an AP is$= \frac{n}{2}\{2a + (n-1)d\}$.

So, from statement I wecan not say the value of a and n.

II.

11th term of that AP is 31,

So, $a + (11-1)3 = 31.$

or,a=1.

Sum of first 21 terms is $= \frac{21}{2}\{2 \times 1 + (21-1) \times 3\}$.

$= \frac{21}{2}\{2 + 60\}$.

$= 21 \times 31 = 651.$

So, B is correct choice.

Question 152

Is 10, a factor of n + 5 ?
I. n is odd and divisible by 9
II. n is even and divisible by 5

A if the statement I alone can give the answer to the question.

B if the statement II alone can give the answer to the question.

C if the statements I and II together are necessary to give the answer to the question.

D if the statements I and II both are not sufficient to answer the question and additional information is necessary

Answer: B

Explanation:
I.

Let say value of n is 9 which is divisible by 9.

So,$n+5=9+5=14$,10 is not a factor of 14.

But, if value of n is 45 which is also divisible by 9, gives $n+5=45+5=50$.

10 is a factor of 50.

So, from statement I ,we can not say that whether 10 is a factor n+5 or not.

II.

n is even and also divisible 5 , this statement is only possible when the last digit of the number is 0.

In that case 10 is never be a factor of n+5.

So, B is correct choice.

Question 153

Is the positive integer m odd?
I. m^2+2m is even
II. m^2+m is even

A if the statement I alone can give the answer to the question.

B if the statement II alone can give the answer to the question.

C if the statements I and II together are necessary to give the answer to the question.

D if the statements I and II both are not sufficient to answer the question and additional information is necessary

Answer: A

Explanation:
I.

let put $m=1 and m=2$

when $m=1$,$m^2+2m=1^2+2=3$. (which is an odd number.)

when$m=2$,$m^2+2m=2^2+4=8$.(which is an even number.)

So we can say that m^2+2m is only even when m is an even number.

II.

let put $m=1 and m=2$

when $m = 1, m^2 + m = 1^2 + 1 = 2.$

when $m = 2, m^2 + m = 2^2 + 2 = 6.$

both the numbers are even numbers. So we can not say that whether m is odd or even.

So, A is correct choice.

Question 154

What is the value of $\cos\theta$?

I. $\sec\theta + \tan\theta$ = 5

II. $1 + \sin\theta = \frac{25}{13}$

A if the statement I alone can give the answer to the question.

B if the statement II alone can give the answer to the question.

C if the statements I and II together are necessary to give the answer to the question.

D if the statements I and II both are not sufficient to answer the question and additional information is necessary

Answer: A

Explanation:

I.

we know that $\sec^2\theta - \tan^2\theta = 1.$

or, $(\sec\theta - \tan\theta)(\sec\theta + \tan\theta) = 1.$

here, $\sec\theta + \tan\theta = 5.$

So, $\sec\theta - \tan\theta = 1 \div 5 = 0.2.$

So, $2\sec\theta = 5 + 0.2 = 5.2.$

or, $\sec\theta = 2.6.$

or, $\cos\theta = \frac{10}{26} = \frac{5}{13}.$

II.

we know that $\sin^2\theta + \cos^2\theta = 1.$

or, $\cos\theta = \pm\sqrt{1 - \sin^2\theta}.$

here, $\sin\theta = \frac{12}{13}.$

So, $\cos\theta = \pm\sqrt{1 - \frac{144}{169}} = \pm\sqrt{\frac{25}{169}} = \pm\frac{5}{13}.$

So, Option A is correct choice.

Question 155

If the A.M. of 4, 20, 40, x is m, then what is the value of m?

I. $\frac{m}{x} - 5$ = 8

II. x is less than m

A if the statement I alone can give the answer to the question.

B if the statement II alone can give the answer to the question.

C if the statements I and II together are necessary to give the answer to the question.

D if the statements I and II both are not sufficient to answer the question and additional information is necessary

Answer: A

Explanation:

Arithmetic mean of 4,20,40 and x is $(4 + 20 + 40 + x) \div 4$.

