SSC CPO 4 July 2017 Afternoon Shift

Quant

Instructions

For the following questions answer them individually

Question 1

If $N = (\frac{\sqrt{7}-\sqrt{5}}{\sqrt{7}+\sqrt{5}})$, then what is the value of $\frac{1}{N}$?

A $6 - \sqrt{35}$

B $6 + \sqrt{35}$

C $7 + \sqrt{35}$

D $7 - \sqrt{35}$

Answer: B

Explanation:

Given : $N = \frac{\sqrt{7}-\sqrt{5}}{\sqrt{7}+\sqrt{5}}$

=> $\frac{1}{N} = \frac{\sqrt{7}+\sqrt{5}}{\sqrt{7}-\sqrt{5}}$

Rationalizing the denominator, we get :

= $\frac{\sqrt{7}+\sqrt{5}}{\sqrt{7}-\sqrt{5}} \times \frac{\sqrt{7}+\sqrt{5}}{\sqrt{7}+\sqrt{5}}$

= $\frac{(\sqrt{7}+\sqrt{5})^2}{(\sqrt{7}-\sqrt{5})(\sqrt{7}+\sqrt{5})}$

= $\frac{7+5+2(\sqrt{7})(\sqrt{5})}{7-5}$

= $\frac{12+2\sqrt{35}}{2} = 6 + \sqrt{35}$

=> Ans - (B)

Question 2

The sum of three consecutive even numbers is always divisible by ____.

A 12

B 6

C 18

D 24

Answer: B

Explanation:

Let the three consecutive even numbers be $(2n - 2), (2n), (2n + 2)$

=> Sum of numbers = $(2n - 2) + (2n) + (2n + 2) = 6n$

Thus, the sum is always divisible by **'6'**

=> Ans - (B)

Question 3

How many positive factors of 24 are there?

A 3

B 4

C 6

D 8

Answer: D

Explanation:
Prime factorization of $24 = (2)^3 \times (3)^1$

=> umber of positive factors = $(3 + 1) \times (1 + 1)$

= $4 \times 2 = 8$

=> Ans - (D)

Question 4

4/5 part of a tank is filled with oil. After taking out 42 litres of oil the tank is 3/4 part full. What is the capacity (in litres) of the tank?

A 420

B 630

C 840

D 1680

Answer: C

Explanation:
Let capacity of tank = x litres

According to ques,

=> $\frac{4x}{5} - 42 = \frac{3x}{4}$

=> $\frac{4x}{5} - \frac{3x}{4} = 42$

=> $\frac{16x - 15x}{20} = 42$

=> $x = 42 \times 20 = 840$

∴ Capacity (in litres) of the tank = **840 litres**

=> Ans - (C)

Question 5

What is the largest four digit number which is a perfect square?

A 9704

B 9801

C 9901

D 9999

Answer: B

Explanation:
9999 is the largest 4 digit number and $100^2 = 10000$

This means that the closest square root of the largest perfect square is most likely 99. So $99^2 = 9801$ is the largest perfect square of four digits.

=> Ans - (B)

Question 6

Two inlet pipes can fill a cistern in 20 and 24 hours respectively and an outlet pipe can empty 160 gallons of water per hour. All the three pipes working together can fill the empty cistern in 40 hours. What is the capacity (in gallons) of the tank?

A 1200

B 2400

C 3600

D 1800

Answer: B

Explanation:
Let capacity of tank = L.C.M.(20,24,40) = $120x$ gallons

1st inlet pipe can fill in 20 hours, => 1st pipe's efficiency = $\frac{120x}{20} = 6x$ gallons/hr

Similarly, 2nd pipe's efficiency = $\frac{120x}{24} = 5x$ gallons/hr

Also, efficiency of 3rd outlet pipe = -160 gallons/hr

According to ques,

=> $(6x + 5x - 160) \times 40 = 120x$

=> $11x - 160 = \frac{120x}{40} = 3x$

=> $11x - 3x = 160$

=> $x = \frac{160}{8} = 20$

$\therefore$ Capacity of tank = $120 \times 20 = 2400$ gallons

=> Ans - (B)

Question 7

P alone can complete the work in 5 days, Q alone can do same work in 6 days and R alone can do the same work in 12 days. They jointly complete the work and earn Rs 5400. What is the share of R?

A 1000

B 1200

C 1500

D 1800

Answer: A

Explanation:
Ratio of efficiencies of P:Q:R = $\frac{1}{5} : \frac{1}{6} : \frac{1}{12}$

= $\frac{60}{5} : \frac{60}{6} : \frac{60}{12} = 12 : 10 : 5$

$\therefore$ Share of R = $\frac{5}{(12+10+5)} \times 5400$

= $5 \times 200 = Rs.\ 1000$

=> Ans - (A)

Question 8

After giving two successive discounts of 20% and 25% a cycle is sold for Rs 4200. What is the marked price (in Rs) of the cycle?

A 7200

B 7000

C 6500

D 6200

Answer: B

Explanation:
Let marked price = Rs. $100x$

Selling price after first discount of 20% = $100x - (\frac{20}{100} \times 100x)$

= $100x - 20x = Rs.\ 80x$

Similarly, selling price after second discount of 25% = $80x - (\frac{25}{100} \times 80x)$

= $80x - 20x = Rs.\ 60x$

According to ques, => $60x = 4200$

=> $x = \frac{4200}{60} = 70$

$\therefore$ Marked price = $100 \times 70 = Rs.\ 7,000$

=> Ans - (B)

Question 9

The marked price of an article is 60% more than its cost price. What should be the discount (in %) offered by the shopkeeper so that he earns a profit of 12%?

A 12

B 25

C 30

D 60

Answer: C

Explanation:
Let cost price = Rs. 100

=> Marked price = $100 + (\frac{60}{100} \times 100)$

= $100 + 60 = Rs.\ 160$

Also, profit % = 12%

=> Selling price = $100 + (\frac{12}{100} \times 100)$

= $100 + 12 = Rs.\ 112$

$\therefore$ Discount % = $\frac{(160-112)}{160} \times 100$

= $\frac{48}{1.6} = 30\%$

=> Ans - (C)

Question 10

The ratio of the speed of P, Q and R is 10 : 12 : 15 respectively. What is the ratio of the time taken by P, Q and R respectively to cover the same distance?

A 10 : 12 : 15

B 15 : 12 : 10

C 6 : 5 : 4

D 4 : 5 : 6

Answer: C

Explanation:
Speed is inversely proportional to time.

=> Ratio of time taken = $\frac{1}{10} : \frac{1}{12} : \frac{1}{15}$

L.C.M.(10,12,15) = 60

$= \frac{60}{10} : \frac{60}{12} : \frac{60}{15}$

$= 6 : 5 : 4$

=> Ans - (C)

Question 11

Three bottles of equal capacity are containing a mixture of milk and water in ratio 2 : 1, 3 : 7 and 4 : 11 respectively. These three bottles are emptied into a large bottle. What is the ratio of milk and water respectively in this large bottle?

A 37 : 53

B 37 : 90

C 37 : 30

D 7 : 30

Answer: A

Explanation:
Let capacity of each bottle = L.C.M.(3,10,15) = 30 litres

=> Milk in first bottle = $\frac{2}{2+1} \times 30 = 20$ litres

and water in first bottle = $30 - 20 = 10$ litres

Similarly, in 2nd bottle, milk = 9 litres and water = 21 litres

In 3rd bottle, milk = 8 litres and water = 22 litres

=> Total quantity of milk = $20 + 9 + 8 = 37$ litres

and water = $10 + 21 + 22 = 53$ litres

$\therefore$ Required ratio = **37 : 53**

=> Ans - (A)

Question 12

The average of 11 results is 182. If the average of first 6 results is 199 and that of the last 6 results is 161, then what will be the 6th result?

A 79

B 118.5

C 158

D 237

Answer: C

Explanation:
Average of 11 results = 182

=> Sum of 11 results = $182 \times 11 = 2002$

Similarly, sum of first 6 results = $199 \times 6 = 1194$

And sum of last 6 results = $161 \times 6 = 966$

$\therefore$ 6th result = $(1194 + 966) - 2002 = 158$

=> Ans - (C)

Question 13

The average of 45 results was calculated as 27 but later it was found that while calculating 39 was taken as 93 by mistake, then what will be the correct average?

A 25.8

B 26.8

C 27.2

D 28.2

Answer: A

Explanation:
Average of 45 results = 27

=> Sum of 45 results = $27 \times 45 = 1215$

After correcting the mistake new sum = $1215 - 93 + 39 = 1161$

=> Correct average = $\frac{1161}{45} = 25.8$

=> Ans - (A)

Question 14

A shopkeeper professes to sell his goods at cost price but uses a 960 gm weight instead of 1 kilogram weight. What is the profit percentage of the shopkeeper?

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

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

C $5\frac{1}{7}$

D $5\frac{1}{6}$

Answer: A

Explanation:
Let cost price of shopkeeper = Rs. 1000/kg => Re. 1/gm

Selling price = Rs. 1000/960gm

=> Profit % = $\frac{(\frac{1000}{960}-1)}{1} \times 100$

= $\frac{40}{960} \times 100 = \frac{100}{24}$

= $4\frac{1}{6}\%$

=> Ans - (A)

Question 15

A person sold a book for Rs 21 and got a loss percentage which was numerically equal to the cost price. What is the cost price (in Rs) of the book?

A 30

B 70

C Both 30 and 70

D Cannot be determined

Answer: C

Explanation:
Selling price of book = Rs. 21

Let cost price = Rs. x

=> Loss % = $x\%$

According to ques,

=> $\frac{(x-21)}{x} \times 100 = x$

=> $100x - 2100 = x^2$

=> $x^2 - 100x + 2100 = 0$

=> $x^2 - 30x - 70x + 2100 = 0$

=> $x(x - 30) - 70(x - 30) = 0$

=> $(x - 30)(x - 70) = 0$

=> $x = 30, 70$

∴ Cost price (in Rs) of the book = Rs. 30 or 70

=> Ans - (C)

Question 16

If length of a rectangle is increased by 10% and breadth is increased by 15%, then what will be the percentage increase in the area of rectangle?

A 25.5

B 25

C 28.4

D 26.5

Answer: D

Explanation:
Let the length and breadth of the rectangle be 10 cm

Area of rectangle = $10 \times 10 = 100\ cm^2$

After increasing the length by 10%, => New length = $10 + (\frac{10}{100} \times 10)$

= $10 + 1 = 11$ cm

Similarly, new breadth = $10 + (\frac{15}{100} \times 10)$

= $10 + 1.5 = 11.5$ cm

=> New area = $11 \times 11.5 = 126.5\ cm^2$

$\therefore$ Increase in area = $\frac{(126.5-100)}{100} \times 100 = 26.5\%$

=> Ans - (D)

Question 17

If the base of triangle is increased by 10% and height is decreased by 20%, then what will be the percentage change in the area of a triangle?

A 30

B 20

C 22

D 12

Answer: D

Explanation:
Let the base and height of the triangle be 10 cm

Area of triangle = $\frac{1}{2} \times 10 \times 10 = 50\ cm^2$

After increasing the base by 10%, => New base = $10 + (\frac{10}{100} \times 10)$

= $10 + 1 = 11$ cm

Similarly, new height = $10 - (\frac{20}{100} \times 10)$

= $10 - 2 = 8$ cm

=> New area = $\frac{1}{2} \times 11 \times 8 = 44\ cm^2$

$\therefore$ Decrease in area = $\frac{(50-44)}{50} \times 100 = 12\%$

=> Ans - (D)

Question 18

A bus starts running with some initial speed and its speed increases every hour by 9 km/hr. If it takes 11 hours to cover a distance of 572 km, then what was the initial speed (in km/hr) of the bus?

A 3.5

B 7

C 10.5

D 14

Answer: B

Explanation:
Let initial speed of bus = x km/hr = Distance travelled in 1st hour

Speed after 1 hour = $(x + 9)$ km/hr = Distance travelled in 2nd hour and so on.

Similarly, distance travelled in 11th hour = $(x + 90)$ km

Total distance (using sum of an arithmetic series) = $\frac{11}{2}[(x) + (x + 90)] = 572$

=> $x + 45 = \frac{572}{11} = 52$

=> $x = 52 - 45 = 7$

$\therefore$ Initial speed of bus = **7 km/hr**

=> Ans - (B)

Question 19

A boat goes 15 km upstream and 22 km downstream is 5 hours. It goes 20 km upstream and $\frac{55}{2}$ km downstream in $\frac{13}{2}$ hours. What is the speed (in km/hr) of stream ?

A 3

B 5

C 8

D 11

Answer: A

Explanation:
Let speed of boat = x km/hr and speed of stream = y km/hr

=> Downstream speed = $(x + y)$ km/hr and Upstream speed = $(x - y)$ km/hr

According to ques,

=> $\frac{15}{x-y} + \frac{22}{x+y} = 5$

and $\frac{20}{x-y} + \frac{27.5}{x+y} = 6.5$

Let $\frac{1}{x-y} = m$ and $\frac{1}{x+y} = n$

=> $15m + 22n = 5$ and $20m + 27.5n = 6.5$

Solving above equations, we get : $m = \frac{1}{5}$ and $n = \frac{1}{11}$

Thus, $x - y = 5$ and $x + y = 11$

Subtracting both equation, => $2y = 11 - 5 = 6$

=> $y = \frac{6}{2} = 3$

$\therefore$ Speed of stream = 3 km/hr

=> Ans - (A)

Question 20

If a certain sum becomes 4 times in 4 years at compound interest, then in how many years, it will become 64 times?

A 5

B 12

C 16

D 24

Answer: B

Explanation:

Let principal sum = Rs. P and rate of interest = $r\%$

Amount under compound interest = $P(1 + \frac{r}{100})^T$

Thus, after 4 years

=> $P(1 + \frac{r}{100})^4 = 4P$

=> $(1 + \frac{r}{100})^4 = 4$

=> $(1 + \frac{r}{100}) = (4)^{\frac{1}{4}}$ ----------(i)

Now, Let after t years sum becomes 64 times

=> $P(1 + \frac{r}{100})^t = 64P$

=> $(4)^{\frac{t}{4}} = (4)^3$

Comparing the exponents, we get :

=> $\frac{t}{4} = 3$

=> $t = 4 \times 3 = 12$ years

=> Ans - (B)

Question 21

What is the simple interest on Rs 7200 in 7 years at the rate of 14% per annum?

A 6800

B 6812

C 7056

D 7096

Answer: C

Explanation:

Principal sum = Rs. 7200

Rate of interest = 14% and time period = 7 years

Simple interest = $\frac{P \times R \times T}{100}$

= $\frac{7200 \times 14 \times 7}{100}$

= $72 \times 98 = Rs.\ 7056$

=> Ans - (C)

Instructions

The table give below shows the marks obtained by six students in 5 different subjects.

