CLASS ASSIGNMENT

UGC PAPER DEC – 2014

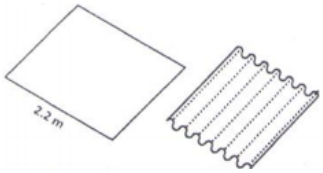
1. We define a function f(N)= sum of digits of N, expressed as decimal number. g f(1 3 7)=1+3+7=11. Evaluate $f(2^7 3^5 5^6)$

1. 10 2. 18 3. 28 4. 11

2. Every month the price of a particular commodity falls in this order:
1024, 640, 400, 250,…
What is the next value?

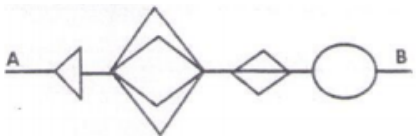
1. 156.25 2. Approximately 39 3. 64 4. 40

3. A 2.2 m wide rectangular steel plate is corrugated as shown in the diagram. Each corrugation is a semi-circle in cross section having a diameter of 7 cm. What will be the width of steel sheet after it is corrugated?



1. 1.4 m 2. 1.6 m 3. 0.7 m 4. 1.1 m

4. A mouse has to go from point A to B without retracing any part of the path, and never moving backwards. What is the total number of distinct paths that the mouse may take to go from A to B?



1. 11 2. 48 3. 72 4. 24

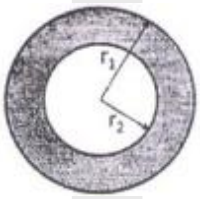
5. What is the next term in the following sequence?
7,11,13,17,19,23,29,…

1. 37 2. 35 3. 31 4. 33

6. If N,E and T are distinct positive integers such that $N \times E \times T=2013$, then which of the following is the maximum possible sum of N,E and T?

1. 39 2. 2015 3. 675 4. 671

7. The areas of the inner circle and the shaded ring are equal. The radii r_1 and r_2 are related by



1. $r_1 = r_2$ 2. $r_1 = r_2\sqrt{2}$ 3. $r_1 = r_2\sqrt{3}$ 4. $r_1 = 2r_2$

8. Which of the following numbers is a perfect square?

1. 1022121 2. 2042122 3. 3063126 4. 4083128

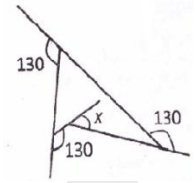
9. What is the 94th term of the following sequence? 1,1,2,2,2,2,3,3,3,3,3,3,4,4,4,4,4,4,4,4,…

1. 8 2. 9 3. 10 4. 11

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10. What is angle x in the schematic diagram given below?



1. 60 2. 50 3. 40 4. 30

11. A 3 m long car goes past a 4 m long truck at rest on the road. The speed of the car is 7 m/s.The time taken to go past is
1. 4/7 s 2. 1 s 3. 7/4 s 4. 10/7 s

12. A pyramid shaped toy is made by tightly placing cubic blocks of 1x1x1 cm^3.The base of the toy is a square 4x4 cm^2 .The width of each step is 0.5 cm.How many blocks are required to make the toy?
1. 30 2. 34 3. 36 4. 40

13. Suppose
(1) x = 4
(2) Then x - 4=x^2 - 4^2 (as both sides are zero)
(3) Therefore (x - 4)=(x - 4)(x + 4)
Cancelling (x - 4) from both sides
(4) 1 = (x + 4)
(5) Then x = -3
Which is the wrong step?
1.1 to 2 2. 2 to 3 3. 3 to 4 4. 4 to 5

14. From a group of 40 players,a cricket team of 11 players is chosen.Then,one of the eleven is chosen as the captain of the team.The total number of ways this can be done is
[$\binom{m}{n}$ below means the number of ways n objects can be chosen from m objects]
1. $\binom{40}{11}$ 2. $11\binom{40}{11}$ 3. $29\binom{40}{11}$ 4. $\binom{39}{10}$

15. I bought a shirt at 10% discount and sold it to a friend at a loss of 10% .If the friend paid me Rs.729.00 for the shirt, what was the undiscounted price of the shirt?
1. Rs. 900 2. Rs.800 3. Rs. 1000 4. Rs.911.25

16. Jar W contains 40 white marbles and jar B contains 40 black marbles. Ten black marbles from B are transferred to W and mixed thoroughly. Now, ten randomly selected marbles from W are put back in jar B to make 40 marbles in each jar .The number of black marbles in W
1. would be equal to the number of white marbles in B
2. would be more than the number of white marbles in B
3. would be less than the number of white marbles in B
4. cannot be determined from the information given

17. How many non-negative integers less than 10,000 are there such that the sum of the digits of the number is divisible by three?
1. 1112 2. 2213 3. 2223 4. 3334

18. If $aN \Rightarrow S$ then $nS \Rightarrow ?$
$eF \Rightarrow I$
$gH \Rightarrow M$

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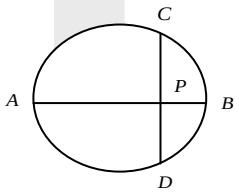
1. T 2. A 3. L 4. K

19. In each of the following groups of words is a hidden number, based on which you should arrange them in ascending order. Pick the right answer:

A. Tinsel event B. Man in England C. Good height D.Last encounter

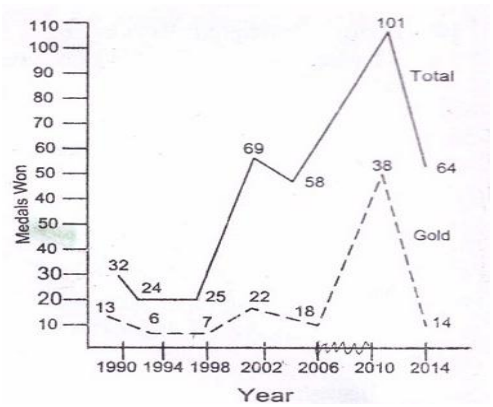
1. A,B,C,D 2. C,B,D,A 3. A,C,D,B 4. C,D,B,A

20. AB is the diameter of a circle .The chord CD is perpendicular to AB intersecting it at P. If CP=2 and PB=1,the radius of the circle is



1. 1 2. 2.5 3. 2 4. 5

21.



Based on the graph, which of the following statements is NOT true?

1. Number of gold medals increased whenever total number of medals increased
2. Percentage increase in gold medals in 2010 over 2006 is more than the corresponding increase in total medals.
3. Every time non-gold medals together account for more than 50% of the total medals
4. Percentage increase in gold medals in 2010 over 2006 is more than the corresponding increase in 2002 over 1998

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22. Three boxes are coloured red, blue and green and so are three balls. In how many ways can one put the balls one in each box such that no ball goes into the box of its own colour?

1. 1 2. 2 3. 3 4. 4

23. Write d = 1 degree, r = 1 radian and g = 1 grad. Then which of the following is true? (100 grad = a right angle)

1. cos d < cos r < cos g 2. cos r < cos g < cos d
3. cos r< cos d < cos g 4. cos g < cos d < cos r

24. The number of diagonals of a convex deodecagon (12-gon) is

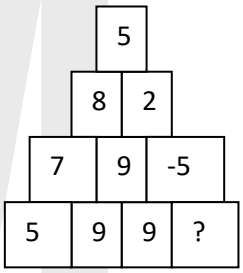
1. 66 2. 54 3. 55 4. 60

25. A vendor sells articles having a cost price of Rs. 100 each. He sells these articles at a premium price during the first eight months, and at a sale price, which is half of the premium price, during next four months. He makes a net profit of 20% at the end of the year. Assuming that equal numbers of articles are sold each month, what is the premium price of the article?

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1. 122 2. 144 3. 150 4. 160

26. The missing number is



1. -19 2. -5 3. 9 4. -9

27.

• • •

• • •

• • •

The minimum number of straight lines required to connect the nine points above without lifting the pen or retracing is

1. 3 2. 4 3. 5 4. 6

28. Suppose three meetings of a group of professors were arranged in Mumbai, Delhi and Chennai. Each professor of the group attended exactly two meetings. 21 professors attended Mumbai meeting, 27 attended Delhi meeting and 30 attended Chennai meeting. How many of them attended both the Chennai and Delhi meetings?

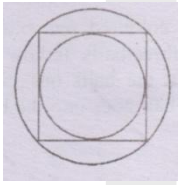
1. 18 2. 24
3. 26 4. Cannot be found from the above information.

29. Decode

G	E	N	T	S	T	U
I	S	S	O	L	V	D
L	I	I	S	P	A	E
L	M	H	T	R	B	N
E	E	L	B	O	L	T
T	N	I	Y	B	E	S

1. GENT STUDENTS CAUSE LITTLE HEART BURNS
2. STUDENTS ARE INTELLIGENT BUT PROBLEM IS NOT SOLVABLE
3. THIS PROBLEM IS UNSOLVABLE BY ANY STUDENT
4. THIS PROBLEM IS SOLVABLE BY INTELLIGENT STUDENTS

30. There is an inner circle and an outer circle around a square. What is the ratio of the area of the outer circle to that of the inner circle?



1. $\sqrt{2}$ 2. 2 3. $2\sqrt{2}$ 4. $\sqrt{3/2}$

31. The probability that a ticketless traveler is caught during a trip is 0.1. If the traveler makes 4 trips, the probability that he/she will be caught during at least one of the trips is:

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1. $1-(0.9)^4$ 2. $(1-0.9)^4$ 3. $1-(1-0.9)^4$ 4. $(0.9)^4$

32. Let A, B be the ends of the longest diagonal of the unit cube. The length of the shortest path from A to B along the surface is

1. $\sqrt{3}$ 2. $1+\sqrt{2}$ 3. $\sqrt{5}$ 4. 3

33. How many digits are there in 3^{16} when it is expressed in the decimal form?

1. Three 2. Six 3. Seven 4. Eight

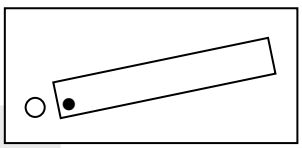
34. "The clue is hidden in this statement", read the note handed to Sherlock by Moriarty, who hid the stolen treasure in one of the ten pillars. Which pillar is it?