So,$m = (64 + x) \div 4 = \left(16 + \frac{x}{4}\right)$.

I.

$\frac{m}{x} = 8 + 5 = 13.$

or, $m = 13x.$

So, $13x = 16 + \frac{x}{4}$.

or, $51x = 64.$

or, $x = \frac{64}{51}$.

So, $m = 13x = 13 \times \frac{64}{51}$.

II. x is less than m, does not signifies any value of m.

So,A is correct choice.

Question 156

What is the volume of the sphere?
I. The surface area of the sphere is equal to area of the circle with radius 5 cm.
II. The radius of the sphere is equal to the perimeter of a square.

A if the statement I alone can give the answer to the question.

B if the statement II alone can give the answer to the question.

C if the statements I and II together are necessary to give the answer to the question.

D if the statements I and II both are not sufficient to answer the question and additional information is necessary

Answer: A

Explanation:

Surface area of sphere is$= 4\pi r^2$.

I. $r = 5.$

Area of sphere$= 4\pi \times 5^2 = 100\pi$.

II.

Perimeter of square $= 4a.\ (a = length\ of\ side)$.

So, from statement II we cant say what is the value of radius of sphere.

So, Option A is correct.

Question 157

What is the range of y?
I. $13 \leq x + y \leq 19$
II. $4 \geq x - y \geq -5$

A if the statement I alone can give the answer to the question.

B if the statement II alone can give the answer to the question.

C if the statements I and II together are necessary to give the answer to the question.

D if the statements I and II both are not sufficient to answer the question and additional information is necessary

Answer: C

Explanation:

$13 \leq x+y \leq 19$ and $-5 \leq x-y \leq 4$

So, $13+5 \leq (x+y)-(x-y) \leq 19-4.$

or,$9 \geq y \geq 7.5.$

So, both the equation needed.

C is correct choice.

Question 158

What is the rate of compound imterest?
I. Principal is Rs. 1200
II. Amount is Rs. 1323

A if the statement I alone can give the answer to the question.

B if the statement II alone can give the answer to the question.

C if the statements I and II together are necessary to give the answer to the question.

D if the statements I and II both are not sufficient to answer the question and additional information is necessary

Answer: D

Explanation:

We know that if Principal amount of P is compounded in n years at the rate of r percent,

Compounded Amount,A$= P \times \left(1+\frac{r}{100}\right)^n.$

But ,here P and A is given . r and n is missing.

So, it is not possible to calculate rate of interest.

D is correct choice.

Instructions

For the Assertion (A) and Reason (R) the correct alternative from the following

Question 159

(A) : The sum 1 + 3 + 5 + ... + 21 = 100
(R) : The sum of first n odd positive integers is n^2

A if both (A) and (R) are true and (R) is the correct explanation of (A)

B if both (A) and (R) are true and (R) is not the correct explanation of (A)

C if (A) is true but (R) is false

D if (A) is false but (R) is true

Answer: D

Explanation:

We know that the nth odd number is 2n−1 and the nth even number is 2n

$Now, let's assume the sum of first n odd number's to be S i.e. S = 1+3+5+\ldots+(2n-1)$

Now let us add 1 n times to the right side,

$S+n=(1+1)+(3+1)+(5+1)+\ldots+(2n-1+1)$

$or, S + n = 2 + 4 + 6 + \ldots + 2n$

Now adding these 2 equations, we get,

$2S + n = 1 + 2 + 3 + \ldots + (2n-1) + 2n$

The RHS is the sum of first 2n natural numbers which is as below,

$2S + n = 2n(2n + 1)/2$

$or, 2S + n = 2n^2 + n$

$or, 2S = 2n^2$

$or, S = n^2$

$So the sum of first n odd integers is n^2.$

So, Condition R is true.

But Condition A is not true.

So, Option D is correct choice.