	Subject				
Student	P	Q	R	S	T
A	72	75	80	82	93
B	87	94	78	87	95
C	68	79	55	91	72
D	55	69	74	81	76
E	74	88	83	93	87
F	86	92	95	81	82

Question 22

What are the total marks obtained by student D in all subjects?

A 343

B 355

C 338

D 362

Answer: B

Explanation:
Total marks obtained by student D in all subjects

= 55 + 69 + 74 + 81 + 76 = 355

=> Ans - (B)

Question 23

What is the average of total marks obtained by all six students in subject R?

A 77.5

B 76.2

C 93

D 83.4

Answer: A

Explanation:
Total marks obtained by all six students in subject R

= 80 + 78 + 55 + 74 + 83 + 95 = 465

=> Required average = $\frac{465}{6} = 77.5$

=> Ans - (A)

Question 24

What is the aggregate percentage of marks obtained by student C in all the five subjects?

A 71

B 75

C 76

D 73

Answer: D

Explanation:
Total marks obtained by student C

= 68 + 79 + 55 + 91 + 72 = 365

=> Average marks = $\frac{365}{5} = 73$

=> Ans - (D)

Question 25

Marks obtained by student B is how much percent more than the marks obtained by A?

A 8.3

B 7.4

C 9.7

D 11.1

Answer: C

Explanation:
Total marks obtained by student A

= 72 + 75 + 80 + 82 + 93 = 402

Total marks obtained by student B

= 87 + 94 + 78 + 87 + 95 = 441

=> Required % = $\frac{(441-402)}{402} \times 100$

$\approx \frac{39}{4} = 9.7\%$

=> Ans - (C)

Instructions
For the following questions answer them individually

Question 26

The perimeter of base of a right circular cone is 88 cm. If the height of the cone is 48 cm, then what is the total surface area (in cm ^{2}) of the cone?

A 2200

B 1100

C 2354

D 2816

Answer: D

Explanation:

Let radius of cone = r cm and height = $h = 48$ cm

Perimeter of base = $2\pi r = 88$

=> $2 \times \frac{22}{7} \times r = 88$

=> $r = 88 \times \frac{7}{44} = 14$ cm

Slant height of cone = $l = \sqrt{r^2 + h^2}$

=> $l = \sqrt{196 + 2304} = \sqrt{2500}$

=> $l = 50$ cm

$\therefore$ Total surface area of cone = $\pi r(r + l)$

= $(\frac{22}{7} \times 14)(14 + 50)$

= $44 \times 64 = 2816\ cm^2$

=> Ans - (D)

Question 27

What is the length of the longest rod that can be placed in a room which is 3 metres long, 4 metres broad and 5 metres high?

A 5

B 12

C 5√2

D 6√2

Answer: C

Explanation:

Length = $l = 3$ m, Breadth = $b = 4$ m and Height = $h = 5$ m

Length (in metres) of the longest rod that can be placed in the room is its diagonals.

=> Diagonal = $d = \sqrt{l^2 + b^2 + h^2}$

=> $d = \sqrt{(3)^2 + (4)^2 + (5)^2}$

=> $d = \sqrt{9 + 16 + 25} = \sqrt{50}$

=> $d = 5\sqrt{2}$ m

=> Ans - (C)

Question 28

If the area of a square is 48, then what is the diagonal of the square?

A $4\sqrt{6}$

B $4\sqrt{3}$

C $4\sqrt{2}$

D $3\sqrt{6}$

Answer: A

Explanation:
Let side of square = s units and diagonal = d units

=> Area = $s^2 = 48$

Also, $d = \sqrt{s^2 + s^2} = \sqrt{2s^2}$

=> $d = \sqrt{2 \times 48} = \sqrt{96}$

=> $d = 4\sqrt{6}$

=> Ans - (A)

Question 29

A cylindrical well of height 20 metres and radius 14 metres is dug in a field 72 metres long and 44 metres wide. The earth taken out is spread evenly on the field. What is the increase (in metre) in the level of the field?

A 6.67

B 3.56

C 5.61

D 4.83

Answer: D

Explanation:
Increase in the level of the field is the height of field (cuboidal shape) when volume of well (cylinderical) is equal to the volume of field (cuboidal).

Radius of well = $R = 14$ m and height = $H = 20$ m

Length of field = $l = 72$ m and width = $b = 44$ m

Let height = h m

=> Volume of cuboid = Volume of cylinder

Now, volume of cuboid = (Area of rectangle - Area of circle) $\times$ height

=> $(lb - \pi R^2) \times h = \pi R^2 H$

=> $[(72 \times 44) - (\frac{22}{7} \times 14^2)] \times (h) = \frac{22}{7} \times (14)^2 \times 20$

=> $(3168 - 616)h = 44 \times 280$

=> $h = \frac{44 \times 280}{2552} \approx 4.83$ m

=> Ans - (D)

Question 30

Radius of hemisphere is thrice than that of a sphere. What is the ratio of total surface area of hemisphere to that of sphere?

A 27 : 8

B 21 : 4

C 27 : 4

D 6 : 1

Answer: C

Explanation:

Let radius of sphere = r cm and radius of hemisphere = $3r$ cm

Ratio of surface area = $\frac{3\pi(3r)^2}{4\pi r^2}$

= $\frac{27}{4}$

=> Ans - (C)

Question 31

If $x + y = 4$, then what is the value of $x^3 + y^3 + 12xy$?

A 16

B 32

C 64

D 256

Answer: C

Explanation:

Given : $x + y = 4$ ----------(i)

Cubing both sides, we get :

=> $(x + y)^3 = (4)^3$

=> $x^3 + y^3 + 3xy(x + y) = 64$

=> $x^3 + y^3 + 3xy(4) = 64$

=> $x^3 + y^3 + 12xy = 64$

=> Ans - (C)

Question 32

If $x^4 + \frac{1}{x^4} = 198$ and $x > 0$, then what is the value of $x^2 - \frac{1}{x^2}$?

A 14

B $2\sqrt{7}$

C $10\sqrt{2}$

D 10

Answer: A

Explanation:

Given : $x^4 + \frac{1}{x^4} = 198$

=> $(x^2 - \frac{1}{x^2})^2 + 2(x^2)(\frac{1}{x^2}) = 198$

=> $(x^2 - \frac{1}{x^2})^2 = 198 - 2 = 196$

=> $x^2 - \frac{1}{x^2} = \sqrt{196} = 14$

=> Ans - (A)

Question 33

If $3x - \frac{1}{3x} = 9$, then what is the value of $x^2 + \frac{x^2}{81}$?

A 7

B 83/9

C 11

D 121/9

Answer: B

Explanation:

Given : $3x - \frac{1}{3x} = 9$

Dividing both sides by 3, => $x - \frac{1}{9x} = 3$

Squaring both sides, we get :

=> $(x - \frac{1}{9x})^2 = (3)^2$

=> $x^2 + \frac{1}{81x^2} - 2(x)(\frac{1}{9x}) = 9$

=> $(x^2 + \frac{1}{81x^2}) - \frac{2}{9} = 9$

=> $(x^2 + \frac{1}{81x^2}) = 9 + \frac{2}{9}$

=> $(x^2 + \frac{1}{81x^2}) = \frac{83}{9}$

=> Ans - (B)

Question 34

If $x^3 - y^3 = 112$ and $x - y = 4$, then what is the value of $x^2 + y^2$?

A 16

B 20

C 24

D 28

Answer: C

Explanation:

Given : $x^3 - y^3 = 112$ ----------(i)

Also, $x - y = 4$ ----------(ii)

Cubing both sides, we get :

=> $(x - y)3 = (4)^3$

=> $(x^3 - y^3) - 3(x)(y)(x - y) = 64$

Substituting values from equations (i) and (ii),

=> $112 - 3xy(4) = 64$

=> $12xy = 112 - 64 = 48$

=> $xy = \frac{48}{12} = 4$ ----------(iii)

Now, squaring equation (ii), we get :

=> $x^2 + y^2 - 2xy = 16$

=> $x^2 + y^2 = 16 + 8 = 24$

=> Ans - (C)

Question 35

If $x = 5 - \frac{1}{x}$, then what is the value of $x^5 + \frac{1}{x^5}$?

A 625

B 3125

C 2525

D 2500

Answer: C

Explanation:

Given : $x = 5 - \frac{1}{x}$

=> $x + \frac{1}{x} = 5 = k$

Now, $x^5 + \frac{1}{x^5} = [(x^3 + \frac{1}{x^3}) \times (x^2 + \frac{1}{x^2})] - (x + \frac{1}{x})$

= $[(x + \frac{1}{x})^3 - 3(x + \frac{1}{x}) \times (x + \frac{1}{x})^2 - 2(x)(\frac{1}{x})] - (x + \frac{1}{x})$

= $[(k^3 - 3k) \times (k^2 - 2)] - (k)$

= $[(125 - 15) \times (25 - 2)] - (5)$

= $(110 \times 23) - 5$

= $2530 - 5 = 2525$

=> Ans - (C)

Question 36

In ΔABC, ∠A : ∠B : ∠C = 3 : 3 : 4. A line parallel to BC is drawn which touches AB and AC at P and Q respectively. What is the value of ∠AQP - ∠APQ?

A 12

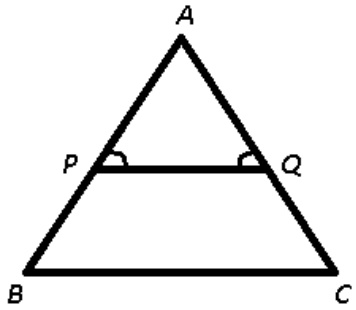
B 18

C 24

D 36

Answer: B

Explanation:



Given : ∠A : ∠B : ∠C = 3 : 3 : 4 and PQ is parallel to BC

To find : ∠AQP - ∠APQ = ?

Solution : Let $\angle A = 3x$, $\angle B = 3x$ and $\angle C = 4x$

Thus, in $\triangle$ ABC,

=> $\angle A + \angle B + \angle C = 180^\circ$

=> $3x + 3x + 4x = 180^\circ$

=> $x = \frac{180^\circ}{10} = 18^\circ$

$\because$ PQ $\parallel$ BC, => $\angle$ APQ = $\angle$ B and $\angle$ AQP = $\angle$ C (Corresponding angles)

$\therefore \angle$ AQP - $\angle$ APQ = $4x - 3x = x = 18^\circ$

=> Ans - (B)

Question 37

In the given figure, O is the center of the circle, $\angle$CAO = 35°. What is the value (in degrees) of $\angle$AOB?

A 90

B 110

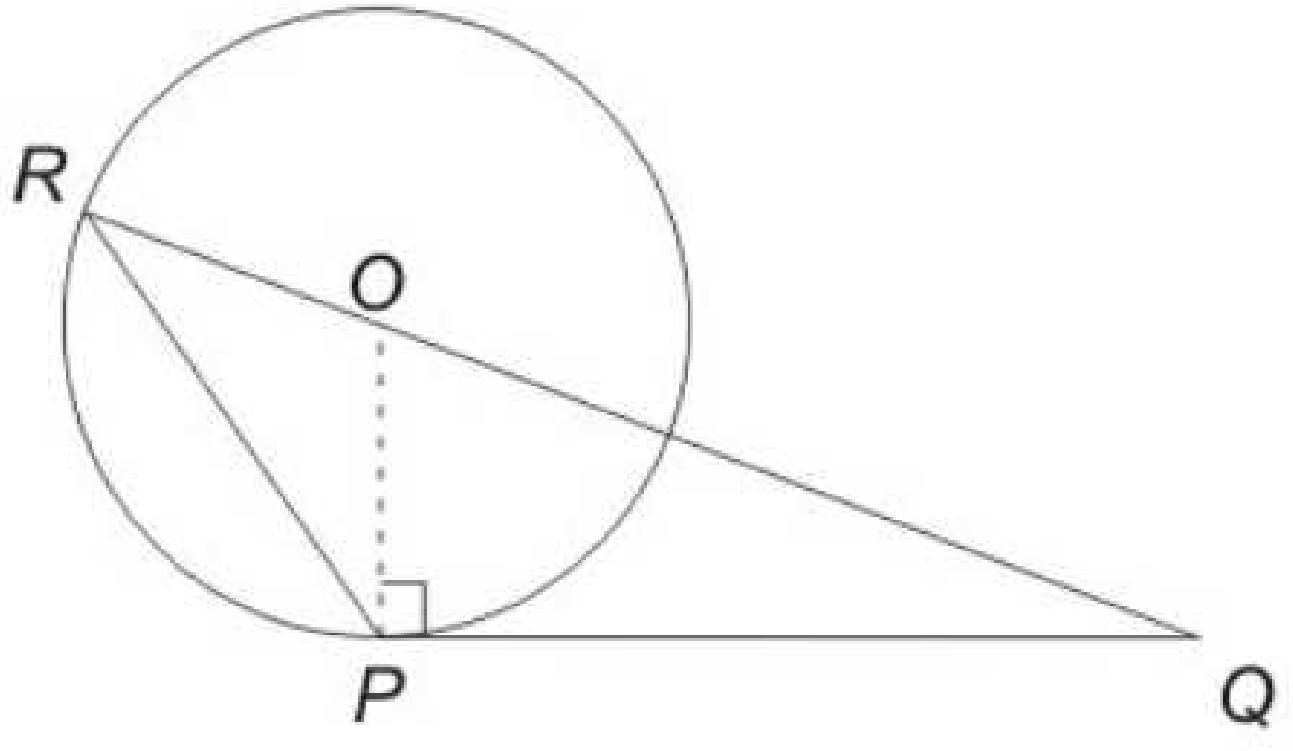
C 160

D 130

Answer: C

Question 38

In the given figure, △PQR is drawn such that PQ is tangent to a circle whose radius is 10 cm and QR passes through centre of the circle. Point R lies on the circle. If QR = 36 cm, then what is the area (in cm^2 of △PQR?