1. X 2. II 3. III 4. IX

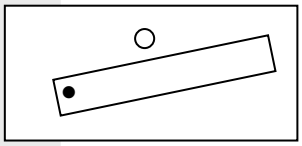
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35. Which will be the next figure in the following sequence?

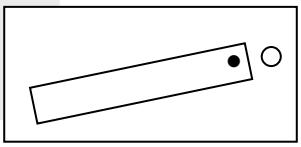
A



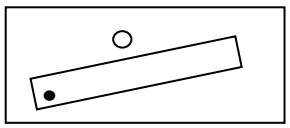
B

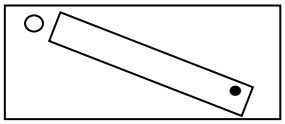


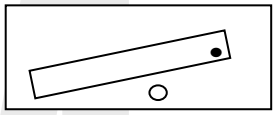
C

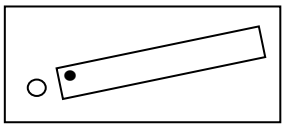


D ?

1. 

2. 

3. 

4. 

36. For a certain regular solid: number of faces + number of vertices =number of edges+2. For three such distinct (not touching each other) objects, what is the total value of faces + vertices- edges?

1. Two 2. Four 3. Six 4. Zero

37. Abdul travels thrice the distance Catherine travels, which is also twice the distance that Binoy travels. Catherine's speed is 1/3 of Abdul's speed, which is also ½ of Binoy's speed. If they start at the same time then who reaches first?

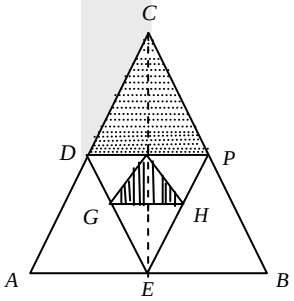
1. Both Abdul and Catherine 2. Binoy
3. Catherine 4. All three together

38. It takes 2 hours for Tiwari and Deo to do a job. Tiwari and Hari takes 3 hours to do the same job. Deo and Hari take 6 hours to do the same job. Which of the following statements is incorrect?

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1. Tiwari alone can do the job in 3 hours
2. Deo alone can do the job in 6 hours
3. Hari does not work at all
4. Hari is the fastest worker

39. Equilateral triangles are drawn one inside the other as shown. What is the ratio of the two shaded areas?



1. 2:1
2. $\sqrt{3}:4$
3. 4:1
4. 8:1

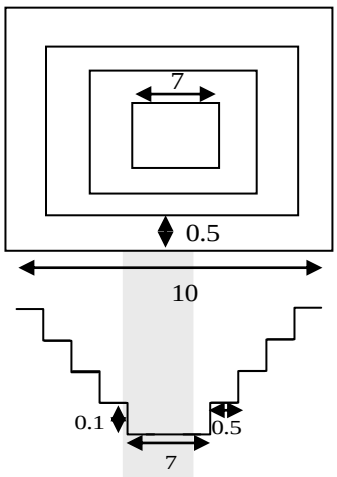
40. A train running at 36 km/h crosses a mark on the platform in 8 sec and takes 20 sec to cross the platform. What is the length of the platform?

1. 120 m
2. 280 m
3. 40 m
4. 160 m

41. When a polynomial f(x) is divided by x-5 or x-3 or x-2 it leaves a remainder of 1. Which of the following would be the polynomial?

1. $x^3-10x^2+31x+31$
2. $x^3-10x^2+31x-29$
3. $x^3-10x^2+31x-31$
4. $x^3-10x^2+31x+29$

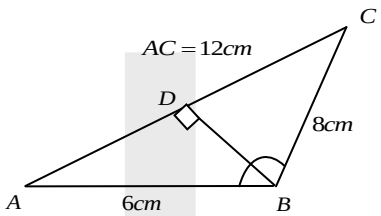
42. The diagram (not to scale) shows the top view and cross section of a pond having a square outline and equal sized steps of 0.5 m width and 0.1 m height. What will be the volume of water (in m^3) in the pond when it is completely filled?



1. 40.0
2. 29.4
3. 19.4
4. 11.3

43. D is a point on AC in the following triangle such that $\angle ADB = \angle ABC$. Then BD (in cm) is

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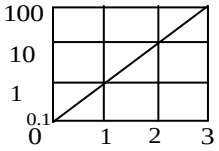


1. 8 2. 6 3. 3 4. 4

44. A notebook contains only hundred statements as under:
1. This notebook contains 1 false statement.
2. This notebook contains 2 false statements.
3. This notebook contains 99 false statements.
4. This notebook contains 100 false statements.

Which of the statements is correct?
1. 100^{th} 2. 1^{st} 3. 99^{th} 4. 2^{nd}

45. The function f(x) is plotted against x as shown. Extrapolate and find the value of the function at x=-1



1. -0.01 2. -0.1 3. 0.01 4. 0.1

46. A frog hops and lands exactly 1 meter away at a time. What is the least number of hops required to reach a point 10 cm away?
1. 1 2. 2
3. 3 4. it cannot travel such a distance

47. Choose the four digit number, in which the product of the first and fourth digits is 40 and the product of the middle digits is 28. The thousands digit is as much less than the unit digits as the hundreds digit is less than the tens digit.
1. 5478 2. 5748 3. 8745 4. 8475

48. A,B,C,D are points on a circle with AB=5 cm, BC=12 cm and AC=13 cm and AD=7cm. Then, the closest approximation of CD is
1. 9 cm 2. 10 cm 3. 11 cm 4. 14 cm

49. The distance between the squares of the ages (in complete years) of father and his son is 899. The age of the father when his son was born
1. cannot be ascertained due to inadequate data 2. is 27 years
3. is 29 years 4. is 31 years

50. Water is slowly dripping out of a tiny hole at the bottom of a hollow metallic sphere initially full of water. Ignoring the water that has flowed away, the centre of mass of the system
1. remains fixed at the centre of the sphere
2. moves down steadily as the amount of water decreases
3. moves down for some time but eventually returns to the centre of the sphere
4. moves down until half of the water is lost and then moves up

51. A chocolate bar having $m \times n$ unit square tiles is given. Calculate the number of cuts needed to break it completely, without stacking into individual tiles
1. $(m \times n)$ 2. $(m-1) \times (n-1)$ 3. $(m \times n) - 1$ 4. $(m \times n) + 1$

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52. An experiment leads to the following set of observations of the variable 'v' at different times 't'.

t	0	1	2	3	4	5	6
v	5	6.1	9.1	13.7	20.6	30.8	41.4

Allowing for experimented errors, which of the following expressions best describes the relationship between t and v?

1. $v \propto t^2$
2. $(v-5) \propto t^2$
3. $v = 5t + t^2$
4. $(v-5) = (t+5)^2$

53. A bicycle tube has a mean circumference of 200 cm and a circular cross section of diameter 6 cm. What is the approximate volume of water (in cc) required to completely fill the tube, assuming that it does not expand?

1. $600\,\pi$
2. $1200\,\pi$
3. $3600\,\pi$
4. $1800\,\pi$

54. A person paid income tax at the rate of R % for the first Rs 2 lakhs, and at the rate of (R+10)% for income exceeding Rs 2 lakhs. If the total tax paid is (R+5)% of the annual income, then what is the annual income?

1. Rs 2.5 lakhs
2. Rs 3.0 lakhs
3. Rs 4.0 lakhs
4. Rs 5.0 lakhs

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55. The houses of three sisters lie in the same row, but the middle sister does not live in the middle house. In the morning, the shadow of the eldest sister's house falls on the youngest sister's house. What can be concluded for sure?

1. The youngest sister lives in the middle.
2. The eldest sister lives in the middle.
3. Either the youngest or the eldest sister lives in the middle.
4. The youngest sister's house lies on the east of the middle sister's house.

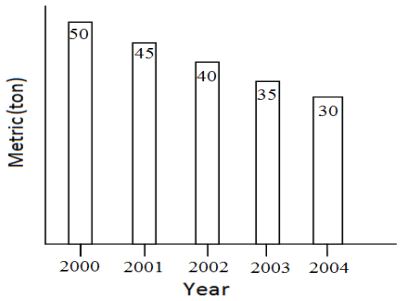
56. A woman starts shopping with Rs. X and Y paise, spends Rs. 3.50 and is left with Rs. 2Y and 2X paise. The amount she started with is

1. Rs. 48.24
2. Rs. 28.64
3. Rs. 32.14
4. Rs. 23.42

57. A mine supplies 10000 tons of copper ore, containing an average of 1.5 wt% copper, to a smelter every day. The smelter extracts 80% of the copper from the ore on the same day. What is the production of copper in tons/day?

1. 80
2. 12
3. 120
4. 150

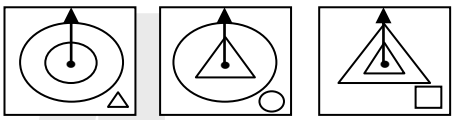
58. Wheat production of a country over a number of years is shown. Which year recorded highest percent reduction in production over the previous year?