Question 160

(A) : If the perimeter of a rectangle is 12 meters, then its maximum area is 9 m^2.
(R) : Geometric mean of two positive numbers is less than or equal to their Arithmetic mean

A if both (A) and (R) are true and (R) is the correct explanation of (A)

B if both (A) and (R) are true and (R) is not the correct explanation of (A)

C if (A) is true but (R) is false

D if (A) is false but (R) is true

Answer: A

Explanation:
Geometric mean of numbers a and b is

$= \sqrt{ab}.$ and Arithmetic mean

$= (a + b)/2.$

we know that ,Geometric mean of two positive numbers is less than or equal to their Arithmetic mean.

So, Condition R is correct.

Condition A:

Let say ,length and breadth of the rectangle are l & b respectively.

So, $2(l + b) = 12.$

Or,$(l + b) = 6.$

And Area $= lb.$

multiplication of two numbers achieve when they are both equal in equation 1.

So,$l = b = 3.$

Then only it can attain maximum value of

$3 \times 3 = 9$m^2.

So, condition 'A' is true and correct explanation made by 'R'.

So,Option A is correct choice.

Question 161

(A): If D, E and F respectively represent orthocentre, centroid and circumcentre of a triangle $\triangle ABC$, then Area of $\triangle DEF = \frac{1}{4}$ (Area of $\triangle ABC$)
(R) : In any triangle, orthocentre, centroid and circumcentre are collinear:

A if both (A) and (R) are true and (R) is the correct explanation of (A)

B if both (A) and (R) are true and (R) is not the correct explanation of (A)

C if (A) is true but (R) is false

D if (A) is false but (R) is true

Answer: D

Explanation:
The **centroid** divides the distance from the **orthocentre** to the **circumcentre** in the ratio 2:1. So, they are colinear.

So, Condition R is true.

But, Condition A doesn't true as they are colinear.So, they can't form any triangle.

So,Option D is correct choice.

Question 162

(A) : The sum of all internal angles in a pentagon is 540°
(R) : A pentagon has 5 sides

A if both (A) and (R) are true and (R) is the correct explanation of (A)

B if both (A) and (R) are true and (R) is not the correct explanation of (A)

C if (A) is true but (R) is false

D if (A) is false but (R) is true

Answer: A

Explanation:
Sum of all internal of a polygon is

$(n-2)180^\circ$.

Condition R:

we know that a pentagon has 5 sides.

So, Condition A:

Sum of all internal angles of a pentagon is

$(5-2) \times 180^\circ = 3 \times 180^\circ = 540^\circ$.

So, both the conditions are correct and A is dependent on R.

So, Option A is correct choice.

Question 163

(A): The area of an equilateral triangle of side 5 cm is $\frac{25}{4}\sqrt{3}cm^2$

(R): Sum of the angles in the triangle is 180°

A if both (A) and (R) are true and (R) is the correct explanation of (A)

B if both (A) and (R) are true and (R) is not the correct explanation of (A)

C if (A) is true but (R) is false

D if (A) is false but (R) is true

Answer: B

Explanation:

If side of an equilateral triangle is 'a' then the height of the triangle is $= (\sqrt{3}/2)a.$

Area of the triangle$= (\sqrt{3}/4)a^2.$

Condition A:

here ,$a = 5$

so, Area$= (\sqrt{3}/4) \times 5^2 = (25/4)\sqrt{3}.$

Condition R:

we know that sum of all the angle of triangle is 180°.

So, both the conditions are correct but 'A' is not dependent on 'R'.

Option B is correct choice.

Question 164

(A): $1^2 + 2^2 + 3^2 + ... + 49^2$ **= 40425**

(R): Sum of the squares of the first n natural numbers is $\frac{n(n+1)(n+2)}{6}$

A if both (A) and (R) are true and (R) is the correct explanation of (A)

B if both (A) and (R) are true and (R) is not the correct explanation of (A)

C if (A) is true but (R) is false

D if (A) is false but (R) is true

Answer: C

Explanation:

We know that sum of squares of first n naturals numbers is $n(n+1)(2n+1)/6.$

Condition A:

$n = 49.$

so,$1^2 + 2^2 + 3^2 + ... + 49^2$

$= 49 \times (49+1)(49 \times 2 + 1)/6$

$= 49 \times 50 \times 99/6$

$= 40425.$

Condition R:

$n(n+1)(n+2)/6$

$= 49 \times 50 \times 51/6$

$= 20825.$

which doesn't satisfy the given equation.