A 134.5

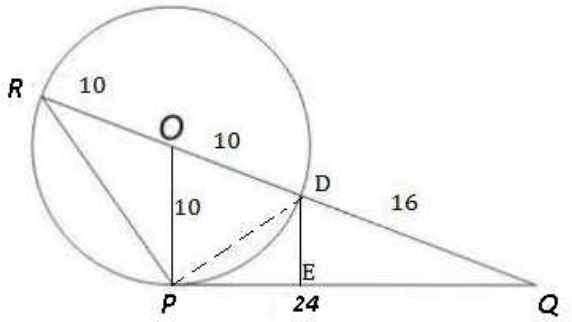
B 148

C 166.15

D 180

Answer: C

Explanation:



Given : OP = OR = 10 cm and QR = 36 cm

=> DQ = 16 cm and $PQ = \sqrt{(26)^2 - (10)^2} = 24$ cm

Area of △ POQ = $\frac{1}{2} \times (PQ) \times (OP)$

= $\frac{1}{2} \times 24 \times 10 = 120\ cm^2$ ---------(i)

Now, draw DE || OP, such that △ DEQ ∼ △ OPQ

=> $\frac{DQ}{OQ} = \frac{DE}{OP}$

=> $DE = \frac{16}{26} \times 10 = \frac{80}{13}$ cm

Thus, area of $\triangle$ PDQ = $\frac{1}{2} \times \frac{80}{13} \times 24 \approx 74\ cm^2$ ----------(ii)

Also, in $\triangle$ PRD, OP is the median, thus $ar(\triangle OPR) = ar(\triangle DOP)$

= $ar(\triangle POQ) - ar(\triangle PDQ)$

Subtracting equation (ii) from (i), we get :

=> Area of $\triangle$ DOP = $120 - 74 = 46\ cm^2$ ----------(iii)

$\therefore$ Area of $\triangle$ PQR = $120 + 46 \approx 166\ cm^2$ [Adding equation (i) and (iii)]

=> Ans - (C)

Question 39

The side QR of ΔPQR is produced to S. If ∠PRS = 105° and ∠Q = (1/2)∠P, then what is the value of ∠P?

A 45

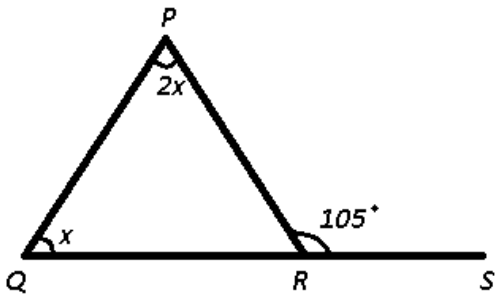
B 60

C 70

D 75

Answer: C

Explanation:



Let $\angle Q = x$, => $\angle P = 2x$

Using exterior angle property in $\triangle$ PQR,

=> $\angle$ P + $\angle$ Q = $\angle$ PRS

=> $2x + x = 105^\circ$

=> $x = \frac{105^\circ}{3} = 35^\circ$

$\therefore \angle P = 2 \times 35^\circ = 70^\circ$

=> Ans - (C)

Question 40

The perimeter of an isosceles triangle is 64 cm and each of the equal sides is 5/6 times the base. What is the area (in cm2) of the triangle?

A 169

B 192

C 196

D 184

Answer: B

Explanation:

Let the length of base = $6x$ cm

=> Length of each equal side = $\frac{5}{6} \times 6x = 5x$ cm

=> Perimeter = $6x + 5x + 5x = 16x = 64$

=> $x = \frac{64}{16} = 4$

=> Base = $b = 24$ cm and side = $a = 20$ cm

Now, height of an isosceles triangle = $h = \sqrt{(a)^2 - (\frac{b}{2})^2}$

=> $h = \sqrt{(20)^2 - (12)^2}$

=> $h = \sqrt{400 - 144} = \sqrt{256} = 16$ cm

$\therefore$ Area of isosceles triangle = $\frac{1}{2} \times (b) \times (h)$

= $\frac{1}{2} \times 24 \times 16 = 192\ cm^2$

=> Ans - (B)

Question 41

What is the simplified value of $\sqrt{\frac{sec^2\theta + cosec^2\theta}{4}}$?

A cosec 2θ

B sec 2θ

C cosec θ sec θ

D tan θ

Answer: A

Explanation:

Expression = $\sqrt{\frac{sec^2\theta + cosec^2\theta}{4}}$

= $\sqrt{\frac{(\frac{1}{cos^2\theta}) + (\frac{1}{sin^2\theta})}{4}}$

= $\sqrt{\frac{(\frac{sin^2\theta + cos^2\theta)}{sin^2\theta . cos^2\theta}}{4}}$

= $\sqrt{\frac{1}{4sin^2\theta cos^2\theta}}$

= $\sqrt{\frac{1}{(2sin\theta cos\theta)^2}}$

= $\frac{1}{sin2\theta} = cosec2\theta$

=> Ans - (A)

Question 42

If $\frac{x - xtan^2 15^\circ}{1 + tan^2 15^\circ}$ = sin 60° + cos 30° , then what is then what is the value of x?

A 2

B -1

C -2

D 1

Answer: A

Explanation:

$tan15^\circ = \frac{\sqrt{3}-1}{\sqrt{3}+1}$

Expression = $\frac{x-xtan^2 15^\circ}{1+tan^2 15^\circ}$ = sin 60° + cos 30°

=> $\frac{x(1-tan^2 15^\circ)}{1+tan^2 15^\circ} = \frac{\sqrt{3}}{2} + \frac{\sqrt{3}}{2}$

=> $x \times \frac{1-(\frac{\sqrt{3}-1}{\sqrt{3}+1})^2}{1+(\frac{\sqrt{3}-1}{\sqrt{3}+1})^2} = \sqrt{3}$

=> $x \times \frac{(\sqrt{3}+1)^2-(\sqrt{3}-1)^2}{(\sqrt{3}+1)^2+(\sqrt{3}-1)^2} = \sqrt{3}$

=> $x \times \frac{(3+1+2\sqrt{3})-(3+1-2\sqrt{3})}{(3+1+2\sqrt{3})+(3+1-2\sqrt{3})} = \sqrt{3}$

=> $x \times \frac{4\sqrt{3}}{8} = \sqrt{3}$

=> $x = \frac{8}{4} = 2$

=> Ans - (A)

Question 43

What is the simplified value of $\frac{2sin^3\theta - sin\theta}{cos\theta - 2\,cos^3\theta}$**?**

A tan θ

B sin θ

C cos θ

D cot θ

Answer: A

Explanation:

Expression : $\frac{2sin^3\theta - sin\theta}{cos\theta - 2\,cos^3\theta}$

= $\frac{sin\,\theta(2sin^2\theta - 1)}{cos\,\theta(2 - 2\,cos^2\theta)}$

= $\frac{sin\,\theta(cos2\,\theta)}{cos\,\theta(cos2\,\theta)}$

= $\frac{sin\,\theta}{cos\,\theta} = tan\,\theta$

=> Ans - (A)

Question 44

If $tan(\theta)tan(5\theta) = 1$**, then what is the value of** $sin2\theta$**?**

A 0

B $\frac{1}{2}$

C $1\sqrt{2}$

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

Answer: B

Explanation:

Given : $tan(\theta)tan(5\theta) = 1$

Using, $tan(A+B) = \frac{tanA+tanB}{1-tanAtanB}$

$tan(\theta+5\theta) = \frac{tan(\theta)+tan(5\theta)}{1-tan(\theta)tan(5\theta)}$

=> $tan(6\theta) = \frac{tan(\theta)+tan(5\theta)}{1-1}$

=> $tan(6\theta) = \infty$

=> $tan(6\theta) = tan(90^\circ)$

=> $6\theta = 90^\circ$

=> $\theta = \frac{90^\circ}{6} = 15^\circ$

$\therefore sin(2\theta) = sin(2 \times 15^\circ)$

= $sin(30^\circ) = \frac{1}{2}$

=> Ans - (B)

Question 45

The angles of elevation of the top of a building from the top and bottom of a tree are 30° and 30° respectively. If the height of the tree is $50m$, then what is the height of the building?

A $50\sqrt{3}$

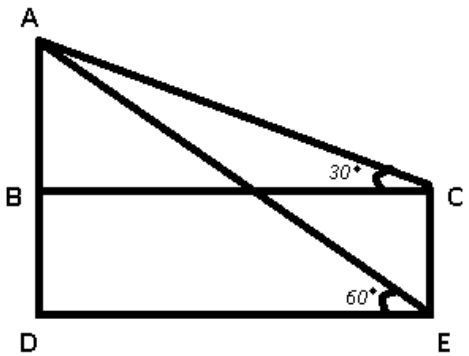
B 75

C $50(\sqrt{3}+1)$

D $75\sqrt{3}$

Answer: B

Explanation:



AD is the building and CE is the tree, thus $CE = BD = 50$ m

Let AB = x m and DE = BC = y m

Also, $\angle$ AED = 60° and $\angle$ ACB = 30°

In $\triangle$ ADE, => $tan(\angle AED) = \frac{AD}{DE}$

=> $tan(60) = \sqrt{3} = \frac{x+50}{y}$

=> $y\sqrt{3} = x + 50$

=> $y = \frac{x+50}{\sqrt{3}}$ ----------(i)

In $\triangle$ ABC, => $tan(\angle ACB) = \frac{AB}{BC}$

=> $tan(30) = \frac{1}{\sqrt{3}} = \frac{x}{y}$

=> $y = x\sqrt{3}$

=> $\frac{x+50}{\sqrt{3}} = x\sqrt{3}$ [Using equation (i)]

=> $x + 50 = 3x$

=> $3x - x = 2x = 50$

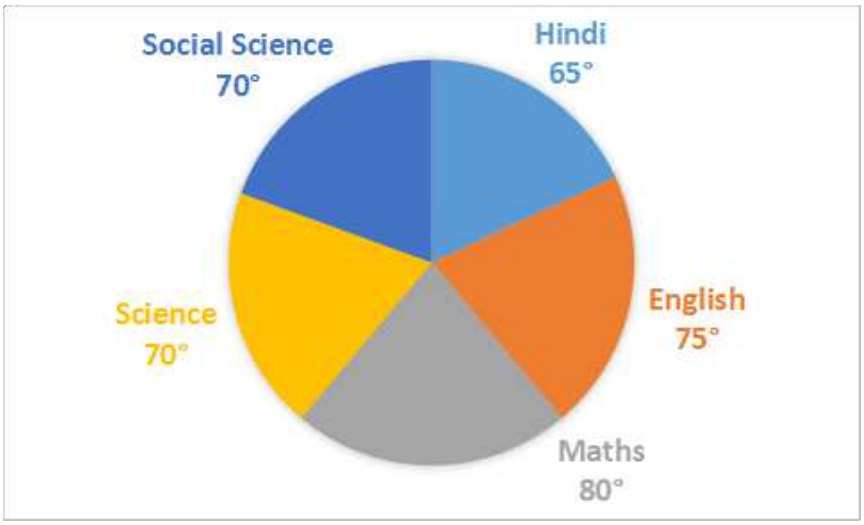
=> $x = \frac{50}{2} = 25$

$\therefore$ AD = AB + BD = $x + y = 25 + 50 = 75$ m

=> Ans - (B)

Instructions

The given pie chart shows the marks obtained (in degrees) by a student in different subjects. The total marks obtained by the student in the examination is 432.



Question 46

What is the total of marks obtained in Hindi and Maths?

A 178

B 172

C 174

D 182

Answer: C

Explanation:
Total marks in the examination = 432

Marks (in degree) obtained in Maths and Hindi together = $80 + 65 = 145^\circ$

Marks obtained in Maths and Hindi together = $\frac{145^\circ}{360^\circ} \times 432$

= $145 \times 1.2 = 174$

=> Ans - (C)

Question 47

The marks obtained in science is what percentage of the total marks?

A 20.14

B 18.12

C 17.16

D 19.44

Answer: D

Explanation:
Marks (in degrees) obtained in Science = 70°

Total marks (in degrees) = 360°

=> Required % = $\frac{70}{360} \times 100$

= $\frac{700}{36} = 19.44\%$

=> Ans - (D)

Question 48

The marks obtained in Maths is how much percent more than the marks obtained in Social Science?

A 7.14

B 14.28

C 9.13

D 10.41

Answer: B

Explanation:
Marks (in degrees) obtained in Maths = 80°

Marks (in degrees) obtained in Social Science = 70°

=> Required % = $\frac{(80-70)}{70} \times 100$

= $\frac{100}{7} = 14.28\%$

=> Ans - (B)

Question 49

In how many subjects marks obtained are more than the average marks per subject?

A 3

B 1

C 2

D 4

Answer: C

Explanation:
Total marks in the examination = 432

Average marks per subject = $\frac{432}{5} = 86.4$

Marks obtained in :

Hindi = $\frac{65^\circ}{360^\circ} \times 432 = 78$

English = $\frac{75^\circ}{360^\circ} \times 432 = 90$

Maths = $\frac{80^\circ}{360^\circ} \times 432 = 96$

Science = $\frac{70^\circ}{360^\circ} \times 432 = 84$

Social Science = $\frac{70^\circ}{360^\circ} \times 432 = 84$

Thus, only in **2** subjects (English and Maths), marks obtained are more than the average marks per subject

=> Ans - (C)

Question 50

If the maximum marks per subject is 100, then what is the total marks (in percentage) obtained in English and Hindi together?

A 168

B 68

C 76

D 84

Answer: D

Explanation:
Total marks in the examination = 432

Marks (in degree) obtained in English and Hindi together = $75 + 65 = 140^\circ$

Marks obtained in English and Hindi together = $\frac{140^\circ}{360^\circ} \times 432 = 168$

$\therefore$ Total marks (in percentage) obtained in English and Hindi together = $\frac{168}{200} \times 100 = 84\%$

=> Ans - (D)

Reasoning

Instructions

In the following question, select the related word from the given alternatives.

Question 51

Tailor : Needle : : Woodcutter : ?

A Sword

B Chisel

C Axe

D Plough

Answer: C

Explanation:
Second is the primary tool of first, a tailor uses a needle to stitch, similarly a woodcutter uses **axe** to cut wood.

=> Ans - (C)

Question 52

Scissors : Cloth : : Axe : ?

A Stone

B Wood

C Hunt

D Vegetables

Answer: B

Explanation:
First is used to cut second, a cloth is cut using a pair of scissors, similarly **wood** is cut via axe.

=> Ans - (B)

Instructions

In the following question, select the related letters from the given alternatives.

Question 53

PQRS : QSUW : : ABCD : ?

A BCDE

B BDHF

C BDGI

D BDFH

Answer: D

Explanation:
Expression = PQRS : QSUW : : ABCD : ?

The pattern followed is :

P	Q	R	S
(+1)	(+2)	(+3)	(+4)
Q	S	U	W

Similarly, for ABCD : **BDFH**

A	B	C	D
(+1)	(+2)	(+3)	(+4)
B	D	F	H

=> Ans - (D)

Question 54

REKM : UHNP : : PKDL : ?

A SNGO

B SGNO

C SNOG

D MHAG

Answer: A

Explanation:
Expression = REKM : UHNP : : PKDL : ?

The pattern followed is :

R	E	K	M
(+3)	(+3)	(+3)	(+3)
U	H	N	P

Similarly, for PKDL : **SNGO**

P	K	D	L
(+3)	(+3)	(+3)	(+3)
S	N	G	O

=> Ans - (A)

Instructions

In the following question, select the related number from the given alternatives.

Question 55

5 : 26 : : 8 : ?

A 63

B 64

C 65

D 72

Answer: C

Explanation:
Expression = 5 : 26 : : 8 : ?

The pattern followed is = $n : n^2 + 1$

Eg :- $(5)^2 + 1 = 26$

Similarly, $(8)^2 + 1 = 65$

=> Ans - (C)

Question 56

5 : 125 : : 11 : ?