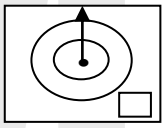
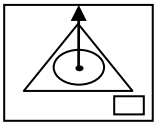
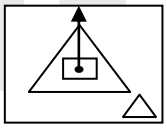
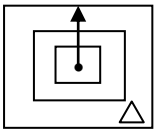


1. 2001
2. 2002
3. 2003
4. 2004

59. What is the next pattern in the given sequence?

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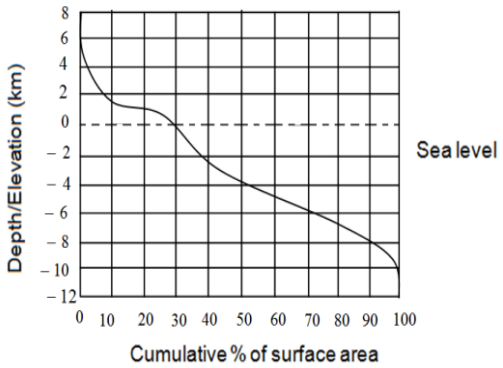


1. 
2. 
3. 
4. 

60. A person completely under sea water tracks the Sun. Compared to an observer above water, which of the following observations would be made by the underwater observer?
1. Neither the time of sunrise or sunset nor the angular span of the horizon changes.
2. Sunrise is delayed, sunset is advanced, but there is no change in the angular span of the horizon.
3. Sunrise and sunset times remain unchanged, but the angular span of the horizon shrinks.
4. The duration of the day and the angular span of the horizon, both decrease.

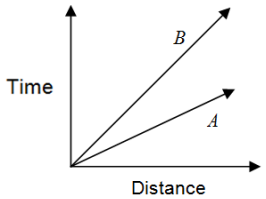
61. A man sells three articles A, B, C and gains 10% on A, 20% on B and loses 10% on C. He breaks even when combined selling prices of A and C are considered, whereas he gains 5% when combined selling prices of B and C are considered. What is his net loss or gain on the sale of all the articles?
1. 10% gain 2. 20% gain 3. 10.66% gain 4. 6.66% gain

62. Based on the distribution of surface area of the Earth at different elevations and depths (with reference to sea-level) shown in the figure, which of the following is FALSE?

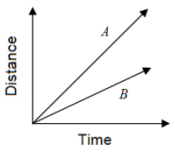


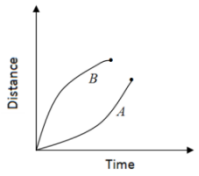
1. Larger proportion of the surface of the Earth is below sea-level.
2. Of the surface area above sea-level, larger proportion lies below 2 km elevation
3. Of the surface area below sea-level, smaller proportion lies below 4 km depth
4. Distance from sea level to the maximum depth is greater than that to the maximum elevation.

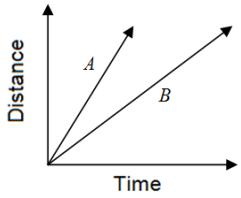
63. Time-distance graph of two objects A and B are shown.

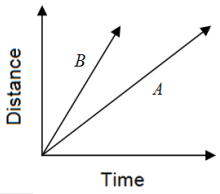


If the axes are interchanged, then the same information is shown by

1. 

2. 

3. 

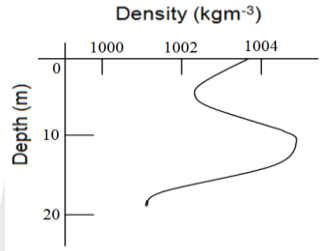
4. 

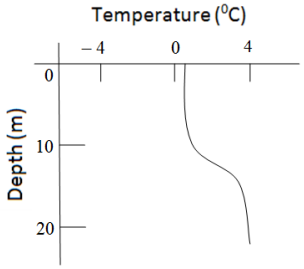
64. A chocolate salesman is travelling with 3 boxes with 30 chocolates in each box. During his journey he encounters 30 toll booths. Each toll booth inspector takes one chocolate per box that contains chocolate(s), as tax. What is the largest number of chocolates he can be left with after passing through all toll booths?
1. 0 2. 30 3. 25 4. 20

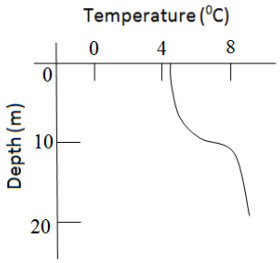
65. A milkman adds 10 litres of water to 90 litres of milk. After selling $1/5^{th}$ of the total quantity, he adds water equal to the quantity he has sold. The proportion of water to milk he sells now would be
1. 72:28 2. 28:72 3. 20:80 4. 30:70

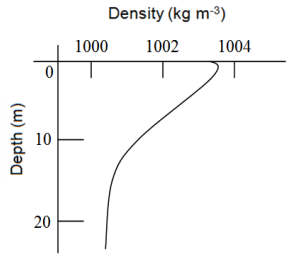
66. Two coconuts have spherical space inside their kernels, with the first having an inner diameter twice that of the other. The larger one is half filled with liquid, while the smaller is completely filled. Which of the following statements is correct?
1. The larger coconut contains 4 times the liquid in the smaller one.
2. The larger coconut contains twice the liquid in the smaller one.
3. The coconuts contain equal volumes of liquid.
4. The smaller coconut contains twice the liquid in the larger one.

67. Which of the following graphs represents a stable fresh water lake? (i.e., no vertical motion of water)

1. 

2. 

3. 

4. 

68. A tiger usually stalks its prey from a direction that is upwind of the prey. The reason for this is
1. the wind aids its final burst for killing the prey
2. the wind carries the scent of the prey to the tiger and helps the tiger locate the prey easily
3. the upwind area usually has denser vegetation and better camouflage

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4. the upwind location aids the tiger by not letting its smell reach the prey

69. A cellphone tower radiates 1W power while the handset transmitter radiates 0.1 mW power. The correct comparison of the radiation energy received by your head from a tower 100m away (E_1) and that from a handset held to your car (E_2) is
1. $E_1 >> E_2$
2. $E_2 >> E_1$
3. $E_1 = E_2$ for communication to be established
4. insufficient data even for a rough comparison

70. The pitch of a spring is 5 mm. The diameter of the spring is 1 cm. The spring spins about its axis with a speed of 2 rotations/s. The spring appears to be moving parallel to its axis with a speed of
1. 1 mm/s 2. 5 mm/s 3. 6 mm/s 4. 10 mm/s

71. The dimensions of a floor are 18×24. What is the smallest number of identical square tiles that will pave the entire floor without the need to break any tile?
1. 6 2. 24 3. 8 4. 12

72. To determine the number of parrots in a sparse population, an ecologist captures 30 parrots and puts rings around their necks and releases them. After a week he captures 40 parrots and finds that 8 of them have rings on their necks. What approximately is the parrot population?
1. 70 2. 150 3. 160 4. 100

73. The mid-point of the arc of a semicircle is connected by two straight lines to the ends of the diameter as shown. What is the ratio of the shaded area to the area of the triangle?



1. $\frac{\pi}{2}-1$ 2. $\frac{\pi-1}{2}$ 3. $\pi-1/2$ 4. $2\pi-1/4$

74. Why is there low fish population in lakes that have large hyacinth growth?
1. Hyacinth prevents sunlight from reaching the depths of the lake.
2. Decaying matter from hyacinth consumes dissolved oxygen in copious amounts.
3. Hyacinth is not a suitable food for fishes.
4. Hyacinth releases toxins in the water.

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75. N is a two digit number such that the product of its digits when added to their sum equals N. The unit digit of N would be
1. 1 2. 7 3. 8 4. 9

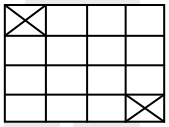
76. If $P+\frac{1}{Q}=1$ and $Q+\frac{1}{R}=1$, then what is PQR?
1. -1 2. 2 3. -2 4. cannot be calculated

77. What is the remainder when 3^{256} is divided by 5?
1. 1 2. 2 3. 3 4. 4

78. If equal weights of 22 carat gold (alloy of 22 parts gold and 2 parts copper by weight) and 24 carat gold (pure gold) are mixed to form an alloy, what will be the weight proportion of copper in the alloy?

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1. $\frac{1}{2}$ 2. $\frac{1}{8}$ 3. $\frac{1}{12}$ 4. $\frac{1}{24}$

79. 

A 4m × 4m floor needs to be covered by tiles of size 2m × 1m. Two diagonally opposite corners of size 1m × 1m should be left uncovered. How many tiles are required to complete the job without breaking the tiles or overlapping them?

1. 6 2. 7 3. 8 4. Impossible to cover

80. If 42 → 26, 71 → 78, 33 → 16, then 62 →

1. 68 2. 54 3. 38 4. 39

81. A shopkeeper sells a file and a notebook for Rs. 27 to the first customer, a notebook and a pen for Rs. 31 to the second customer and a pen and file for Rs. 29 to the third customer. The prices of the items are rounded in rupees. Which of the following inferences is correct?

1. The pen is the costliest of the three
2. The file is the costliest of the three
3. the notebook is the costliest of the three
4. The shopkeeper sold the different items to different customers at different rates.

82. Consider a square of side a. Fit the largest possible circle inside it and the largest possible square inside the circle. What is the side length of the innermost square?

1. $\frac{a}{\pi\sqrt{2}}$ 2. $\frac{a}{2}$ 3. $\frac{a}{2\sqrt{2}}$ 4. $\frac{a}{\sqrt{2}}$

83. Walking from my home at a speed of 5 km/h I am 8 minutes late in reaching my office. If I walk at a speed of 8 km/h I reach 5 minutes late. How far is my office from the house?