So,Option C is correct choice.

Instructions

Identify the odd thing from the following options.

Question 165

A Earth

B Mercury

C Moon

D Venus

Answer: C

Explanation:
Earth , Mercury and Venus all are planet except Moon

Question 166

A Awareness

B Goofy

C Lore

D Cadence

Answer: B

Explanation:
Awareness, Lore and Cadence is a form of knowledge about a particular subject

Goofy means foolish

Question 167

A B,C

B K,M

C Q,S

D V,W

Answer: D

Question 168

A Asparagus

B Carambola

C Fig

D Peach

Answer: A

Explanation:
Asparagus is a small plant

Rest all are the different types of fruit

Question 169

A ABEC

B DIFO

C UGAH

D EJIK

Answer: B

Question 170

A Betterment

B Elevation

C Emendation

D Improvement

Answer: B

Explanation:
Elevation

-the action or fact of raising or being raised to a higher or more important level, state, or position.

Rest all are synonyms of improvement

Question 171

A F A O

B I L O

C S A A R C

D W H O

Answer: C

Explanation:
S A A R C

The *SAARC* is an economic and geopolitical organization of eight countries which are located in South Asia.

Rest all are the agencies

Instructions

Choose the option containing the odd pair.

Question 172

A Boar : sow

B Deer : Fawn

C Horse : Foal

D Swan : Cygnet

Answer: A

Explanation:
Deer : Fawn

Fawn - baby Deer

Horse : Foal

Foal - baby horse

Swan : Cygnet

cygnet - Baby Swan

Boar : sow

Sow - adult female pig

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Question 173

A Hurricane : Cyclone

B Mist : Fog

C Moisten : Drench

D Prick : Stab

Answer: A

Question 174

A Bees : Apiculture

B Birds : Aviculture

C Fish : Pisciculture

D Paddy : Horticulture

Answer: D

Explanation:
Bees : Apiculture

Study of Bees

Birds : Aviculture

Study of Birds

Fish : Pisciculture

Study of Fish

so,

Paddy : Horticulture

Study of plant physiology and propagation

Instructions
For the following questions answer them individually

Question 175

Mr. X starts from his office and goes 5 km towards East, then he turns left and moves 4 km again turning left and reaches his home after walking 8 km. Then the shortest distance between his home and office, is (in kilometers)

A 5

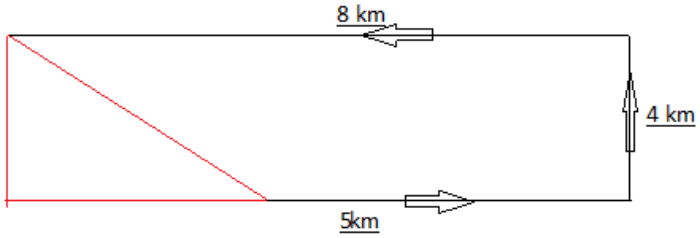
B 12

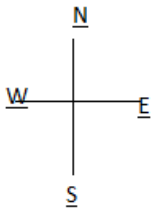
C 13

D 4

Answer: A

Explanation:





shortest distace,

$4^2 + 3^2 = 25 = 5^2$

= 5 km

Question 176

When the time is 1.15 P.m the minutes hand in the clock points towards North, then at 830 a.m. on the next day,the direction of minutes hand shows is :

A South

B East

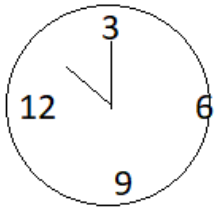
C West

D South West

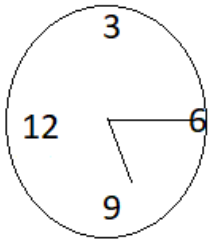
Answer: B

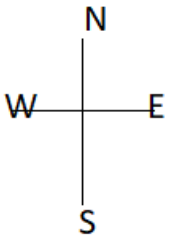
Explanation:

STEP I



STEP II





East

Question 177

A is to the north of B, C is to the east of B, then the direction of A with respect to C is

A South - West

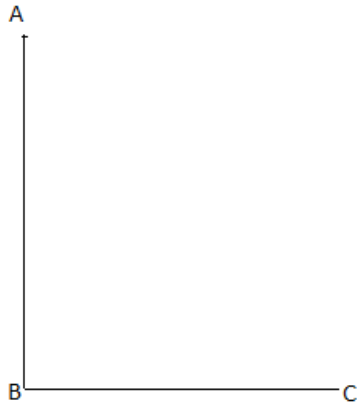
B North - West

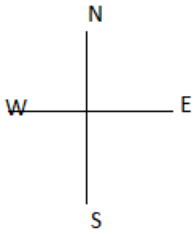
C South - East

D North - East

Answer: B

Explanation:





The direction of A with respect to C is North - West

Instructions

Based on the information below answer the questions.
In a certain code, the 26 letters of english alphabets are written around a circle in the same order and each consonant is coded as the 4th consonant after it and each vowel is coded as the 3rd vowel after it.

Question 178

The code for the word 'PRINCE' is

A TVURQO

B TWASHU

C TWURGO

D TVASJU

Answer: B

Question 179

The word which is coded as KISJ is

A GUMS

B FIND

C FUND

D JUMP

Answer: C

Explanation:

K 11.....is coded as the 4th consonant before it, F = 6

I 9.... is coded as the 3rd vowel before it U = 21

S 19.....is coded as the 4th consonant before it N = 14

J 10.....is coded as the 4th consonant before it D = 4

Question 180

The letter 'X' is coded as

A A

B Z

C B

D C

Answer: D

Explanation:
X = 24.....is coded as the 4th consonant after it is C =3

Question 181

The letter that is coded as 'L' is

A F

B G

C H

D J

Answer: B

Explanation:
G ..... is coded as the 4th consonant after it is L

Question 182

The word BOND is coded as

A GESJ

B GASH

C FARH

D FERJ

Answer: A

Explanation:
B 2 .....the 4th consonant after it is G

O 15....each vowel is coded as the 3rd vowel after it E

N 12 .....the 4th consonant after it is S

D 4 .....the 4th consonant after it is J

so,

GESJ

Instructions
For the following questions answer them individually

Question 183

If the word LINE is coded as QMQG then, in the same code, the word FORT is coded as

A KSUV

B KUVS

C KVUS

D KSVU

Answer: A

Explanation:
L..... after 4 alphabets Q

I..... after 3 alphabets M

N..... after 2 alphabets Q

E..... after 1 alphabets G

similarly

F..... after 4 alphabets k

O..... after 3 alphabets S

R..... after 2 alphabets U
T..... after 1 alphabets V

Question 184

If the word BRING is coded as 50 and STATE is coded as 65 then in the same code, the word SWORD is coded as

A 95

B 79

C 94

D 81

Answer: B

Explanation:
Addition of place value

BRING = 2+18+9+ 14+ 7 = 48

STATE = 19+20+1+20+5 = 65

so,

SWORD = 19+23+15+18 + 4 = 79

Question 185

In a certain code the word 'PRINCE' • coded as QQ JM DD. Then in the same code,CHARIT is coded as

A DD BQ JJ

B DI BQ JU

C DF BQ

D DG BQ JS

Answer: D

Explanation:
'PRINCE' • coded as QQ JM DD

Nearest alphabet like

P Q R = QQ (nearest letter)

I J K L M N= J M (nearest letter)

C D E = DD (nearest letter)

similarly for CHARIT

C D E F G H = D G (nearest letter)

A B C D E F G H I J K L M N O P Q R =B Q (nearest letter)

I J K L M N O P Q R S T =J S (nearest letter)

D G B Q J S

Question 186

In a certain code, the word NESTUM is coded as 123456 and the word PARIS is coded as 78903, then in the same code, the code for the word TAMPER is