A 1231

B 1331

C 1441

D 1551

Answer: B

Explanation:
Expression = 5 : 125 : : 11 : ?

The pattern followed is = $n : n^3$

Eg :- $(5)^3 = 125$

Similarly, $(11)^3 = 1331$

=> Ans - (B)

Instructions
For the following questions answer them individually

Question 57

In the following question, select the odd word from the given alternatives.

A Almonds

B Cashewnut

C Walnut

D Potato

Answer: D

Explanation:
Almonds, cashewnut and walnut are dry fruits, while **potato** is a vegetable, hence it is the odd one.

=> Ans - (D)

Question 58

In the following question, select the odd word pair from the given alternatives.

A Time : Seconds

B Km/hr : Speed

C Electric Current : Ampere

D Temperature : Kelvin

Answer: B

Explanation:
Second is the S.I. unit of first, seconds is the unit of time, ampere of electric current and kelvin is the unit of Temperature, but **Km/hr :**

Speed is written in reverse order, hence it is the odd one.

=> Ans - (B)

Instructions

In the following question, select the odd letters from the given alternatives.

Question 59

A BDGK

B XZCG

C TVYB

D NPSW

Answer: C

Explanation:
(A) : B (+2) = D (+3) = G (+4) = K

(B) : X (+2) = Z (+3) = C (+4) = G

(C) : T (+2) = V (+3) = Y (**+3**) = B

(D) : N (+2) = P (+3) = S (+4) = W

=> Ans - (C)

Question 60

A RS

B VW

C CD

D TV

Answer: D

Explanation:
Apart from **TV**, all other pairs are consecutive letters from English alphabetical series.

=> Ans - (D)

Instructions
For the following questions answer them individually

Question 61

In the following question, select the odd number from the given alternatives.

A 347

B 124

C 782

D 479

Answer: C

Explanation:

(A) : 347 ; $3 + 7 = 10 - 4 = 6$

(B) : 124 ; $1 + 4 = 5 - 2 = 3$

(C) : 782 ; $7 + 2 = 9 - 8 = 1$

(D) : 479 ; $4 + 9 = 13 - 7 = 6$

Except the third option, rest all are divisible by 3.

=> Ans - (C)

Question 62

In the following question, select the odd number pair from the given alternatives.

A 41 - 43

B 61 - 67

C 71 - 73

D 83 - 97

Answer: D

Explanation:
Apart from the last option, rest all are consecutive pairs of prime numbers, but there is one prime number between 83 and 97, i.e. 89, hence it is the odd one.

=> Ans - (D)

Instructions

Arrange the given words in the sequence in which they occur in the dictionary.

Question 63

1. Brain
2. Brand
3. Beep
4. Boxer
5. Boxed

A 35412

B 45312

C 34512

D 43512

Answer: A

Explanation:
As per the order of dictionary,

= Beep -> Boxed -> Boxer -> Brain -> Brand

$\equiv$ 35412

=> Ans - (A)

Question 64

1. Wrong
2. Write
3. West
4. Wind
5. Walk

A 53412

B 53421

C 43512

D 54312

Answer: B

Explanation:
As per the order of dictionary,

= Walk -> West -> Wind -> Write -> Wrong

≡ 53421

=> Ans - (B)

Instructions

A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.

Question 65

A, D, G, J, ?

A N

B O

C M

D L

Answer: C

Explanation:
The pattern followed is :

A (+3 letters) = D (+3 letters) = G (+3 letters) = J (+3 letters) = **M**

=> Ans - (C)

Question 66

AB10, DF101, GJ290, ?

A DE80

B JM580

C JN577

D JN359

Answer: C

Explanation:
The pattern followed in each letter of the terms is :

1st letter : A (+3) = D (+3) = G (+3) = J

2nd letter : B (+4) = F (+4) = J (+4) = N

Number : A(1) and B(2) $\equiv (1+2)^2+1 = 9+1 = 10$

DF ; $(4+6)^2+1 = 101$

GJ ; $(7+10)^2+1 = 290$

Similarly, JN ; $(10+14)^2+1 = 577$

Thus, missing term = **JN577**

=> Ans - (C)

Instructions

In the following question, select the missing number from the given series.

Question 67

1, 4, 13, 40, 121, ?

A 284

B 286

C 364

D 396

Answer: C

Explanation:
Numbers of the form 3^n are added, where n is natural number.

$1+(3)^1$ = 4

$4+(3)^2$ = 13

$13+(3)^3$ = 40

$40+(3)^4$ = 121

$121+(3)^5$ = **364**

=> Ans - (C)

Question 68

84, 42, 44, 22, 24, 12, ?

A 20

B 14

C 24

D 28

Answer: B

Explanation:
The numbers are alternatively divided and added by '2'

$84 \div 2$ = 42

$42+2$ = 44

$44 \div 2 = 22$

$22 + 2 = 24$

$24 \div 2 = 12$

$12 + 2 =$ **14**

=> Ans - (B)

Instructions
For the following questions answer them individually

Question 69

Amit's present age is 5/4 of his age at time of his sister's marriage. If his sister's marriage happened 5 years ago and his father's age was twice of Amit's age at that time, then what is his father's present age (in years)?

A 55

B 45

C 50

D 40

Answer: B

Explanation:
Let Amit's age 5 years ago (at his sister's marriage) = $4x$ years

Thus, father's age at that time = $2 \times 4x = 8x$ years

=> Amit's present age = $\frac{5}{4} \times 4x = 5x$ years

Also, present age = $4x + 5$

Hence, => $5x = 4x + 5$

=> $5x - 4x = x = 5$

$\therefore$ His father's present age = $8(5) + 5 = 45$ years

=> Ans - (B)

Question 70

Six games are kept one on top of the other. Uno is just above Snakes & Ladders. The Monopoly is between Ludo and Chess. Carrom is between Uno and Ludo. Which game is between the Carrom and Monopoly games?

A Uno

B Chess

C Carrom

D Ludo

Answer: D

Explanation:
Uno is just above Snakes & Ladders and Carrom is between Uno and Ludo, => Carrom is just below Ludo and just above Uno.

The Monopoly is between Ludo and Chess, => Monopoly is just above Ludo and Chess is at the top.

Chess
Monopoly
Ludo
Carrom
Unb
Snakes & Ladders

Thus, **Ludo** is between the Carrom and Monopoly games.

=> Ans - (D)

Question 71

Present age of a father is 3 times that of his son. After 10 years the son's age will be 5 times of Raman's present age. If Raman celebrated his third birthday 2 years ago, then what is the present age (in years) of father?

A 45

B 40

C 36

D 39

Answer: A

Explanation:
Raman celebrated his third birthday 2 years ago, => Raman's present age = 5 years

Son's age after 10 years = $5 \times 5 = 25$ years

=> Son's present age = 15 years

=> Father's present age = $3 \times 15 = 45$ years

=> Ans - (A)

Instructions

In the following question, select the word which cannot be formed using the letters of the given word.

Question 72

Precipitation

A Reaction

B Patient

C Reacts

D Petition

Answer: C

Explanation:
The word PRECIPITATION does not contain any 'S', thus the term **Reacts** cannot be formed.

=> Ans - (C)

Question 73

Imprisonment

A Prison

B Sonnet

C Impression

D Moment

Answer: C

Explanation:
The word IMPRISONMENT does not contain two S's, thus the term **Impression** cannot be formed.

=> Ans - (C)

Instructions
For the following questions answer them individually

Question 74

In a certain code language, "BALL" is written as "27" and "CANE" is written as "23". How is "YELL" written in that code language?

A 50

B 39

C 54

D 61

Answer: C

Explanation:
The sum of the numbers corresponding to the respective alphabets.

BALL ; $2 + 1 + 12 + 12 = 27$

CANE ; $3 + 1 + 14 + 5 = 23$

YELL ; $25 + 5 + 12 + 12 = 54$

=> Ans - (C)

Question 75

In a certain code language, "RENTED" is written as "718314" and "SCARF" is written as "92576". How is "CARTED" written in that code language?

A 257314

B 962514

C 237614

D 759613

Answer: A

Explanation:
Codes for each letter is given :

C -> 2
A -> 5
R -> 7
T -> 3
E -> 1
D -> 4

Thus, CARTED : **257314**

=> Ans - (A)

Question 76

In the following question, by using which mathematical operators will the expression become correct?
7 ? 4 ? 5 ? 165 ? 5

A ×, +, = and ÷

B ×, ×, = and +

C ×, ÷, = and ÷

D +, +, ÷ and =

Answer: A

Explanation:
Expression : 7 ? 4 ? 5 ? 165 ? 5

(A) : ×, +, = and ÷

$\equiv 7 \times 4 + 5 = 165 \div 5$

L.H.S. = $(7 \times 4) + 5 = 33$

R.H.S. = $\frac{165}{5} = 33$

Thus, L.H.S. = R.H.S.

=> Ans - (A)

Question 77

In the following question, correct the equation by interchanging two signs.
24 × 8 ÷ 9 + 9 - 10 = 26

A ÷ and -

B ÷ and ×

C × and -

D × and +

Answer: B

Explanation:
Expression : 24 × 8 ÷ 9 + 9 - 10 = 26

(A) : ÷ and -

L.H.S. = $24 \times 8 - 9 + 9 \div 10$

= $192 - 9 + 0.9 = 183.9 \neq$ R.H.S.

(B) : ÷ and ×

L.H.S. = $24 \div 8 \times 9 + 9 - 10$

= $(3 \times 9) - 1 = 26 =$ R.H.S.

=> Ans - (B)

Question 78

If 21 (49) 14 and 159 (169) 146, then what is the value of 'A' in 56 (A) 44?

A 144

B 121

C 225

D 256

Answer: A

Explanation:
The number in the middle is the square of the difference of the remaining two numbers.

Eg :- $(21-14)^2 = (7)^2 = 49$

and $(159-146)^2 = (13)^2 = 169$

Similarly, $(56-44)^2 = (12)^2 = 144$

=> Ans - (A)

Question 79

If 2^3 # 4^3 @ 3^3 = 45 and 3^3 # 5^3 @ 4^3 = 88, then 4^3 # 2^3 @ 1^3 = ?

A 48

B 71

C 56

D 65

Answer: B

Explanation:
If we replace # with '+' and @ with '-', then we get the desired result.

Eg :- $[(2)^3 + (4)^3] - (3)^3 = (8 + 64 - 27) = 45$

and $[(3)^3 + (5)^3] - (4)^3 = (27 + 125 - 64) = 88$

Similarly, $[(4)^3 + (2)^3] - (1)^3 = (8 + 64 - 1) = 71$

=> Ans - (B)

Question 80

In the following question, select the number which can be placed at the sign of question mark (?) from the given alternatives.

2	7	6
4	1	4
3	2	3
5	4	?

A 1

B 2

C 3

D 4

Answer: A

Question 81

In the following question, select the number which can be placed at the sign of question mark (?) from the given alternatives.

2	4	6	26
5	3	1	35
2	3	?	23

A 7

B 8

C 9

D 10

Answer: D

Explanation:
In each row, the sum of squares of first two numbers and the third number is equal to the last number.

Eg :- $(2)^2 + (4)^2 + 6 = (4 + 16 + 6) = 26$

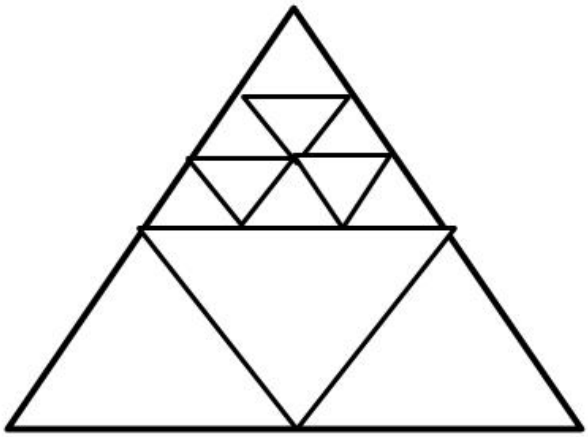
and $(5)^2 + (3)^2 + 1 = (25 + 9 + 1) = 35$

Similarly, $(2)^2 + (3)^2 + x = 23$

=> $x = 23 - 4 - 9 = 10$

=> Ans - (D)

Question 82



How many triangles are there in the given figure ?

A 17

B 15

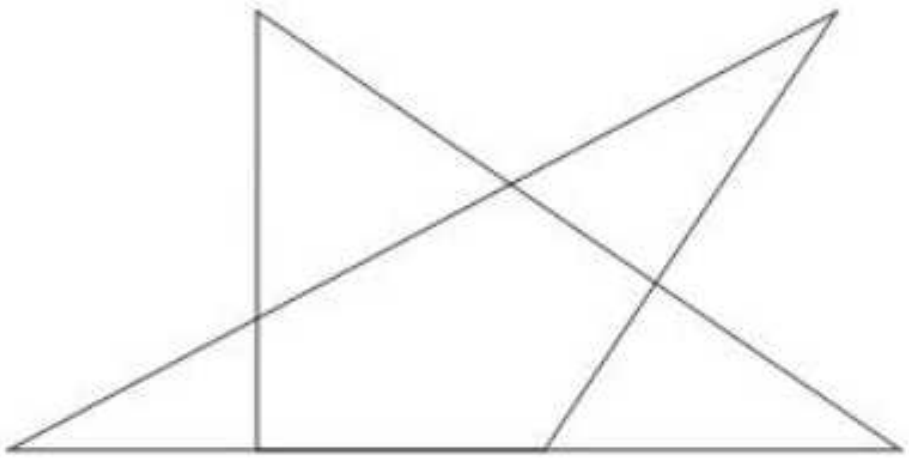
C 30

D 19

Answer: B

Question 83

How many triangles are there in the given figure ?



A 6

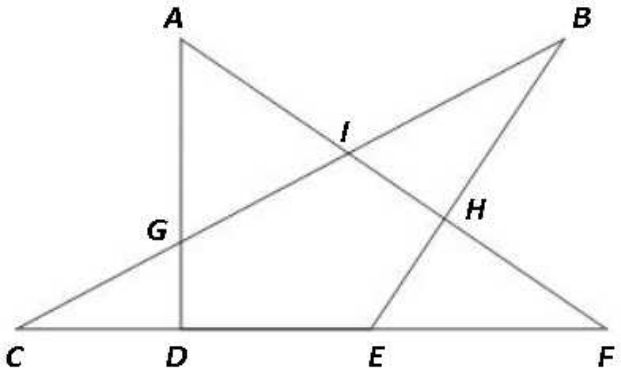
B 7

C 8

D 10

Answer: B

Explanation:



Small triangles = AGI, CGD, BIH, HEF

Big triangles = ADF, BCE, CIF

Thus, total triangles = **7**

=> Ans - (B)

Instructions

In each of the following question below are given some statements followed by some conclusions. Taking the given statements to be true even if they seem to be at variance from commonly known facts, read all the conclusions and then decide which of the given conclusion logically follows the given statements.