1. 2 km 2. 1/3 km 3. 2/3 km 4. 1/2 km

84. A, B and C are three distinct digits. If they are added as below,

$$\begin{array}{cccc} & A & B & C \\ + & A & B & C \\ + & A & B & C \\ \hline & C & C & C \end{array}$$

find out the value of A, B and C

1. A = 3, B = 4, C = 5
2. A = 2, B = 3, C = 1
3. A = 5, B = 1, C = 3
4. A = 1, B = 8, C = 5

85. A tight fitting band is wrapped around the Equator. Another circular band whose length is 15 m more lies at a certain height over the first band. A group of human beings attempt to pass under the longer band. Can they walk under it? (Earth's circumference is roughly 40,000 km. The height of human beings is between 1 & 2 m)

1. Yes
2. No
3. Can not be determined
4. Only those with the height less than 1.7 m

86. L is the tallest and eldest of a group of five people K, L, M, N and P. M is elder to N and shorter than K. M and P are of same age and P is taller than K. N and K are of same height and K is younger to P. Which of the following inferences is certain?

1. P is taller than M
2. N is the youngest
3. N is elder to P
4. N is elder to K

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87. If the product of three consecutive positive integers is equal to their sum, then what would be the sum of their squares?

1. 9 2. 14 3. 16 4. 24

88. A tall metal cylinder is filled end-to-end with n snugly fitting spherical wax balls of diameter d. If the balls melt completely, the volume fraction occupied by the melted wax is

1. independent of both d and n
2. dependent on both d and n
3. independent of d, but dependent on n
4. dependent on d, but independent of n

89. Some fishermen caught some fish. No one caught more than 20 fish. a_1 number of fishermen caught at least one among them, a_2 number of fishermen caught at least two fish among them, and so on and a_{20} number of fishermen caught exactly 20 fish among them. How many fish were caught?

1. $a_1 + a_2 + a_3 + ... + a_{20}$
2. $a_1 + 2a_2 + 3a_3 + ... + 20a_{20}$
3. $20(a_1 + a_2 + a_3 + ... + a_{20})$
4. $20(a_1 + 2a_2 + 3a_3 + ... + 20a_{20})$

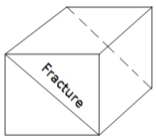
90. If NET14 and NET15 are five digit numbers such that their sum = 157229, then N + E + T would be

1. 15 2. 21 3. 25 4. 72

91. A cylindrical cake is to be cut into 16 equal pieces. What is the minimum number of cuts required to do so?

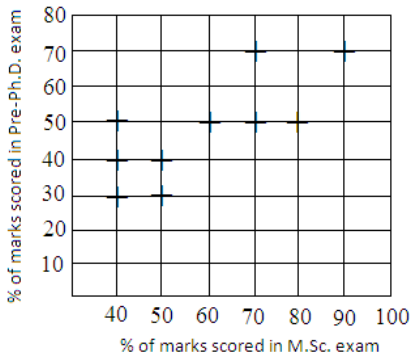
1. 9 2. 3 3. 8 4. 5

92. The diagram shows a cubic block of marble ($1 \times 1 \times 1$ m^3) having a planar fracture. What is the maximum number of slabs sized $20 \times 20 \times 5$ cm^3 that can be cut from this block avoiding the fracture?



1. 200 2. 300 3. 400 4. 500

93.

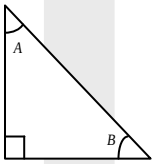


Pre-Ph.D. exam score of 10 students are plotted against their M.Sc. marks. Which of the following is true?

1. Two students have scored better in Pre-Ph.D. than their M.Sc. exam.
2. All those students who scored 50% in Pre-Ph.D. scored more percentage of marks in their M.Sc. exam.
3. Two students scored the same percentage of marks in their Pre-Ph.D. and M.Sc. exams.
4. The student who scored maximum in M.Sc. is the only student to get maximum in Pre-Ph.D. exam.

94. With reference to the right angled triangle shown, what is the value of sin(A) cos(B) + cos(A) sin(B)?

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1. $\frac{-1}{2}$ 2. 1 3. $\frac{+1}{2}$ 4. -1

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95. A boy holds one end of rope of length l and the other end is fixed to a thin pole of radius r($r \ll l$). Keeping the rope taut, the boy goes around the pole causing the rope to get wound around the pole. Each round takes 10 s. What is the speed (in units of s^{-1}) with which the boy approaches the pole?

1. $\frac{\pi r}{5}$ 2. $\frac{\pi l}{5}$
3. $20\pi(r+l)$ 4. $\frac{2\pi(l-r)}{5}$

96. The smallest square floor which can be completely paved with tiles of size 8 × 6, without breaking any tile, needs n tiles. Find n

1. 56 2. 12 3. 24 4. 48

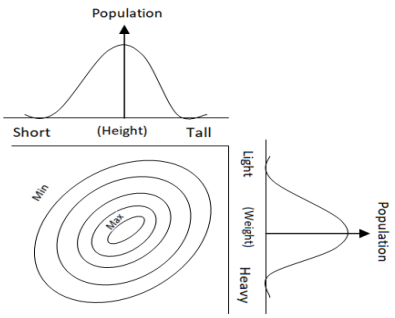
97. A 2 m long ladder is to reach a wall of height 1.75 m. The largest possible horizontal distance of the ladder from the wall could be

1. slightly less than 1 m
2. slightly more than 1 m
3. 1 m
4. 1.2 m

98. A rectangular flask of length 11 cm, width 8 cm and height 20 cm has water filled upto height 5 cm. If 21 spherical marbles of radius 1 cm each are dropped in the flask, what would be the rise in water level?

1. 8.8 cm 2. 10 cm 3. 1 cm 4. 0 cm

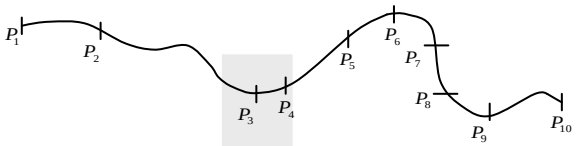
99. Contours in the bivariate (weight, height) graph connect regions of approximately equal populations. Which of the following interpretations is correct?



1. There is no correlation between height and weight of the population.
2. Heavier individuals are likely to the taller than lighter individuals.
3. Taller and lighter individuals are more in number than taller and heavier individuals.
4. There are no individuals of medium weight and medium height.

100. A path between points P_1 and P_{10} on a level ground is shown, and positions of a moving object at 1 second intervals are marked. Which of the following statements is correct?

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1. The motion is uniform
2. The speed between P_3 and P_4 is greater than that between P_5 and P_6
3. The speed from P_1 to P_2 increases because of downward slope
4. The section P_3 to P_4 is covered at the slowest speed

101. A new tyre can be used for at most 90 km. What is the maximum distance (in km) that can be covered by a three wheeled vehicle carrying one spare wheel, all four tyres being new?
1. 180 2. 90 3. 120 4. 270

102. A plate of 5m × 2m size with uniform thickness, weighing 20 kg, is perforated with 1000 holes of 5cm × 2cm size. What is the weight of the plate (in kg) after perforation?
1. 10 2. 2 3. 19.8 4. 18

103. What is the maximum number of cylindrical pencils of 0.5 cm diameter that can be stood in a square shaped stand of 5 cm × 5cm inner cross section?
1. 99 2. 121 3. 100 4. 105

104. The sum of two numbers is equal to sum of square of 11 and cube of 9. The larger number is $(5)^2$ less than square of 25. What is the value of the sum of twice of 24 percent of the smaller number and half of the larger number?
1. 415 2. 400 3. 410 4. 420

105. What is the volume of soil in an open pit of size 2m × 2m × 10cm?
1. 40 m^3 2. 0.4 m^3 3. 0 m^3 4. 4.0 m^3

106. For which values of A and B is sin A = cot B?

1. A = B = 0
2. $A = B = \frac{\pi}{2}$
3. $A = 0, B = \frac{\pi}{2}$
4. $A = \frac{\pi}{2}, B = 0$

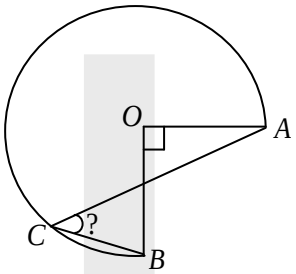
107. For which one of the following statements is the converse NOT true?
1. If a patient dies even with excellent medical care, he likely had terminal illness.
2. If a person gets employed, he has good qualifications.
3. If an integer is even, it is divisible by two.
4. If an integer is odd, it is not divisible by two.

108. Four small squares of side x are cut out of a square of size 12 cm to make a tray by folding the edges. What is the value of x so that the tray has the maximum volume?
1. 6 cm
2. 2 cm
3. 3 cm 4.
4. cm

109. Two runners A and B start running from diametrically opposite points on a circular track in the same direction. If A runs at a constant speed of 8 km/h and B at a constant speed of 6 km/h and A catches up with B in 30 minutes, what is the length of the track?
1. 1 km 2. 4 km 3. 3 km 4. 2 km

110. Three quarters of a circle is shown in the figure, OA and OB are two radii perpendicular to each other. C is a point on the circle.

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What is angle of ACB?

1. Cannot be determined 2. 30^0 3. 60^0 4. 45^0

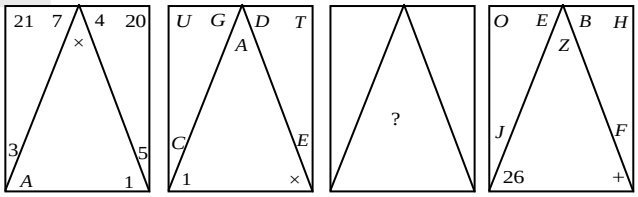
111. If a plant with green leaves is kept in a dark room with only green light ON, which one of the following would we observe?