A 485219

B 482769

C 486729

D 483509

Answer: C

Explanation:
N 1

E 2

S 3

T 4

U 5

M 6

P 7

A 8

R 9

I 0

S 3

so,

T = 4

A = 8

M = 6

P = 7

E = 2

R = 3

486729

Question 187

In a certain code, the word MISTER is coded as SIYTKR, then the word NORMAL is coded as

A TOMGXL

B TOXMGL

C TMXOGL

D TONIXGL

Answer: B

Explanation:
MISTER is coded as SIYTKR

M.... after 5 alphabets s

I..... same I

S.... after 5 alphabets Y

T...same Y

E.... after 5 alphabets K

R ....same R

similarly for

N.... after 5 alphabets T

O.....O

R.... after 5 alphabets X

M..... M

A.... after 5 alphabets G

L.... I

TOXMGL

Question 188

P is mother of V; V is sister of B. A is son of B. D is brother of A. S is mother of D. G is grand daughter of P. T has only two children V and B. Which one of the following is true?

A G is a daughter of B

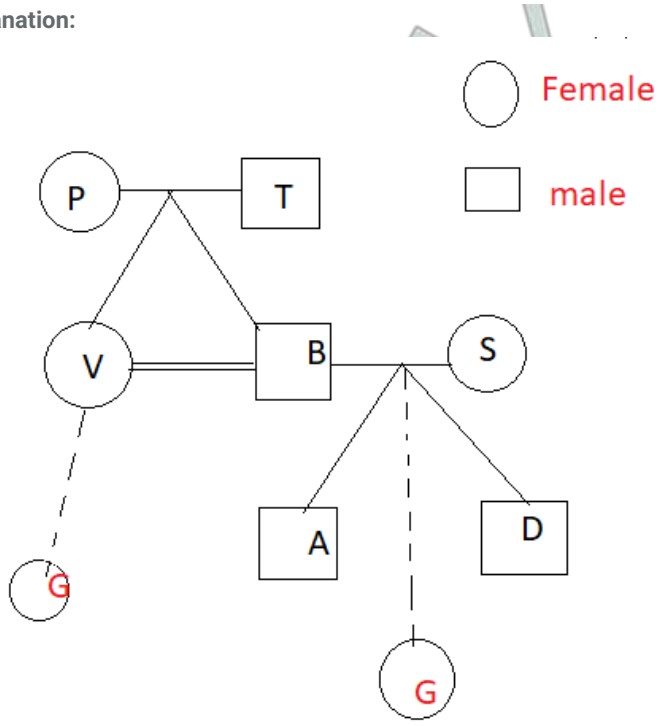
B G is a daughter of V

C D is a son of T's son

D There are five females and three males in that family

Answer: C

Explanation:



we dont know the exact relation of G

so,

D is a son of T's son

Question 189

In a family D is the wife of C and daughter of F and D is also the daughter-in-law of A. G is the mother of C. A is the paternal grand son of E. Then how A is related to G

A Son

B Husband

C Brother-in-law

D Brother

Answer: B

Instructions

Read the following information answer the questions below.
The following are the conditions for the selection of a manager post in an organisation.
i) The candidate must be a graduate with at least 65% of marks.
ii) As on 1st January 2018, the candidate's age must be between 22 and 30 years.
iii) The candidate must secure at least 40% marks in the entrance exam and at least 50% marks in the interview.
iv) The candidate must have management trainee experience of atleast 1 year.
(a) In case a candidate fails to fulfil (i) but has a post graduate degree with atleast 60% of marks, then his/her case is to be referred to Head of human resource section.
(b) In case a candidate fails to fulfil (iv) above but ready to execute a bond for two years then his/her case is to be referred to the General Manager.

Question 190

Lakshmi was born on 15^{th} March 1993. She did her MBA and securecie marks. At a company she had a training experience after her MBA, for 13 months. Every member in the interview board gave marks from 6 to 9 out of 10. She secured 52% of marks in the entrance examination. Then

A The data provided is not adequate to take a decision

B Lakshmi is to be selected

C Lakshmi is not to be selected

D Her case is to be referred to head, human resources section.