Question 84

Statements:
I. All boys are smart.
II. All smart are thin.
Conclusions:
I. All boys are thin.
II. All smart are boys.

A Only conclusion (I) follows

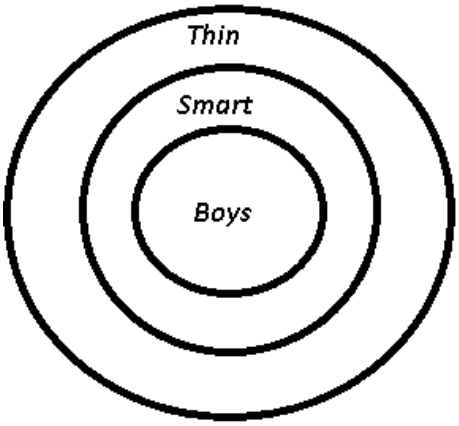
B Only conclusion (II) follows

C Both conclusion follow

D Neither conclusion (I) nor conclusion (II) follows

Answer: A

Explanation:
The venn diagram for above statements is :



Conclusions:
I. All boys are thin = true
II. All smart are boys = false

Thus, only conclusion (I) follows.

=> Ans - (A)

Question 85

Statements:
I. All cups are pencils.
II. Some pencils are pens.
Conclusions:
I. Some pencils are cups.
II. No pencil are cups.
III. Some cups are pens.

A Only conclusion (I) follows

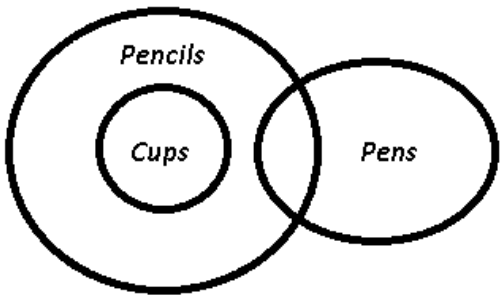
B Only conclusion (III) follows

C Only conclusion (I) and (II) follow

D Only conclusion (II) and (III) follow

Answer: A

Explanation:
The venn diagram for above statements is :



Conclusions:
I. Some pencils are cups = true
II. No pencil are cups = false
III. Some cups are pens = false

Thus, only conclusion (I) follows.

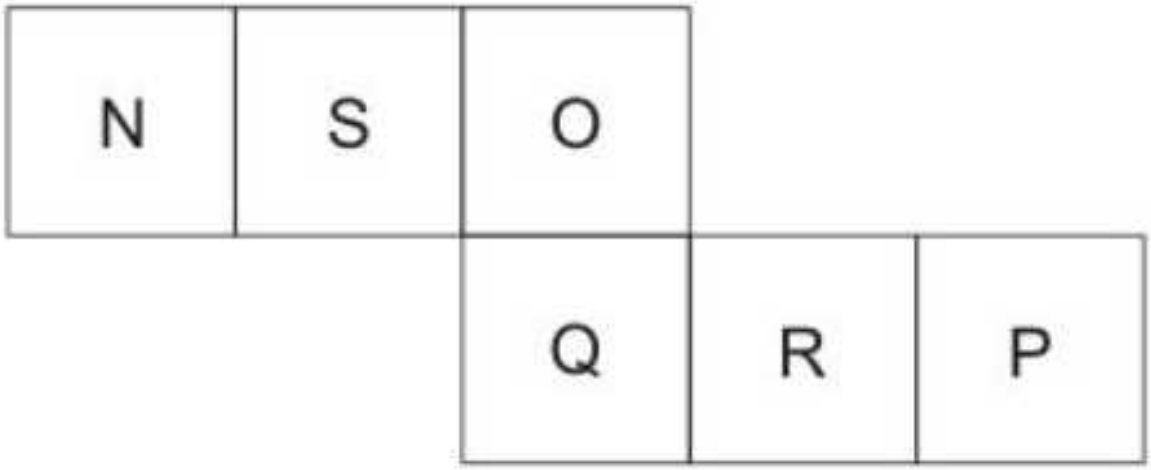
=> Ans - (A)

Instructions

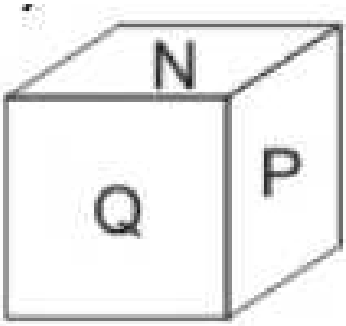
For the following questions answer them individually

Question 86

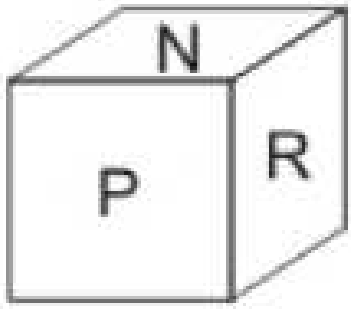
From the given options, which answer figure can be formed by folding the figure given in the question ?



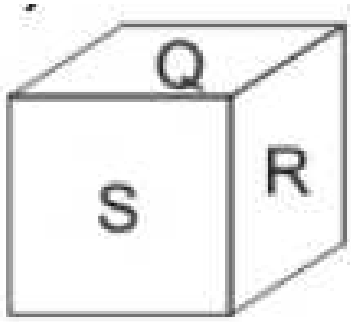
A



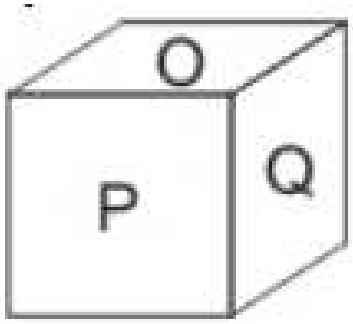
B



C



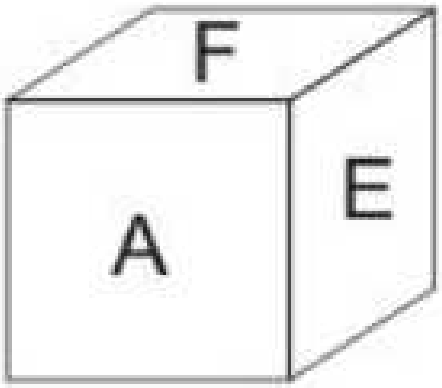
D

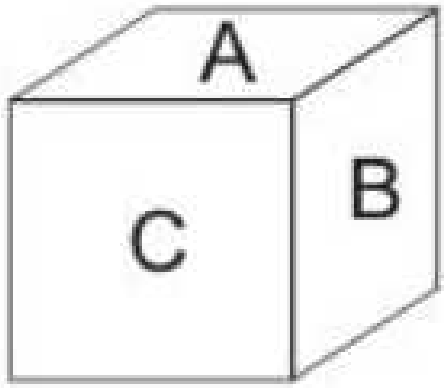


Answer: B

Question 87

Two position of a cube are shown below. What will come opposite to face containing 'B'?





A C

B E

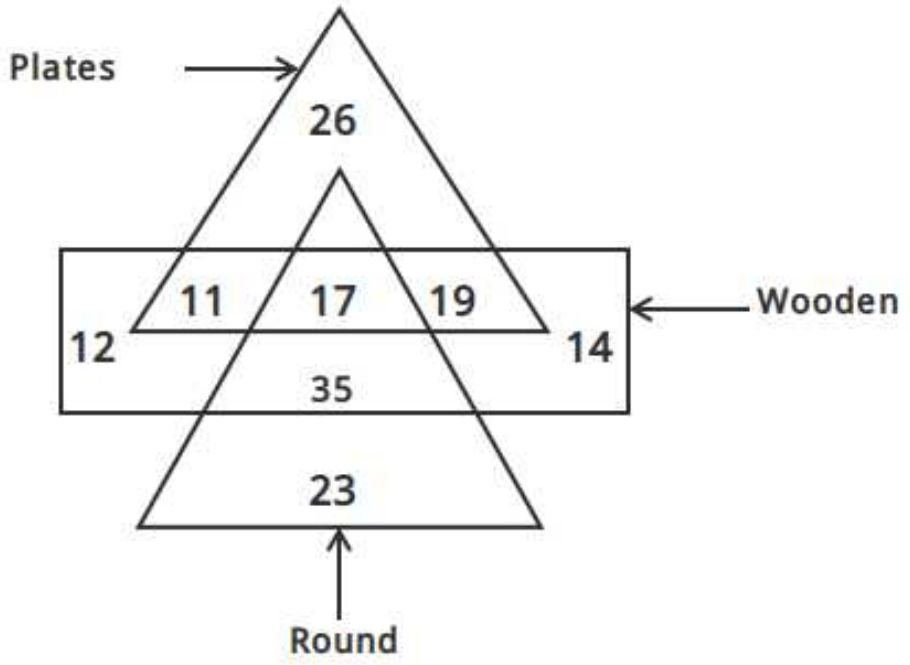
C F

D A

Answer: C

Question 88

In the given figure, how many wooden plates are there ?



A 30

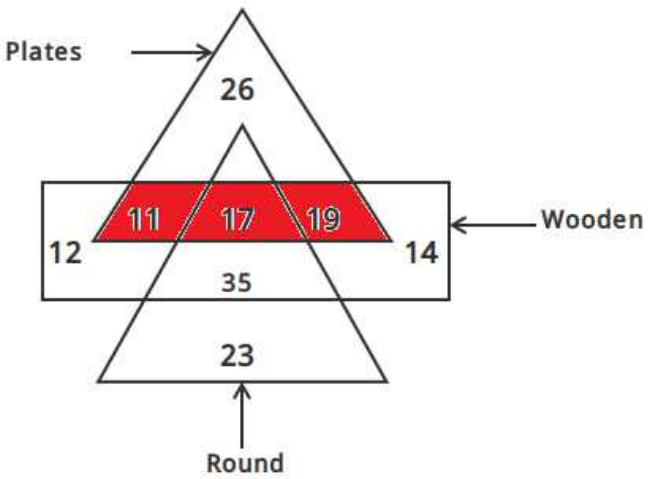
B 47

C 36

D 28

Answer: B

Explanation:

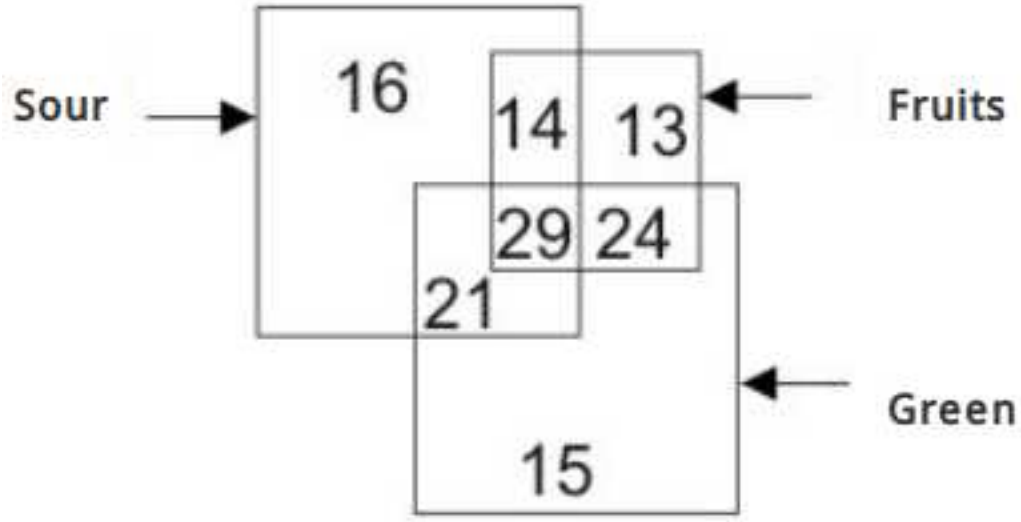


Number of wooden plates = $11 + 17 + 19 = 47$

=> Ans - (B)

Question 89

In the given figure, how many sour fruits are there ?



A 27

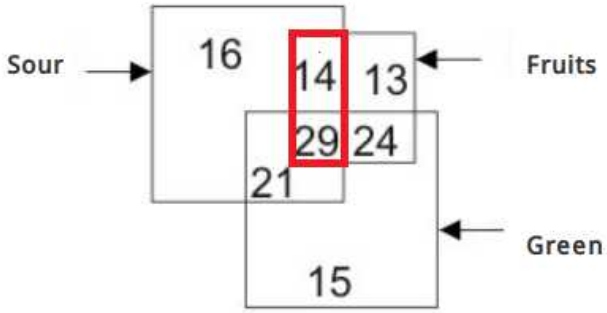
B 53

C 50

D 43

Answer: D

Explanation:

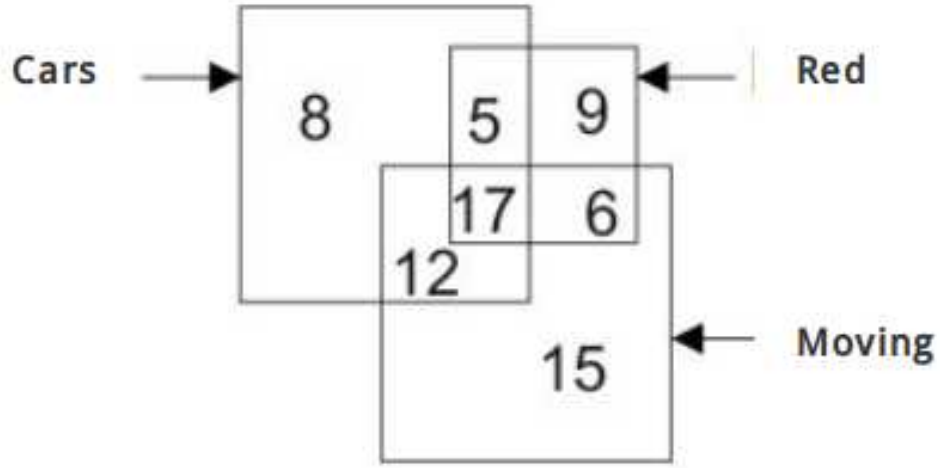


Number of sour fruits = $14 + 29 = 43$

=> Ans - (D)

Question 90

In the given figure, how many moving cars are not red ?