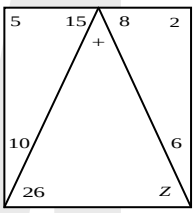
1. The plant appears brighter than the surroundings
2. The plant appears darker than the surroundings
3. We cannot distinguish the plant from the surroundings
4. It will have above normal photosynthetic activity

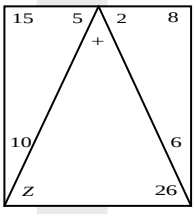
112. A person purchases two chains from a jeweller, one weighing 18 g made of 22 carat gold and another weighting 22 g made of 18 carat gold. Which one of the following statements is correct?

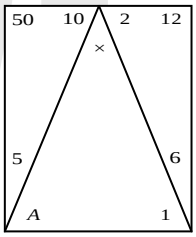
1. 22 carat chain contains $\frac{2}{11}$ times more gold than 18 carat chain.
2. 22 carat chain contains $\frac{1}{11}$ times more gold than 18 carat chain.
3. Both chains contain the same quantity of gold.
4. 18 carat chain contains $\frac{2}{11}$ times more gold than 22 carat chain.

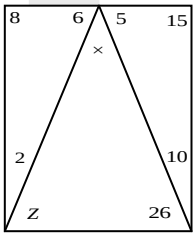
113. Find the missing pattern



1. 

2. 

3. 

4. 

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114. There are small and large bacteria of the same species. If S is surface area and V is volume, then which of the following is correct?

1. $S_{small} > S_{large}$
2. $V_{small} > V_{large}$
3. $(S/V)_{small} > (S/V)_{large}$
4. $(S/V)_{small} < (S/V)_{large}$

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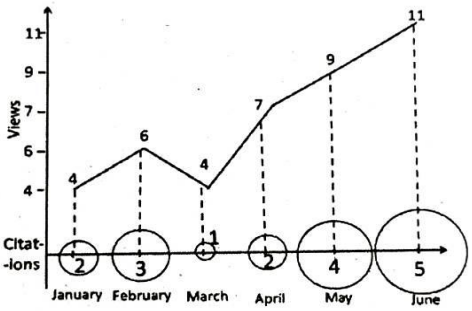
115. The area of the triangle formed by joining the points (2017, 2017), (2027, 2027) and (2037, 2017) is

1. 2017
2. 100
3. $100\sqrt{10}$
4. $100\sqrt{20}$

116. A stick of length L is broken into two pieces at random. What is the average length of the smaller piece?

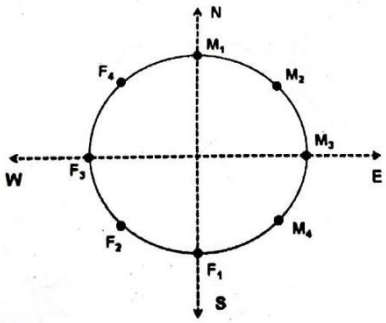
1. L/6
2. L/4
3. L/3
4. L/2

117. Number of times a research paper is viewed and cited is shown in the plot. In which month was the percentage increase in citation more than the double of the percentage increase in view?



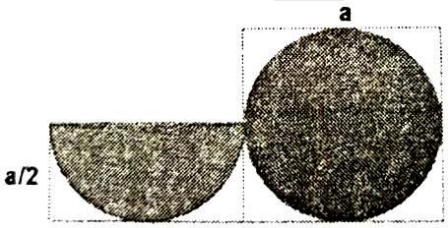
1. February
2. April
3. May
4. June

118. Four males M_1, M_2, M_3, M_4 and four females F_1, F_2, F_3 and F_4 are sitting around a round table facing away from the table, as shown in the figure. If each one moves three positions to his/her right and then one position to the left, then in which direction does F_4 face?



1. East
2. North-East
3. North-West
4. North

119. In the diagram, what is the ratio of the total shaded area (of the circle and semi-circle) to the total area of the square and the rectangle?



1. $\frac{5}{6}\pi$
2. $\frac{6}{5}\pi$
3. $\frac{5}{12}\pi$
4. $\frac{\pi}{4}$

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120. Which of the following options is the best choice for the missing number?
0.1, 0.25, 0.3, 0.2, 0.5, 0.6, 0.3, _____ , 0.9, 0.4, 1.0, 1.2
1. 1.05 2. 0.85 3. 0.75 4. 0.65

121. Fourteen of the students in a class are girls. Eight students in the class wear blue shirts. Two are neither girls nor wear blue shirts. Five students who wear blue shirts are girls. How many students are there in the class?
1. 19 2. 29 3. 17 4. 24

122. Prof. Murthy likes to let her students choose who their partners will be; however, no pair of students may work together for more than seven class periods in a row. Alice and Bob have worked together for seven class periods in a row. Calvin and Denny have worked together for three class periods in a row. Calvin does not want to work with Alice. Who should be assigned to work with Bob?
1. Calvin 2. Alice 3. Denny 4. None

123. Three semi-circles are drawn inside a big circle as shown in the figure. If the radius of the two identical smaller semi-circles is $\frac{1}{4}th$ of that of the big circle and the radius of the bigger semi-circle is twice that of the small semi-circle, what proportion of the big circle's area is shaded?



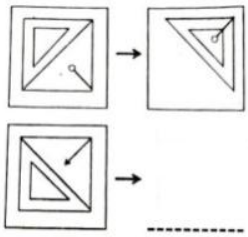
1. $\frac{11}{12}$ 2. $\frac{12}{16}$ 3. $\frac{13}{16}$ 4. $\frac{13}{14}$

124. A ball is dropped from a height of 100 m. The ball after each bounce rises vertically by half its previous height (This means at the first bounce it rises by 50 m, by 25 m at the second bounce and so on). What is the vertical distance travelled by the ball between the first and the fifth bounces?
1. $\frac{355}{2}$m 2. $\frac{365}{2}$m 3. $\frac{375}{2}$m 4. $\frac{385}{2}$m

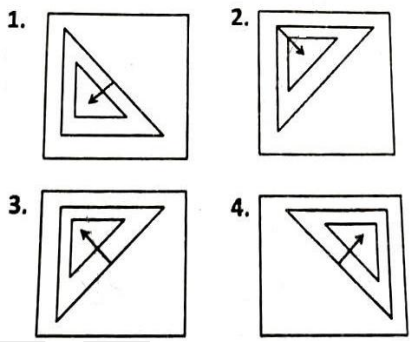
125. Consider a number 54 expressed in a base different from ten. What is the base of this number system if its equivalent value in the decimal system is 49?
1. 1 2. 3 3. 6 4. 9

126. A fuel station sold diesel costing Rs 15000 to 150 persons on a day. If the lower limit of sale to a person is Rs 50, what is the maximum amount in rupees for which one person could have purchased diesel on that day?
1. 7450 2. 7500 3. 7550 4. 7600

127. Which of the options is appropriate for the blank space?



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128. If Sangeeta's daughter is my daughter's mother, then how am I related to Sangeeta?
1. Son is the only possibility
2. Son-in-law is the only possibility
3. Daughter is the only possibility
4. Son-in-law or daughter

129. In a group of 44 players, 26 play hockey, 24 play football and 24 play cricket. Eight of them play both hockey and football, 12 play both football and cricket, and 5 play all the three games. How many play both hockey and cricket?
1. 10
2. 15
3. None
4. 7

130. It is given that
$(a)^* = a \ \ if \ \ a > 0$
$= 0 \ \ if \ \ a \le 0$
for any real number a. Suppose for two real numbers x and y, $(xy)^* = (x)^*(y)^*$. Then which of the following is necessarily true?
1. x > 0 and y > 0
2. {x<0 and y<0} or {x>0 and y>0}
3. {x≤0 and y≤0} or {x≥0 and y≥0}
4. {x≥0} or {y≥0} or {x≥0 and y≥0}

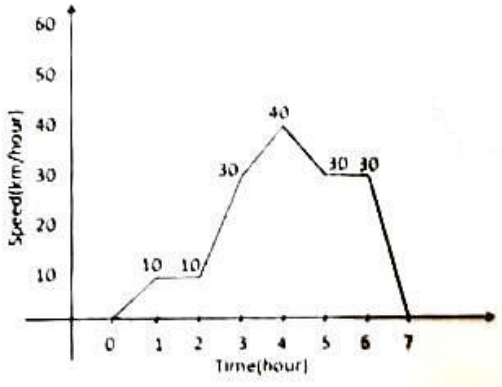
131. A long-distance runner finds a water station after completing $\frac{1}{7}th$ of the total distance. After covering another $\frac{1}{6}th$ of the total distance he gets medical-aid. Another runner joins him 4 km after the medical-aid station. The second runner stops 4 km before the completion of run, covering $\frac{1}{2}$ of the total distance. What is the total distance?
1. 21 km
2. 30 km
3. 42 km
4. 50 km

132. A and B move clockwise around a circle, starting from a common point O. A takes 9 minutes to complete a round but re-starts after a delay of 1 minute. B takes 13 minutes to complete the round but restarts after a delay of 2 minutes. How many minutes after they began would they meet again at O?
1. 30
2. 29
3. 31
4. 28

133. Two students are solving the same problem independently. If the probability that the first one solves the problem is $\frac{3}{5}$ and the probability that the second solves the problem is $\frac{4}{5}$, what is the probability that at least one of them solves the problem?
1. $\frac{17}{25}$
2. $\frac{19}{25}$
3. $\frac{21}{25}$
4. $\frac{23}{25}$

134. Movement of a car with respect to time is given below:

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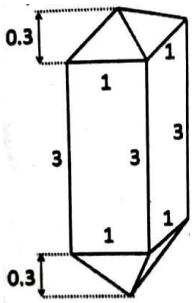


The average speed of the car is

1. 30.42 2. 20.43 3. 10.43 4. 21.43

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135. The diagram shows the dimensions (in cm) of a zircon crystal having a square prism and two identical square pyramids. What is the volume of this crystal (in cm^3)



1. 3.2 2. 3.6 3. 6.4 4. 7.2

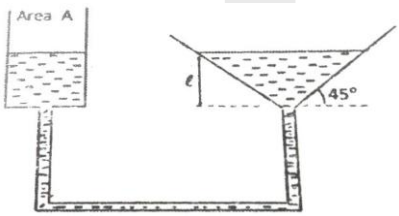
136. A boy throws a ball with a speed v at a vehicle that is approaching him with a speed V. After bouncing from the vehicle, the ball hits the boy with a speed

1. v 2. v+V 3. v+2V 4. V+4V

137. Four friends were sharing a pizza. They decided that the oldest friend will get an extra piece of pizza. Bahu is two months older than Kattappa, who is turn is three months younger than Bhalta. Devsena is one month older than Kattappa. Who should get the extra piece of pizza?