Answer: A

Explanation:
The data provided is not adequate to take a decision :

we don't know the graduation and post graduation percentage

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Question 191

Amar is an applicant for manager post and was born on 2nd September 1990. In the entrance , examination he got more marks than in interview. He got 55% marks in interview. He is ready to execute a bond for two years. He got a first class in graduation securing 68% of marks.

A Amar's case is to be referred to head, human resources

B Arnar's case is to be referred to General Manager

C Amar is selected, as he satisfies all the conditions

D Amar's data is inadequate to take a decision

Answer: B

Explanation:
Arnar's case is to be referred to General Manager because

His age is 28

he qualified interview and entrance exam with required percentage

He got a first class in graduation securing 68% of marks.

He is ready to execute a bond for two years.

all the condition are fulfilled by Arnar

Question 192

Sobhan graduated with 55% marks and secured post graduate degree by scoring 63% marks. In the entrance exam and interview he secured respectively 43% and 53% marks. He had experience as management trainee for 2 years. Sobhan's date of birth is 15th December 1986.

A Sobhan is not selected for the post

B Sobhan's case is to be referred to the General Manager

C Sobhan is selected for the post

D Sobhan's data is inadequate to make decision

Answer: A

Explanation:
Sobhan is not selected for the post;

His graduation marks is less than 60%

Instructions

Based on the below information, answer the questions.
5 persons A, B, C, D and E are to be invited on to the dais and are requested to sit on the 5 coloured chairs arranged in the order of Red, Blue, Green, Yellow and White. The person D is not allowed to sit on the Blue chair. The Chief guest A is to be seated on the white chair only. The person E is always to be seated by the side of A. The person B always to be seated at the middle.

Question 193

The order in which the person are to be seated is:

A C,D,B,A,E

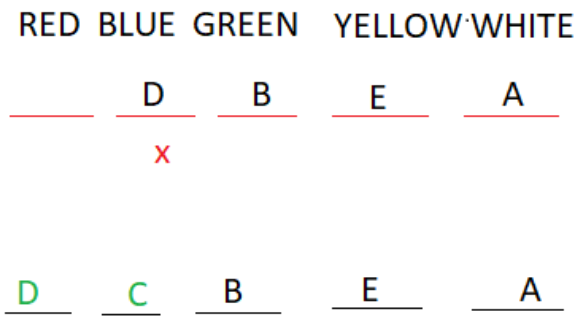
B D,C,B,A,E

C D,C,B,E,A

D A,D,B,E,C

Answer: C

Explanation:



so order is

D

C

B

E

A

Question 194

If all the persons change their seats except the person sitting on the white chair, the person E is to be seated in the middle chair and no one has the same earlier neighbours, then the order of the persons to be seated on the dais is

A B, D, E, C, A

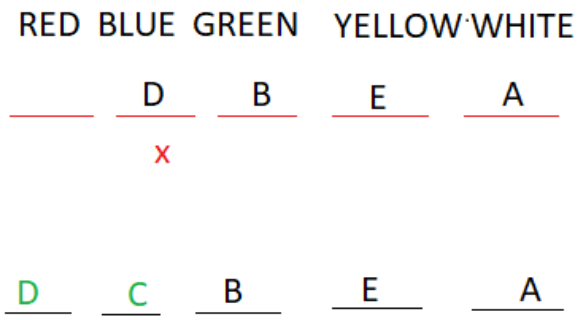
B B, C, E, D, A

C A, D, E, B, C

D B, A, E, C, D

Answer: A

Explanation:



so order is

D

C

B

E

A

Above is the original seating arrangement

If all the persons change their seats except the person sitting on the white chair, the person E is to be seated in the middle chair and no one has the same earlier neighbours

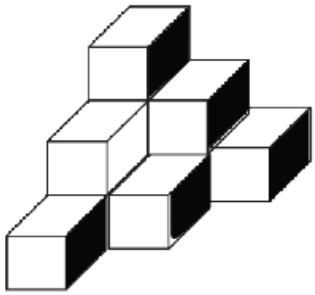
so,

B , D,E,C,A

Instructions
For the following questions answer them individually

Question 195

Observe the following figure.