A 22

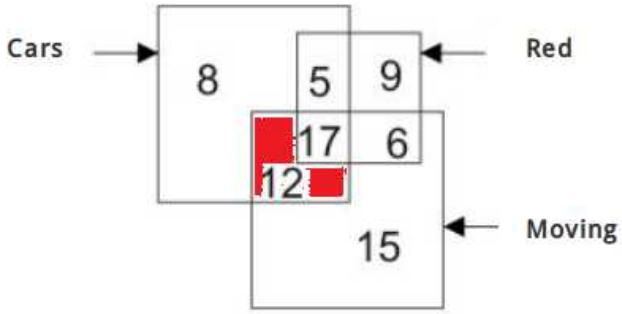
B 17

C 12

D 29

Answer: C

Explanation:

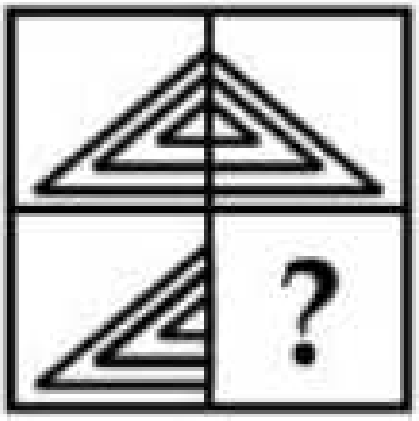


Moving cars which are not red = **12**

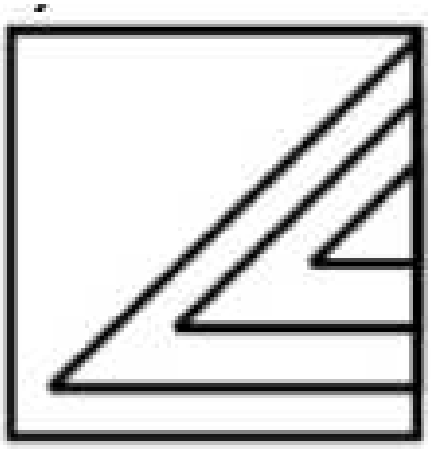
=> Ans - (C)

Question 91

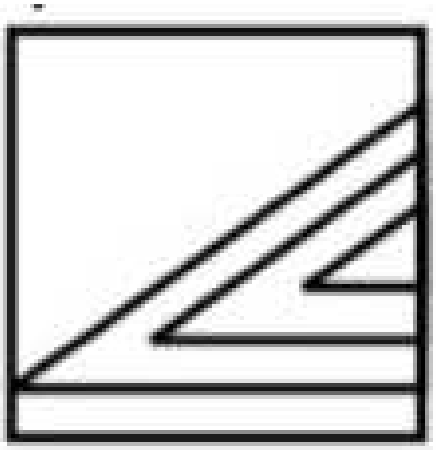
Which answer figure will complete the pattern in the question figure ?



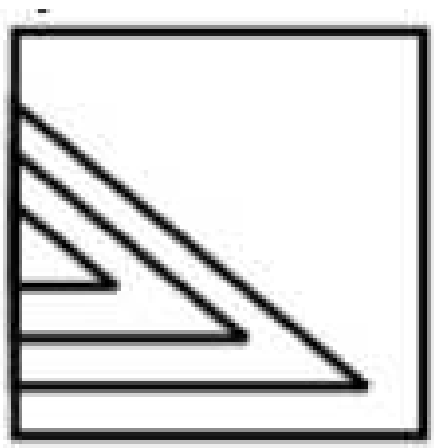
A



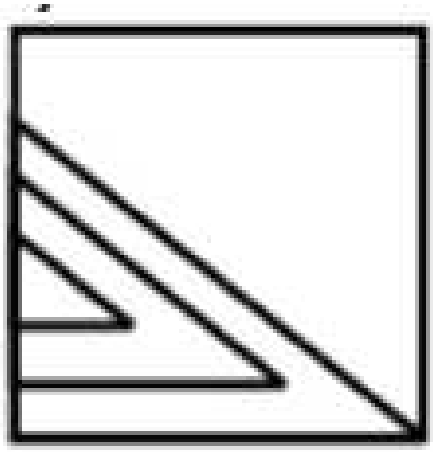
B



C



D



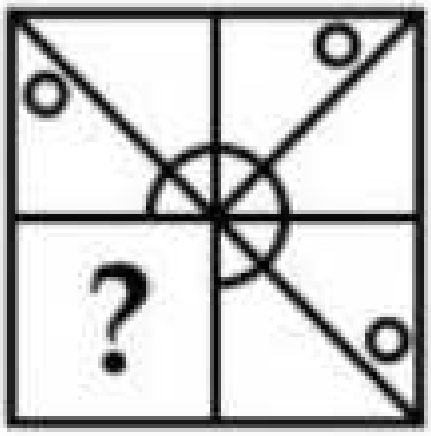
Answer: C

Explanation:
The question figure will be completed by :

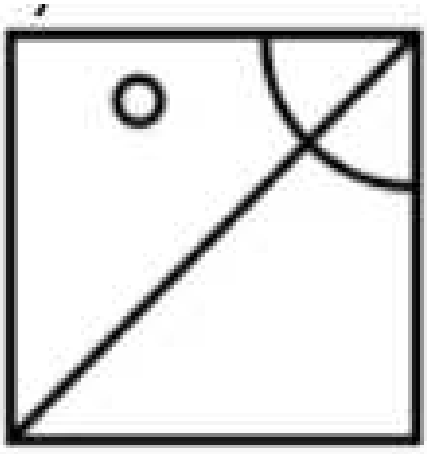
=> Ans - (C)

Question 92

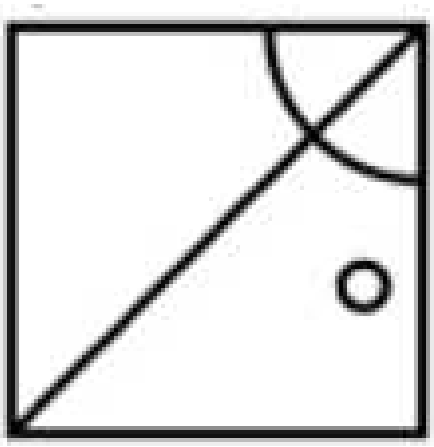
Which answer figure will complete the pattern in the question figure ?



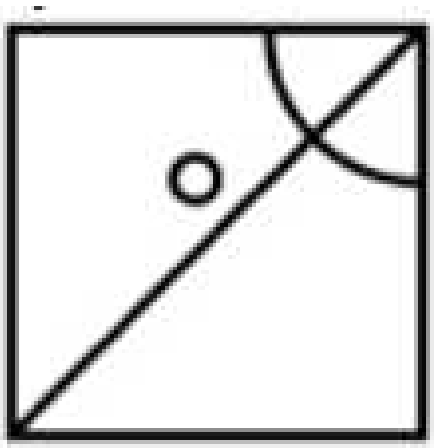
A



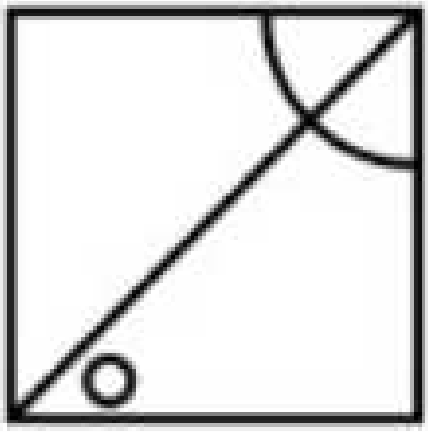
B



C



D



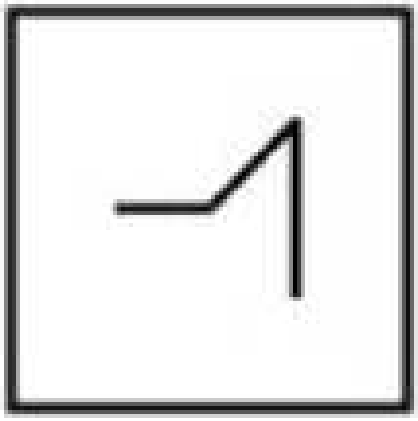
Answer: D

Explanation:
The question figure will be completed by :

=> Ans - (D)

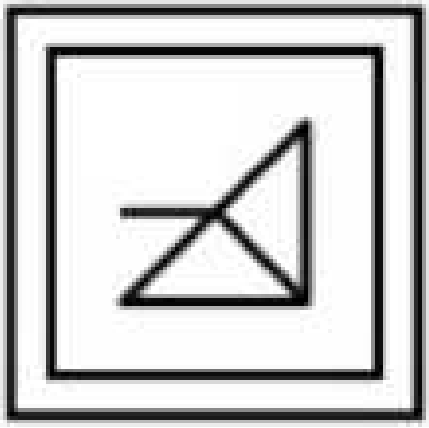
Question 93

From the given answer figures, select the one in which the question figure is hidden/embedded.

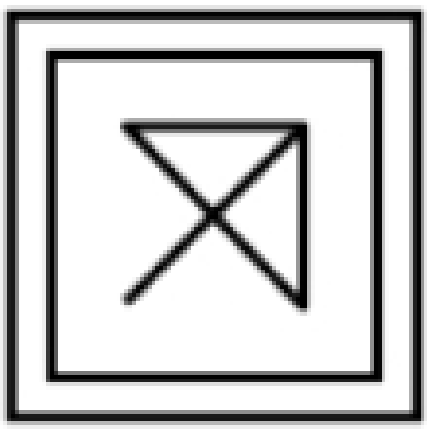


A

B



C



D

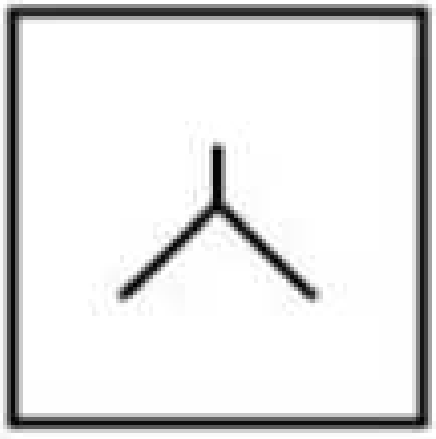
Answer: B

Explanation:
The above figure is represented by 'red' color and is hidden in :

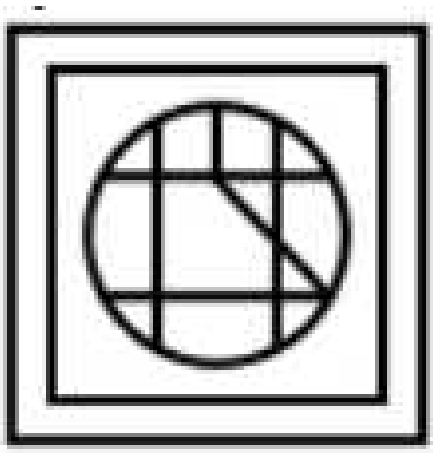
=> Ans - (B)

Question 94

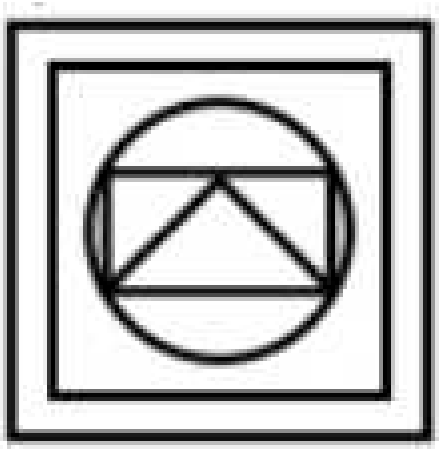
From the given answer figures, select the one in which the question figure is hidden/embedded.



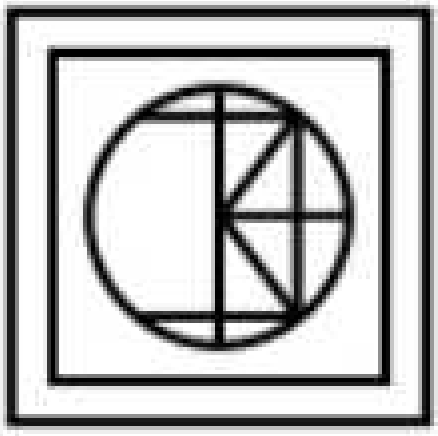
A



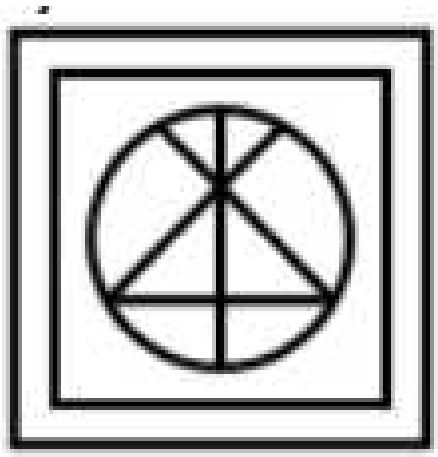
B



C



D



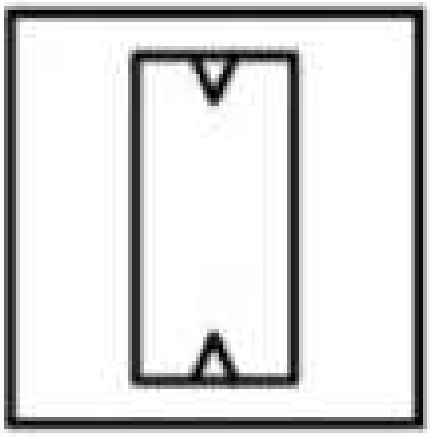
Answer: D

Explanation:
The above figure is represented by 'red' color and is hidden in :

=> Ans - (D)

Question 95

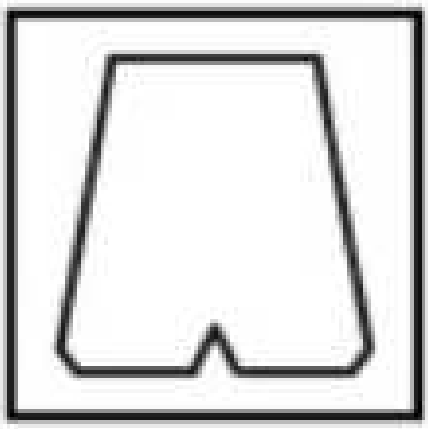
A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened ?