1. Bahu 2. Devsena
3. Bhalla 4. Kattappa

138. A funnel is connected to a cylindrical vessel of cross sectional area A as shown, to make an interconnected system of vessels. Water is poured in the cylinder such that the height of water in the funnel is ℓ as shown. If the level of water in the cylindrical vessel is pushed down by a distince $x << \ell$, the level of water in the funnel:



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1. Remains unchanged
2. Rises by $\frac{Ax}{\pi\ell^2}$
3. Rises by $\frac{\pi\ell^2}{Ax}$
4. Rises by $\frac{A^2x}{\pi^2\ell^4}$

139. Marks (out of 30) of seven students in an examination are 4,15,6,7,5, a and b, where a (>0) is a multiple of 4 and b is a prime. What is the maximum possible value of the range of marks (i.e., maximum mark –minimum mark) ?
1. 25 2. 26 3. 27 4. 29

140. Two persons A and B starts walking in opposite direction from a point. A travels twice as fast as B. The speed at which B travels is 1 km/h. If A travels 2 km and turns back and starts walking towards B, at what distance from the starting point will A cross B ?
1. 2 km 2. 4 km 3. 6 km 4. 8 km

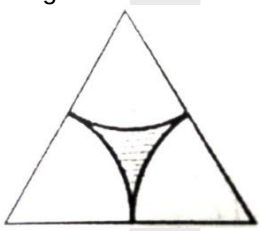
141. A person wanted to travel from Charbag to Alambag with an average speed of 60 km/h by car. The distance between Charbag and Alambag is 2 km. Due to heavy traffic, he could travel at 30 km/h for the first kilometer of his journey. What should his speed be for the remaining journey to achieve his average speed target of 60 km/h?
1. Cannot achieve his target with any finite speed
2. 60 km /h
3. 90 km /h
4. 120 km/h

142. The average rainfall over a given place during the three – year period of 2003-2005 was 65 cm. During the three – year period 2002-2004 the average rainfall was 63 cm. The actual rainfall during 2005 was 60 cm. What was the rainfall in 2002?
1. 55 cm 2. 60 cm 3. 54 cm 4. 53 cm

143. In a four consecutive day schedule, four pilots flew flights each on a different day. Mr. A was scheduled to work on Monday, but he traded with Ms. B who was originally scheduled to work on Wednesday. Ms C traded with Mr. D, who was originally scheduled to work on Thursday. After all the switching was done, who worked on Tuesday?
1. Mr. A 2. Mr. D 3. Ms. B 4. Ms. C

144. After 6 g of carbon is completely burnt in an atmosphere of 40 g of oxygen, the percentage oxygen left is:
1. 80 2. 60 3. 40 4. 20

145. What fraction of the equilateral triangle shown below with three identical sectors of a circle is shaded?



1. $1-\frac{\pi}{2\sqrt{3}}$ 2. $\frac{\pi}{2\sqrt{3}}$ 3. $1-\frac{2\pi}{\sqrt{3}}$ 4. $1-\frac{\sqrt{3}\pi}{2}$

146. How many different salads can be made from cucumber, tomatoes, onions, beetroot and carrots?
1. 16 2. 28 3. 31 4. 32

147. A bottle of perfume is opened and a person at a distance of 10 m gets the smell after 10 seconds. The time taken for a person 20m away to get the smell is about

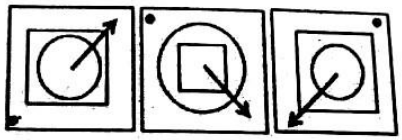
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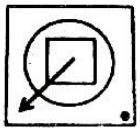
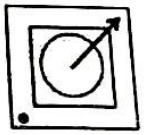
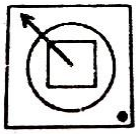
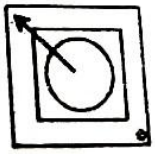
1. 20 s 2. 40 s 3. 14 s 4. 80 s

148. A mineral contains a cubic and a spherical cavity. The length of the side of the cube is the same as the diameter of the sphere. If the cubic cavity is half filled with a liquid and the spherical cavity is completely filled with liquid, what is the approximate ratio of the volume of liquid in the cubic cavity to that in the spherical cavity?
1. 2:1 2. 1:1 3. 1:2 4. 1:4

149. Out of 6 unbiased coins, 5 are tossed independently and they all result in heads. If the 6^{th} is now independently tossed, the probability of getting head is
1. 1 2. 0 3. 1/2 4. 1/6

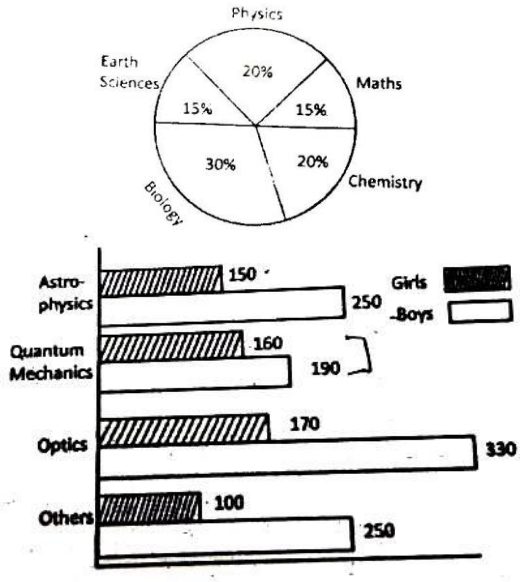
150. What could the fourth figure in the sequence be?



1. 
2. 
3. 
4. 

151. The average age of A,B and C, whose ages are integers x,y and z respectively ($x \le y \le z$), is 30. If the age of B is exactly 5 more than that of A, what is the minimum possible value of z?
1. 31 2. 33 3. 35 4. 37

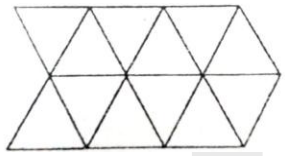
152. Percentage-wise distribution of all science students in a university is given in the pie-diagram. The bar chart shows the distribution of physics students in different sub-areas, where a student takes one and only sub-area. What percentage of the total science students is girls studying quantum mechanics?



1. 10 2. 1 3. 0.2 4. 2

153. What is the total number of parallelograms in the given diagram?

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1. 27 2. 24 3. 22 4. 14

154. Election results of a city, which contains 3 segments (A, B and C) are given in the table. Percentage votes obtained by parties X, Y and Z are also shown. Which party won the election?

Segment	Total Voters	% of voting	X	Y	Z
A	2,00,000	60	30	30	40
B	2,50,000	70	40	30	30
C	3,00,000	80	30	40	30

1. Y
2. X
3. Z
4. It was a tie between X and Y

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155. The number of digits you have to type to write all the page numbers of a book starting from 1 (first page) is 2019. What is the number of pages in that book?
1. 609 2. 610 3.709 4.710

156. A student received the following marks in the five of the six courses: 91, 86, 81, 79 and 92. Average of his marks in six subjects is 85. How many marks did he receive in the sixth subject?
1. 83 2. 85 3. 81 4. 88

157. Salesperson 'A' sells an object at a price Rs. 5 less than the marked price, receiving a commission of 5% on the selling price. The same object is sold by person 'B' at a price Rs. 15 less than the marked price, receiving a commission of 15% on the selling price. If both A and B receive the same amount in commission, then what is the marked price of the object?
1. 10 2. 20 3. 22.5 4. 30

158. A ball rotates at a rate r rotations per second and simultaneously revolves around a stationary point O at a rate R revolutions per second (R < r). The rotation and revolution are in the same sense. A certain point on the ball is in the line of the centre of the ball and point O at a certain time. This configuration repeats after a time
1. $\frac{1}{r-R}$ 2. $\frac{1}{R}-\frac{1}{r}$ 3. $\frac{1}{r+R}$ 4. $\frac{1}{R}+\frac{1}{r}$

159. There are two examinations, A and B in a subject which are evaluated out of 30 and 70 marks, respectively. In order to pass the course the student has to get at least 40% in total and at least 40% in B. The following are the marks of the students S_1 to S_4.

Students	A	B
S_1	12	28
S_2	10	29
S_3	16	27
S_4	05	29

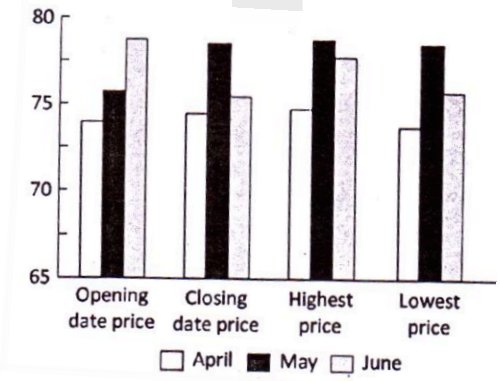
The only student/s to have passes is/are
1. S_1, S_3 2. S_1, S_2, S_4
3. S_1, S_2 4. S_1

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160. Two forest patches have, respectively, 100 and 200 teak trees of the same age. In a given season, all trees shed some of their leaves at random. The daily total collections of the leaf litter from the two patches are expected to have
1. nearly equal means, standard deviations and coefficients of variation
2. different means, nearly equal standard deviations and coefficients of variation
3. different means, nearly equal standard deviations and different coefficients of variation
4. different means, and standard deviations but nearly equal coefficients of variation

161. Which one of the following numbers is a prime number?
1. 183 2. 121 3. 157 4. 10201

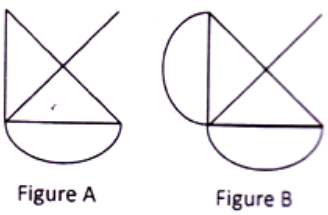
162. The graph depicts the petrol prices (in Rs. per litre) for the months April, May and June.