The minimum number of cubes to be placed in empty spaces to complete the cube is

A 10

B 17

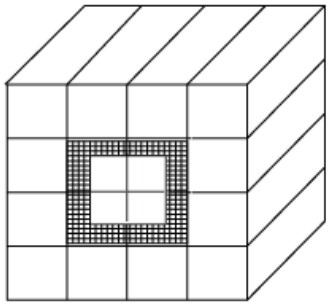
C 15

D 22

Answer: B

Question 196

A hollow cuboid is constructed with identical small blocks as shown in the figure. Three such identical cuboids are attached to it to form z a big hollow cuboid. Then the number of small blocks required to fill the hollow space is



A 7

B 9

C 8

D 16

Answer: D

Question 197

Seven letters G, N, T, Y, V, Q, C are selected and arranged in the dictionary order. Another two letters are selected and placed in between these seven letters so that
i) the position of the middle letter is not altered after the inclusion of these two letters.
ii) one of the two selected letters become the middle one for the right most five letters.
iii) for the left most five letters G is the middle letter and no two letters are consecutive. Then the two letters included are

A D, X

B E, U

C I, Y

D H, W

Answer: B

Question 198

Consider the following activities in a student life.
A: Examinations
B : Convocation
C : Admission
D : Results
E : First Class
If the sequence of occurrance of these activities is arranged in the reverse order, then the correct one in the given options is

A C,A,D,E,B

B A,B,D,E,C

C B,D,C,E,A

D B,E,D,A,C

Answer: D

Explanation:
A: Examinations
B : Convocation
C : Admission
D : Results
E : First Class

So the main order will be first his/her admission will be done, then examinations will be conducted followed by his/her results in a class (First, second, third etc) and finally degree will be awarded which is convocation.

Hence the correct order is CADEB

Then reverse order is

B : Convocation

E : First Class

D : Results

A: Examinations

C : Admission

Question 199

In a class of 50 students, all students are ranked as per their marks in an examination. All the 50 students got distinct marks from each other. A student Ram is in 18^{th} position from the top and another student Syam is in 26^{th} position from top. The position of the student from the bottom who got the rank exactly in between the ranks of Ram and Syam, is

A 22

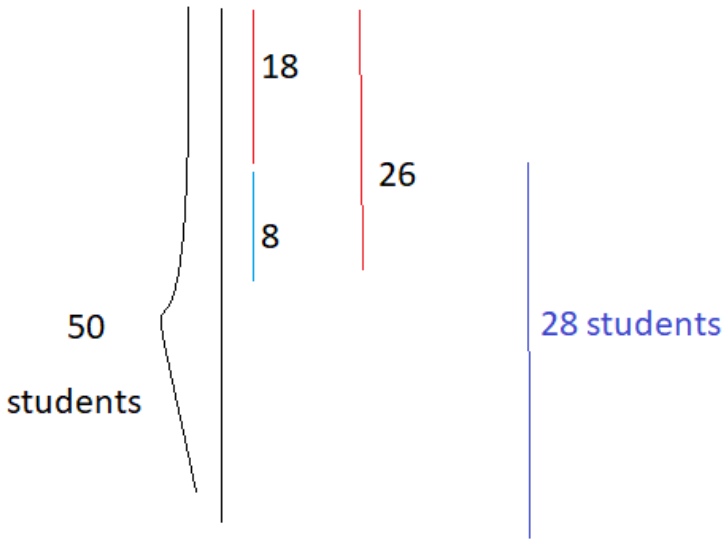
B 25

C 29

D 23

Answer: C

Explanation:



The position of the student from the bottom who got the rank exactly in between the ranks of Ram and Syam, is

29th rank from bottom

Question 200

A, B, C, D and E are 5 boys sitting in a row. B is on the right of C who is on the right of A. The boy E is only one in between A and C. D is on the extreem left side. Then the boy in the middle of the arrangement is

A A

B E

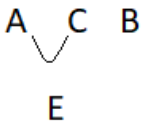
C C

D B

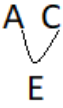
Answer: B

Explanation:

=> A C B



=> D A C B



E is in middle