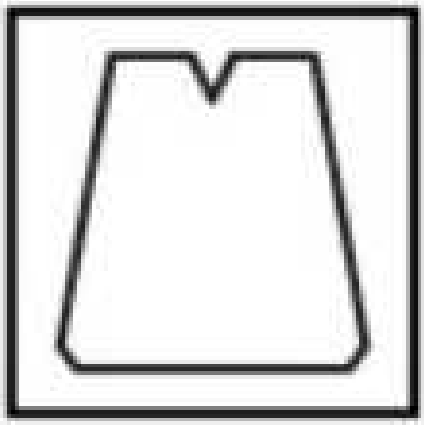
A

B

C



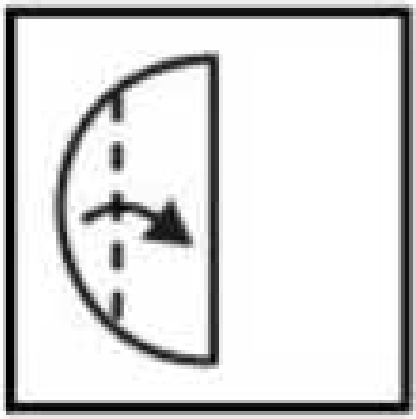
D

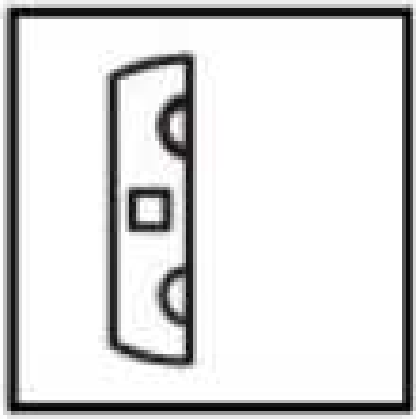


Answer: B

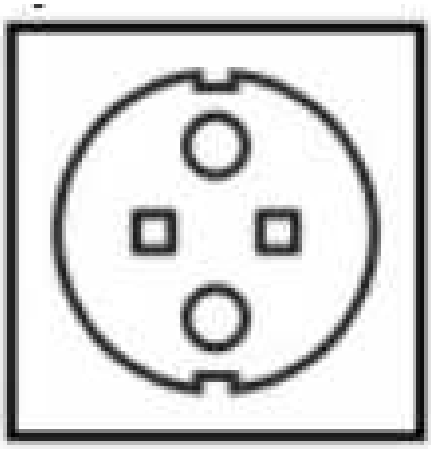
Question 96

A piece of paper is folded ans punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened ?

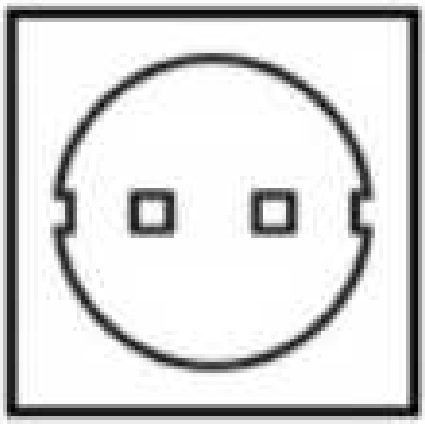




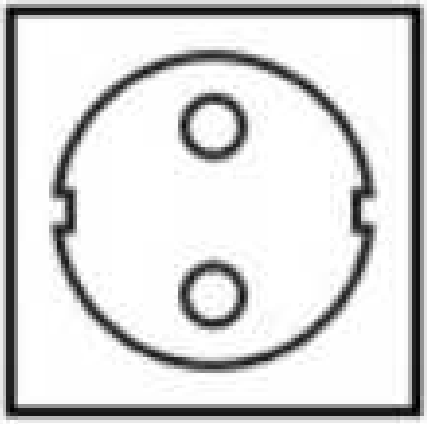
A



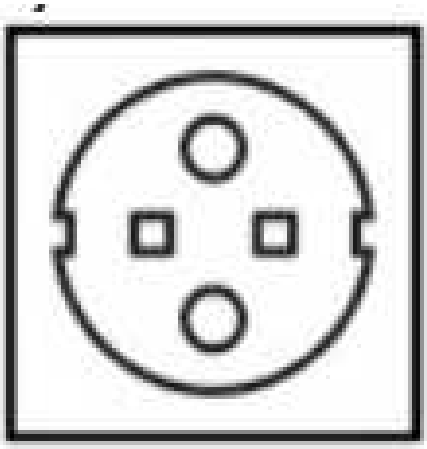
B



C



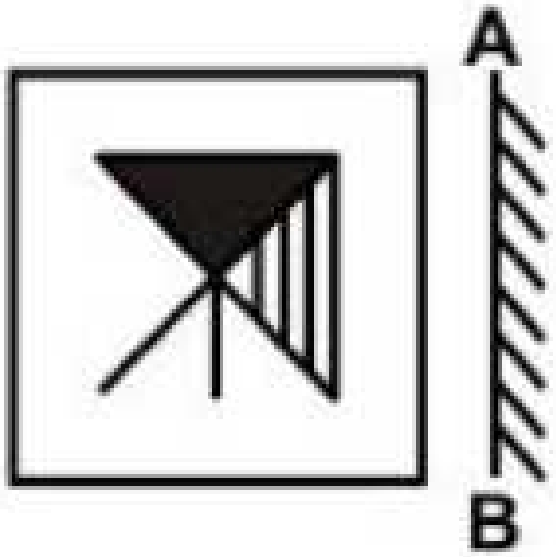
D



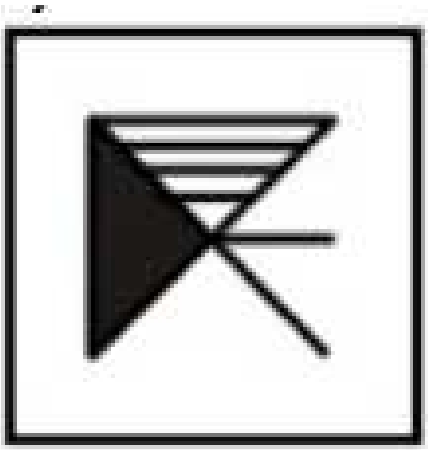
Answer: D

Question 97

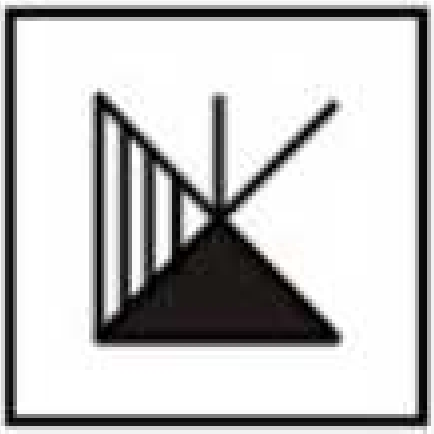
If a mirror is placed on the line AB, then which of the answer figures is the right image of the given figure ?



A

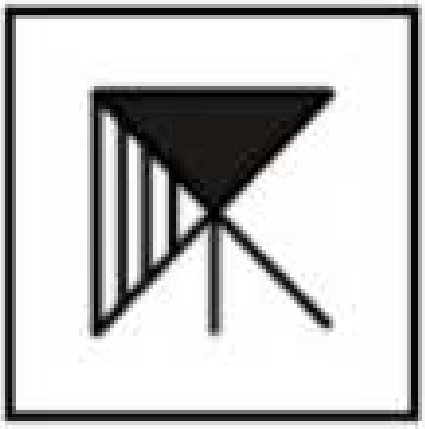


B



C

D



Answer: D

Explanation:
A vertical mirror is placed, so the object on the left will appear right in reverse position and vice-versa.

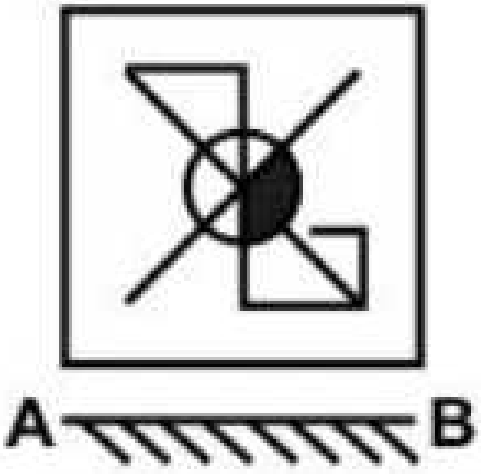
So the triangle at right side (with vertical lines) will be reversed and now will appear at left side, thus the first and third options will be eliminated.

Also, in the question figure, the black triangle at the top will still stay at the top pointing downwards, hence fourth option is the right image.

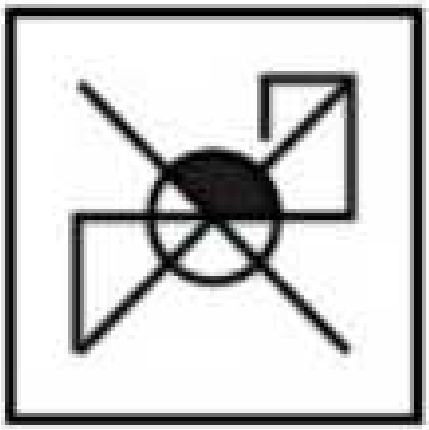
=> Ans - (D)

Question 98

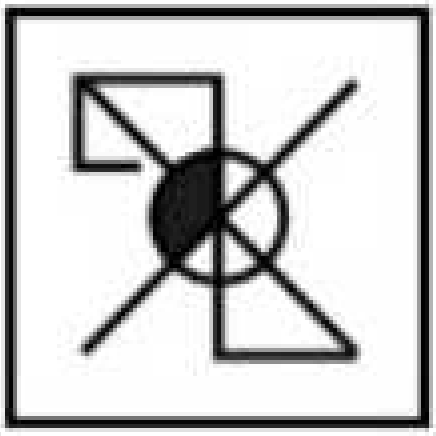
If a mirror is placed on the line AB, then which of the answer figures is the right image of the given figure ?



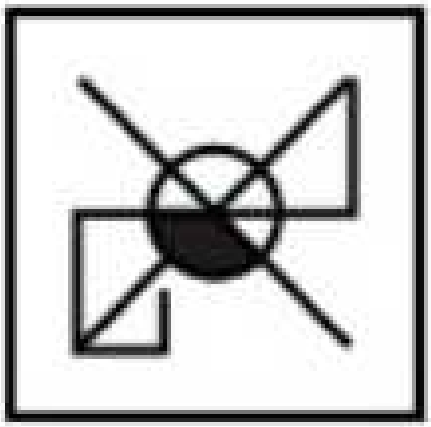
A



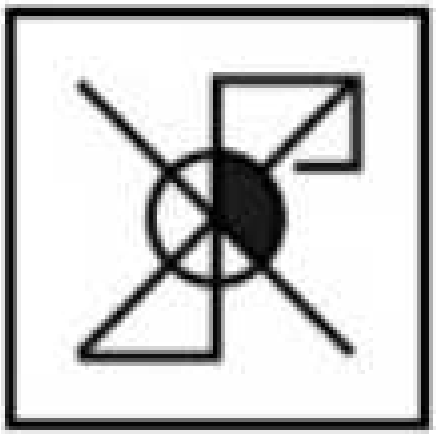
B



C



D



Answer: D

Explanation:
A horizontal mirror is placed, so the object on the top will appear at the bottom in reverse position and vice-versa.

So the triangle at top left will now appear at bottom left, thus the middle two options will be eliminated.

Also, in the question figure, the black part inside the circle will stay as it is on the right side, hence fourth option is the right image.

=> Ans - (D)

Question 99

A word is represented by only set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabets as shown in the given two matrices. The column and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row next by its column, for example, 'S' can be represented by 00, 24 etc., and 'N' can be represented by 66, 97, etc., Similarly, you have to identify the set for the word "SOIL".

Matrix-I

	0	1	2	3	4
0	S	Y	E	Q	O
1	Q	O	S	Y	E
2	Y	E	Q	O	S
3	O	S	Y	E	Q
4	E	Q	O	S	Y

Matrix-II

	5	6	7	8	9
5	T	I	L	A	N
6	A	N	T	I	L
7	I	L	A	N	T
8	N	T	I	L	A
9	L	A	N	T	I

A 12, 42, 57, 95

B 00, 30, 68, 58

C 43, 04, 87, 69

D 24, 11, 98, 76

Answer: C

Explanation:
(A) : 12, 42, 57, 95 : SOLL

(B) : 00, 30, 68, 58 : SOIA

(C) : 43, 04, 87, 69 : **SOIL**

(D) : 24, 11, 98, 76 : SOTL

=> Ans - (C)

Question 100

A word is represented by only set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabets as shown in the given two matrices. The column and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row next by its column, for example, 'A' can be represented by 04, 22 etc., and 'O' can be represented by 59, 98, etc., Similarly, you have to identify the set for the word "TRUMP".

Matrix-I

	0	1	2	3	4
0	S	R	E	T	A
1	R	A	S	E	T
2	T	E	A	R	S
3	A	T	R	S	E
4	E	S	T	A	R

Matrix-II

	5	6	7	8	9
5	M	P	U	N	O
6	U	N	O	M	P
7	O	M	P	U	N
8	N	O	M	P	U
9	P	U	N	O	M

A 20, 01, 57, 68, 58

B 42, 44, 89, 99, 88

C 03, 23, 96, 67, 69

D 31, 10, 65, 76, 79

Answer: B

Explanation:
(A) : 20, 01, 57, 68, 58 : TRUMN

(B) : 42, 44, 89, 99, 88 : **TRUMP**

(C) : 03, 23, 96, 67, 69 : TRUOP

(D) : 31, 10, 65, 76, 79 : TRUMN

=> Ans - (B)

General Awareness

Instructions
For the following questions answer them individually

Question 101

Which one of the following is true about mixed economy?

A Existence of both developed and underdeveloped sectors

B Equal importance to agriculture and industry

C Existence of both public and private sectors in national economy

D Equal partnership of central and states in economic planning and development

Answer: C

Question 102

Which among the following is the most appropriate measure of an economic growth of a country?

A Net Domestic Product

B Gross Domestic Product

C Per Capita Income

D Net National Product

Answer: C

Question 103

Green revolution was introduced in which Five Year Plan of India?

A Seventh

B Fifth

C Second

D Third

Answer: D

Question 104

Who among the following is the ex-officio chairman of the NITI Aayog in India?

A President

B Prime Minister

C Vice President

D Finance Minister

Answer: B

Question 105

How many Miniratna companies are there in Category - I?

A 55

B 56

C 59

D 47

Answer: C

Question 106

Who is the father of 'Utilitarian School of Thought'?

A Hegel

B Bentham

C James Mill

D Locke

Answer: B

Question 107

Which of the following is not a good argument in favour of democracy?
I. Democracy enhances the dignity of citizens
II. Democracies are more prosperous than others
III. Democracies resolve conflicts in a better way

A I and II

B Only III

C Only II

D II and III

Answer: C

Question 108

What is a voluntary union of sovereign and independent states called?

A Federation

B Unitary state

C Confederation

D None of these

Answer: C

Question 109

What is the minimum age required to become a member of Lok Sabha?

A Twenty years

B Thirty years

C Twenty two years

D Twenty five years

Answer: D

Question 110

Who declares the National Emergency in India?

A President

B Prime Minister

C Central Council of Ministers

D Supreme Court of India

Answer: A

Question 111

Indian Constitution contains how many schedules?

A Ten Schedules

B Twelve Schedules

C Fourteen Schedules

D Eight Schedules

Answer: B

Question 112

Which of the following articles relates to 'abolition of titles'?