Pick the INCORRECT statement.
1. The highest price never crossed 75
2. The largest difference between the highest and lowest price was for the month of June
3. Month of June showed the largest decrease of price between the opening date and closing date price
4. All depicted prices lie between 70 and 80

163. A traveler to the town reaches a crossroad. Upon asking residents A, B and C for directions to a certain destination, he gets the following responses
A: turn left
B: do not turn left
C: go straight
If only one among A, B and C is truthful, the traveller
1. should go left
2. should go straight
3. should go right
4. will not be able to decide between going left or right

164. Which of the following figures can be drawn without lifting the pen from the paper or retracing?



1. figure A but not figure B
2. figure B but not figure A
3. both figures A and B
4. neither figure A nor figure B

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165. ABCD is a rectangle and O is the midpoint of AD. P and Q are points on AB and CD, respectively such that $AP = \frac{1}{4}AB$ and $DQ = \frac{1}{4}DC$.



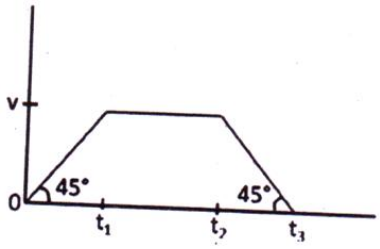
The ratio of area of the rectangle ABCD to that of the triangle OPQ is

1. 4 2. 6 3. 8 4. 16

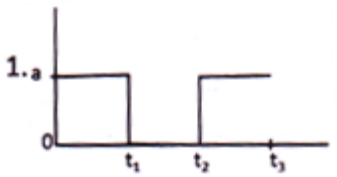
166. Balls are being rolled out with equal initial speeds along a frictionless, undulating (wave-like) track in quick succession. There is denser clustering of balls around point B than around point A. Which of the following statements is true?

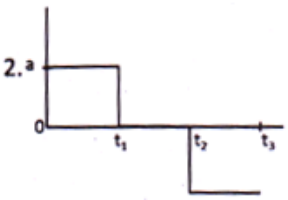
1. Point is A higher than B
2. Point B is higher than A
3. Points A and B are at the same heights
4. Balls reached point A first and then point B

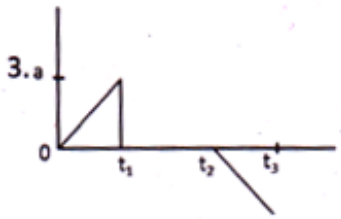
167. Velocity-time curve of a body is given in the diagram below:



The diagram showing the acceleration of this body as a function of time is









168. In a city, each person has atleast one hair on his/her head. At least two persons in this city are guaranteed to have exactly the same number of hair on their heads if the population of the city

1. is greater than the maximum possible number of hair on the head
2. is less than the maximum possible number of hair on the head
3. has at least one pair of identical twins
4. is genetically homogenous

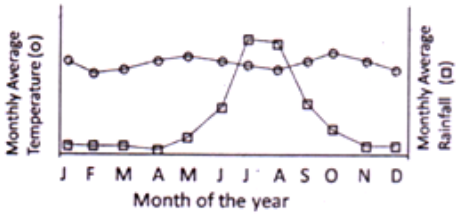
169. A metal wire is stretched along its length. Another identical wire is heated. The resultant length of the two wires is the same. What can be said about the diameters of the two wires?

1. both diameters will have reduced equality
2. both diameters will have increased equality
3. the hot wire has a larger diameter than the stretched wire

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4. the hot wire has a smaller diameter than the stretched wire

170. The graph below shows the monthly average rainfall and monthly average temperature at a certain place in India. Where is this place most likely to be located?

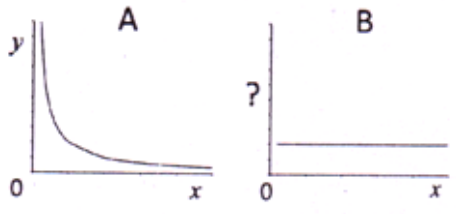


1. On the west coast
2. On the east coast
3. In the north-eastern hills
4. In the Himalayan foothills

171. Two parallel chords of length 8 cm and 6 cm of a circle are separated by a distance of 1 cm. the radius of the circle (in cm) is

1. 4
2. $4\sqrt{2}$
3. 5
4. $5\sqrt{2}$

172. Graphs A and B define the same relationship between y and x for x, y > 0.



The variable on the ordinate of graph B is

1. $\frac{1}{x}$
2. x^2
3. $\frac{x}{y}$
4. xy

173. The value of a physical quantity is measured to be 3.4587 ± 0.0022. Which one of the following is the appropriate representation of the result taking the errors in account?

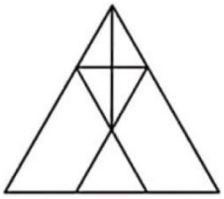
1. 3.4567
2. 3.457
3. 3.46
4. 3.5

174. The cross-section along two mutually perpendicular axes of a solid object are a circle and a square, respectively. The object is

1. a truncated cone
2. a cylinder
3. a rhomboid
4. a cube

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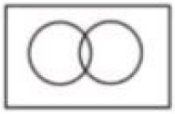
175. The number of triangles in the figure is

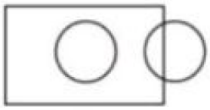


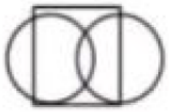
(1) 9
(2) 10
(3) 11
(4) 12

176. Which among the following diagrams can represent the relationships between houses, offices and buildings?

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(1) 

(2) 

(3) 

(4) 

177. In a population of 900, the number of married couples is as much as the number of singles. There are 100 twins of which 50 twins are singles. The population has 400 females in all. What is the number of married persons?
(1) 325 (2) 600 (3) 250 (4) 300

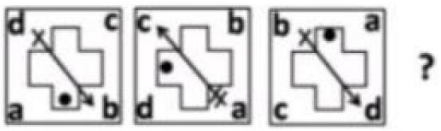
178. The length of a rod is measured repeatedly by two persons. Person A reports the length to be 1002 $\pm$ 1 cm while person B reports the length to be 1001 $\pm$ 2 cm. It is known from a more reliable method that the length is 1000.1 = 0.5 cm. Which one of the following statements is correct?
(1) Measurements made by B are less accurate, but more precise, compared to those by A.
(2) Measurements made by A are less accurate, but more precise, compared to those by B.
(3) Measurements made by B are more precise and more accurate, compared to those by A.
(4) Measurements made by A are more precise and more accurate, compared to those by B.

179. Examine the following statements:
(a) Fat cells normally produce hormone A in proportion to the amount of fat. Obese individuals, however, have lower than normal levels of hormone A.
(b) Hormone A reduces food intake.
Which among the following is a valid inference based on the above statements?
(1) Impaired production of hormone A causes obesity
(2) Impaired action of hormone A causes obesity
(3) Obesity results into low levels of hormone A
(4) Excess food intake causes depletion of hormone A

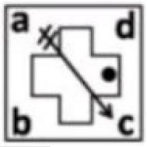
180. The difference, the sum and the product of two integers are in the proportion 1.3.10. The two integers are:
(1) 3, 9 (2) 2, 5 (3) 5, 10 (4) 3, 10

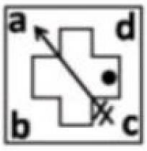
181. A, B, C and D are four consecutive points on a circle such that chords AB = BC = CD = 10.0 cm and DA = 20.0 cm. The radius of the circle (in cm) is
(1) 10.0 (2) $10\sqrt{2}$ (3) $10\sqrt{3}$ (4) 20.0

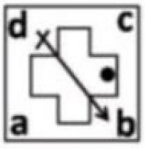
182. Find out the next figure in following sequence?



(1) 

(2) 

(3) 

(4) 

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183. A dart is randomly thrown at a circular board on which two concentric rings of radii R and 2R having the same width (width much less than R) are marked. The probability of the dart hitting the smaller ring is
(1) twice the probability that it hits the larger ring
(2) half of the probability that it hits the larger ring
(3) four times the probability that it hits the larger ring
(4) one-fourth the probability that it hits the larger ring

184. The difference between the squares of two consecutive integers is 408235. The sum of the numbers is
(1) 16324 (2) 27061
(3) 180235 (4) 408235

185. The graph below shows the rainfall and temperature at a place over one week. Which day of the week would feel the most humid?