A Article 51

B Article 50

C Article 18

D Article 32

Answer: C

Question 113

How many members of Lok Sabha are nominated by the President?

A Two members

B Three members

C Eleven members

D Twelve members

Answer: A

Question 114

Which of the following pair is INCORRECT?

A Hiuen Tsang - China

B Ibn Battuta - Morocco

C Magasthenes - Greece

D Fa-Hien - Malaysia

Answer: D

Question 115

Who among the following started Bengal weekly newspaper 'Samvad Kaumudi' in year 1821?

A Raja Ram Mohan Roy

B Aurobindo Ghosh

C Ramkrishna Paramhans

D Debendranath Tagore

Answer: A

Question 116

The Vijaynagar ruler Krishna Dev Raya's work 'Amuktamalayada' was written in which language?

A Tamil

B Malayalam

C Kanada

D Telugu

Answer: D

Question 117

Idol of dancing girl (Bronze) is found in which of the following civilzation?

A Mesopotamian Civilization

B Indus Valley Civilization

C Persian Civilization

D Egyptian Civilization

Answer: B

Question 118

Who is also known as 'Light of Asia'?

A Gautam Buddha

B Jesus Christ

C Prophet Mohammad

D Swami Vivekanand

Answer: A

Question 119

What are the imaginary lines touching both the poles of earth called?

A Latitudes

B Longitudes

C Isobars

D Isotherms

Answer: B

Question 120

On which of the following date, summer solstice is observed in Northern Hemisphere?

A 21st June

B 5th August

C 18th July

D 19th December

Answer: A

Question 121

Which of the following pair is CORRECT?

A 49th parallel - United States of America and Canada

B 38th parallel - China and North Korea

C Durand Line - India and Afghanistan

D Radcliffe Line - India and Sri lanka

Answer: A

Question 122

Near coastal areas, temperature on land in night time gets reduced due to _____.

A Land breeze

B Sea breeze

C Both land and sea breeze

D Sparsely populated coasts

Answer: A

Question 123

Which of the following wind is also known as 'Snow Eater'?

A Mistral

B Chinook

C Loo

D Harmattan

Answer: B

Question 124

Turmeric is a modified _____.

A Stem

B Root

C Leaves

D Fruit

Answer: A

Question 125

Which of the following cell organelle is present in both plant and animal cell?

A Cell wall

B Lysosomes

C Chloroplasts

D Mitochondria

Answer: D

Question 126

What is the nature of cell membrane?

A Permeable

B Semi-permeable

C Non-permeable

D Freely permeable

Answer: B

Question 127

Which of the following is the longest bone in human body?

A Forearm bone

B Chest bone

C Femur bone

D Shoulder bone

Answer: C

Question 128

What is the main function of white blood cells (WBC's)?

A To transport oxygen

B To fight against infection

C Blood clotting

D To provide red colour to blood

Answer: B

Question 129

Arrangement of leaves in a plant is called as _____.

A Phyllotaxy

B Phototaxy

C Phytotaxy

D Lianataxy

Answer: A

Question 130

Law of Inertia is also known as _____.

A Newton's fist law of motion

B Newton's second law of motion

C Newton's third law of motion

D None of these

Answer: A

Question 131

Surface water of a lake is about to freeze. What will be the temperature (in 0C) of water at the bottom of the lake?

A 0

B -1

C 1

D 4

Answer: C

Question 132

By the use of photovoltaic cell while converting solar energy which of the following is produced?

A Light energy

B Electric energy

C Chemical energy

D Heat energy

Answer: B

Question 133

Hydraulic brakes used in automatic vehicles is direct virtual application of which law?

A Pascal's law

B Archemedes' principle

C Newton's law

D Boyle's law

Answer: A

Question 134

Which among the following is/are input devices?
I. Keyboard
II. Scanner
III. Joy-stick

A I and II

B II and III

C I and III

D All options are correct.

Answer: D

Question 135

Which among the following is a light sensitive device used for converting images to their digital form?

A Printer

B Monitor

C Scanner

D RAM

Answer: C

Question 136

Which of the following elements are commonly found in most fertilizers?

A Sodium, Potassium, Phosphorus

B Sodium, Potassium, Calcium

C Nitrogen, Potassium, Phosphorus

D Nitrogen, Potassium, Calcium

Answer: C

Question 137

Which of the following is used as moderator in atomic reactor?

A Sodium

B Uranium

C Graphite

D Boron

Answer: C

Question 138

'Oil of vitriol' is the common name of which of the following?

A Nitric Acid

B Carbonic Acid

C Acetic Acid

D Sulphuric Acid

Answer: D

Question 139

Which among the following acid is also known as 'Muriatic Acid'?

A Hydrochloric Acid

B Sulphuric Acid

C Carbonic Acid

D Nitric Acid

Answer: A

Question 140

What is a Vermicompost?

A Organic fertilizer

B Inorganic fertilizer

C Toxic Substance

D Type of soil

Answer: A

Question 141

Plants which can survive in very less water are called as _____.

A Halophytes

B Xerophytes

C Heliophytes

D Saprophytes

Answer: B

Question 142

Which among the following represents plateau phase in population?

A Birth rate and Death rate are equal

B Birth rate and death rate are not equal

C Birth rate is higher than death rate

D Death rate is more than birth rate

Answer: A

Question 143

Programme for capacity building of Elected Women Representatives (EWRs) of panchayats has been launched at _____.

A Nagaur, Rajasthan

B Ranchi, Jharkhand

C Patna, Bihar

D Lucknow, Uttar Pradesh

Answer: B

Question 144

Who invented computer?

A Alexander Fleming

B Charles Babbage

C Bill Gates

D Michael Faraday

Answer: B

Question 145

Which of the following pair is CORRECT?

A Snooker - Cue

B Golf - Pole

C Rugby - Bat

D Squash - Net

Answer: A

Question 146

Match the following.

	Festival		State
1	Onam	a	Maharashtra
2	Kuchipudi	b	Andhra Pradesh
3	Pongal	c	Tamil Nadu
4	Gudipadwa	d	Kerala

A 1-c, 2-a, 3-b, 4-d

B 1-d, 2-b, 3-c, 4-a

C 1-b, 2-a, 3-d, 4-c

D 1-d, 2-c, 3-d, 4-a

Answer: B

Question 147

Who among the following is not a recipient of Nobel Prize 2016 in the field of Chemistry?

A Jean - Pierre Sauvage

B Sir J. Fraser Stoddart

C Bernard L. Feringa

D John M. Kosterlitz

Answer: D

Question 148

'Life on my terms: from the grassroots to the corridors of power' is an autobiography of _____.

A P. Chidambaram

B Jaswant Singh

C Sharad Pawar

D L.K. Advani

Answer: C

Question 149

The 'One belt, One road' summit was held in which of the following cities?

A Shanghai

B Beijing

C Guangzhou

D Hangzhou

Answer: B

Question 150

Maitree Express' is an international train between India and _____.

A Pakistan

B Bhutan

C Bangladesh

D Nepal

Answer: C

English

Instructions

In the following question, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.

Question 151

The CEO has decided to visit all the (a:/ departments of the office tomorrow (b:/ evening to review of the situation. (c:/ No Error (d:

A 1

B 2

C 3

D 4

Answer: C

Question 152

Neha is a very good fashion (a:/ designer but her designs are not (b:/ easily accessible with the public. (c:/ No Error (d:

A 1

B 2

C 3

D 4

Answer: C

Question 153

Dr. APJ Abdul Kalam's life was a (a:/ sage of dedication in the (b:/ cause of educational reforms in India. (c:/ No Error (d:

A 1

B 2

C 3

D 4

Answer: B

Question 154

Ashish was listening (a:/ to a radio when (b:/ Sunita arrived. (c:/ No Error (d:

A 1

B 2

C 3

D 4

Answer: B

Question 155

When the professors are on strike (a:/ and a notice of this effect is pasted on the university gate (b:/ there is no sense to go there. (c:/ No Error
(d:

A 1

B 2

C 3

D 4

Answer: C

Instructions

In the following question, the sentence given with blank to be filled in with an appropriate word. Select the correct alternative out of the four and indicate it by selecting the appropriate option.

Question 156

_____ of the five persons will appear in the court.

A Any

B Neither

C Either

D Both

Answer: A

Question 157

_____ the child saw his parents, he became happy.

A Where

B Who

C When

D While

Answer: C

Question 158

Ruhika was married _____ Akshay.

A with

B to

C by

D off

Answer: B

Question 159

Neha's pay is _____ of her work.

A too highly

B high enough

C much high

D enough high

Answer: B

Question 160

Rahul can _____ the four candles in one breath.

A put out

B put down

C put up

D put away

Answer: A

Instructions

In the following question, out of the four alternatives, select the word similar in meaning to the word given.

Question 161

Imbecility

A dazzling

B foolishness

C desperate

D flattery

Answer: B

Question 162

Somnolent

A irritate

B provoke

C drowsy

D enrage

Answer: C

Question 163

Invidious

A mournful

B slowly

C indifferent

D hateful

Answer: D

Question 164

Haughty

A inborn

B fearful

C skillful

D arrogant

Answer: D

Question 165

Lethal

A stimulus

B fatal

C imaginary

D bliss

Answer: B

Instructions

In the following question, out of the four alternatives, select the word opposite in meaning to the word given.

Question 166

Festal

A unpopular

B solemn

C merry

D sharp

Answer: B

Question 167

Slender

A stout

B deceit

C short

D inadequate

Answer: A

Question 168

Tardy

A mild

B quick

C hard

D genuine

Answer: B

Question 169

Attenuate

A strong

B sweet

C fragrant

D difficult

Answer: A

Question 170

Extant

A forsake

B endorse

C destroyed

D recommend

Answer: C

Instructions

In the following question, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

Question 171

Lion's mouth

A Strict rules

B Harsh spoken

C Brave

D A dangerous situation

Answer: D

Question 172

A stiff-necked person

A Honest and open

B An obstinate person

C A source of quarrel

D Ordinary person

Answer: B

Question 173

Cross out

A Interrupt

B Summon up

C Eliminate

D Inflate

Answer: C

Question 174

Make away with

A To compensate

B To remove

C To find out

D To understand

Answer: B

Question 175

To put one out of countenance

A To put a difficulty in the way of progress

B To provoke quarrel

C To make one feel ashamed

D To deceive someone

Answer: C

Instructions

Improve the bracketed part of the sentence.

Question 176

Practically (every part) of the papaya tree is used by man.

A either part

B each one

C every one

D no improvement

Answer: D

Question 177

Kanika shall be grateful to you if you (are of help) her now.

A help

B shall help

C would help

D no improvement

Answer: A

Question 178

Shweta unnecessarily (picked up) a quarrel with Kanishk and left the party hurriedly.

A picked on

B picked

C has picked up

D no improvement

Answer: B

Question 179

Not a word (she spoke) to the unfortunate mother about it.

A did they speak

B they will speak

C they had spoken

D no improvement

Answer: A

Question 180

Shrey has got many friends because he has got (much money).

A a lot of money

B bags of money

C enough money

D no improvement

Answer: A

Instructions

In the following question, out of the four alternatives, select the alternative which is best substitute of the phrase.

Question 181

A state of mental weariness from lack of occupation

A hermit

B ennui

C heretic

D indict

Answer: B

Question 182

A dabbler in the art and literature

A rapacious

B bohemian

C dilettante

D emeritus

Answer: C

Question 183

Being able to pay one's debt

A dilettante

B credible

C delible

D solvent

Answer: D

Question 184

One who is subject to failure or to committing mistakes

A fallible

B hyperbole

C hermit

D incorrigible

Answer: A

Question 185

A short stay in a place

A excursion

B dotage

C sojourn

D knell

Answer: C

Instructions

In the following question, four words are given out of which one word is incorrectly spelt. Select the incorrectly spelt word.

Question 186

A carnivorus

B courageous

C compulsory

D conceive

Answer: A

Question 187

A spontaneity

B acquaintance

C appropriation

D liquifiable

Answer: D

Question 188

A bereavement

B palladium

C loathsome

D dysentry

Answer: D

Question 189

A apartheid

B exhorbitant

C mischievous

D benefited

Answer: B

Question 190

A repercussion

B obsolescing

C sillhoutte

D ludicrous

Answer: C

Instructions

In the following passage some of the words have been left out. Read the passage carefully and select the correct answer for the given blank out of the four alternatives.
Science is both a blessing and a _____. While it has given us many things which have made life better and _____, it has also given terrible instruments of _____. Science has discovered and invented many things to _____ pain and cure terrible diseases. These discoveries have enabled man to live a longer and _____ life.

Question 191

Science is both a blessing and a _____.

A gift

B curse

C compliment

D source

Answer: B

Question 192

Many things which have made life better and _____,

A terrible

B challenging

C happier

D sophisticated

Answer: C

Question 193

It has also given terrible instruments of _____.

A destruction

B happiness

C convenience

D nature

Answer: A

Question 194

Discovered and invented many things to _____ pain and cure

A aggravate

B alleviate

C nurture

D intensity

Answer: B

Question 195

Enabled man to live a longer and _____ life.

A tedious

B healthier

C productive

D bigger

Answer: B

Instructions

A passage is given with five questions following it. Read the passage carefully and select the best answer to each question out of the given four alternatives.
Corruption is not a new phenomenon in India. It has been prevalent in society since ancient times. History reveals that it was present even in the Mauryan period. Great scholar, Kautilya, mentions the pressure of forty types of corruption in his contemporary society. It was practised even in Mughal and Sultanate period. When the East India Company took control of the country, corruption reached new height. Corruption in India has become so common that people now are averse to thinking of public life with it. Corruption has been defined variously by scholars. But the simple meaning of it is that corruption implies perversion of morality, integrity, character or duty out of mercenary motives, i.e. bribery, without any regard to honour, right and justice. In other words, undue favour for any one for some monetary or other gains is corruption. Simultaneously, depriving the genuinely deserving from their right or privilege is also a corrupt practice. Shrinking from one's duty or dereliction of duty are also forms of corruption. Besides, thefts, wastage of public property constitute varieties of corruption. Dishonesty, exploitation, malpractices, scams and scandals are various manifestations of corruption.

Question 196

According to the passage, corruption is _____ .

A new phenomenon in India

B insignificant to Indian society

C prevalent since ancient times

D prevalent only in middle east countries

Answer: C

Question 197

Kautilya mentions the pressure of how many types of corruption in his contemporary society?

A 20

B 30

C 40

D 50

Answer: C

Question 198

Perversion of what is not mentioned in the passage?

A character

B attitude

C morality

D integrity

Answer: B

Question 199

According to the passage, what all are the manifestation of corruption?

A malpractices

B dishonesty

C scams and scandals

D All of these

Answer: D

Question 200

What people are averse of due to corruption in India?

A thinking of stardom

B thinking of public life

C thinking of monetary gains

D thinking of undue favours

Answer: B