(1) Monday (2) Wednesday
(3) Thursday (4) Saturday

186. Consider a location on the Earth where the Sun is overhead at noon. Compared to its shadow at 10.00 AM, the shadow of a tower at 4.00 PM would be
(1) twice longer (2) three times longer
(3) four times longer (4) eight times longer

187. A tells B, "I could be visiting you on any day in the next two months and you must give me gold coins of as much total weight in grams as the number of days that would elapse from today." If gold coins are available in integer gram weights, what is the least number of coins with which B can meet A's demand on any day?
(1) 31 (2) 7
(3) 6 (4) 13

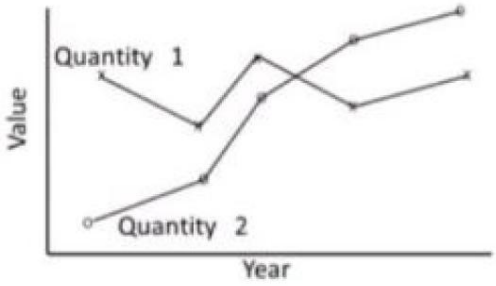
188. There are nine identical balls, one of which is heavier than the other eight. What is the least number of weighings, using a two-pan balance, needed for definitely identifying the heavier ball?
(1) One (2) Two
(3) Three (4) Four

189. A partially filled hour glass has water falling from the upper bowl to the lower bowl. Which of the following statements is correct?
(1) The level of water rises in the lower bowl at the same rate as the fall in the upper bowl
(2) The level of water rises in the lower bowl at the half rate as the fall in the upper bowl
(3) The rate of increase in the volume of water in the lower bowl is the same as the rate of decrease in the upper bowl.
(4) The area of top surface of the water column is the same in both bowls at all times.

190. Seven chairs numbered 1 to 7 are placed around a round table. Starting from chair number 5, a person keeps going around the table anticlockwise. After crossing 41 chairs, the person will reach the chair number.
(1) 1 (2) 3
(3) 5 (4) 7

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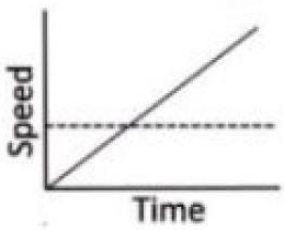
191.



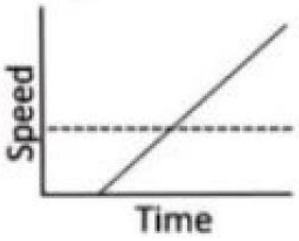
The trends of two quantities over five years are shown in the graph. Which of the following are valid inferences?
A. The mean values of the quantities are nearly equal.
B. The variations in the two quantities are nearly equal.
C. Quantity 1 varies less over the given period as compared to Quantity 2
(1) Only A is true
(2) Only B is true
(3) A and C are true
(4) A and B are true

192. A girl is running at constant speed to catch a bus which is stationary. Before she reaches the bus, the bus leaves and moves with a constant acceleration. Which one of these graphs describes the situation correctly?
bus ——— girl - - - - -

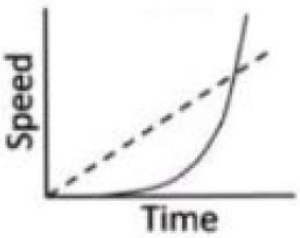
(1)



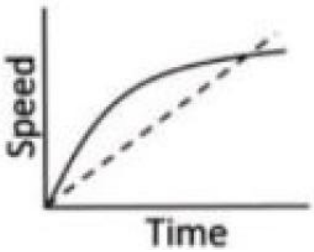
(2)



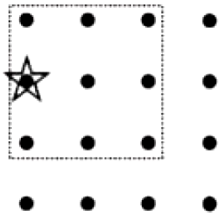
(3)



(4)



193. A move of a coin is defined as crossing any number of points in a straight line on the 4 × 4 grid (horizontally, vertically or diagonally). What is the least numbers of moves in which a coin starting from the indicated position, can cover all nine points within the marked square?



(1) four
(2) five
(3) six
(4) seven

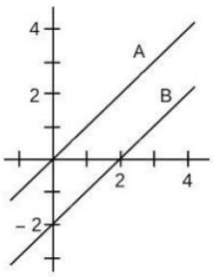
194. In a certain cipher language 'BIKE' is coded as 'YFHB' and 'CAR' is coded as 'ZXO' then 'SCOOTER' can be coded as
(1) TAPPIYB
(2) PYVVAHJ
(3) PZLLQBO
(4) JZKKMCO

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195. Find the value of f(0) if $f(x + 2) = (x + 1)^{34} - (x + 1)^{33} + 5$.
1. 5 2. 7 3.6 4.72

196. The shortest distance between the parallel lines A and B in the following figure is

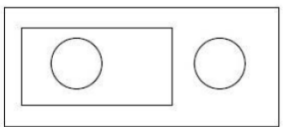
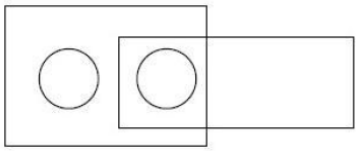
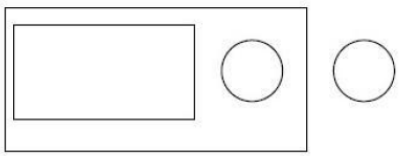
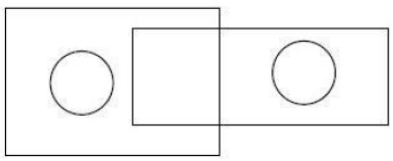


1. $\sqrt{2}$ 2. 2
3. $2\sqrt{2}$ 4. $2\sqrt{3}$

197. Two varieties A and B of rice cost Rs.30 and Rs. 90 per kg, whereas two varieties C and D of pulses, Rs. 100 and Rs. 120 per kg, respectively. If at least one kg each of A and B and at least half a kg each of C and D have to be purchased, then the minimum and maximum costs of a total of 5 kg of these provisions are, respectively
1. Rs. 150 and Rs. 600 2. Rs. 260 and Rs. 530
3.Rs. 290 and Rs. 470 4.Rs. 370 and Rs. 460

198. One of four suspects A, B, C and D has committed a crime. A and D are always truthful and B and C are always untruthful. C and D are identical twins and the interrogator does not know who is who. If A says, “D is innocent”, B says, “A is guilty” and among C and D one says, “A is innocent” and the other says, “B is guilty”, then which of the following is False?
1. D said “A is innocent” 2. D is innocent
3.B is innocent 4.C is innocent

199. Which is an appropriate diagram to represent the relations between the following categories: quadruped, mammal, whale, house lizard

1. 
2. 
3. 
4. 

200. A 7 m long tube having inner diameter of 2 cm is filled with water. The water is then poured into a cylindrical bucket having inner base area of 200 cm^2. What will be the approximate height (in cm) of water in the bucket?
1. 22 2. 44
3.9 4.11

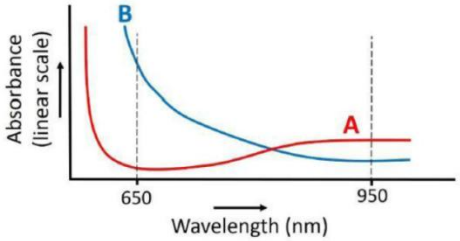
201. Water is being filled in a cone from the top at a constant volumetric rate. The rate of increase of the height of the water column
1. is linearly dependent on time
2. depends on the apex angle of the cone
3. increases as cube-root of the volumetric rate

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4. increases as square-root of the volumetric rate

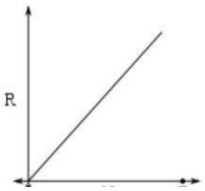
202. A square board is divided into 9 smaller identical squares by drawing lines. Three bullets are shot at the board randomly. The probability that at least 2 bullets hit the same small square is
1.1/3 2. 56/81
3.25/81 4.2/3

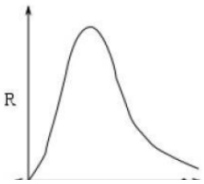
203. The wavelength dependant absorbance of two compounds, A and B, is shown. Absorbance of mixture is a linear function of the concentration of the two compounds. R is defined as a ratio of absorbance at 650 nm to the absorbance at 950 nm.

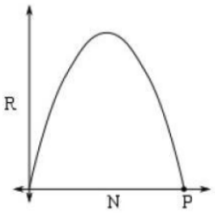


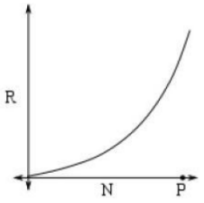
If the mixture contains 95% of compound A then R must be
1. 95 2. 5
3.1 4.less than 1

204. An epidemic is spreading in a population of size P. The rate of spread R of the disease at a given time is proportional to both, the number of people affected by the disease (N), and the number of people not yet affected by the disease. Which of the following graphs of R vs N is correct?

1. 

2. 

3. 

4. 

205. A and B complete a work in 30 days. B and C complete the same work in 24 days where as C and A complete the same work in 28 days. Based on these statements which of the following conclusions is correct?
1. C is the most efficient and B is the least efficient
2. B is the most efficient but, the least efficient one cannot be determined
3.C is the most efficient but, the least efficient one cannot be determined
4.C is the most efficient and A is the least efficient

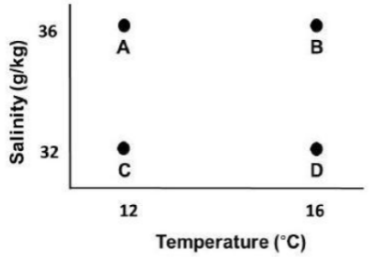
206. Clock A loses 4 minutes every hour, clock B always shows the correct time and clock C gains 3 minutes every hour. On a Monday, all the three clocks showed the same time, 8 pm. On the following Wednesday, when the clock C shows 2 pm, what time will clock A show?
1. 7: 20 am 2. 8: 40 am
3.9: 20 am 4.10: 40 am

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207. In a class, there is one pencil for every two students, one eraser for every three students and one ruler for every four students. If the total number of these stationary items required is 65, how many students are present in the class?

1. 55
2. 60
3. 65
4. 70

208. The figure shows temperature and salinity of four samples of water. Which one of the samples has the highest density?



1. A
2. B
3. C
4. D

209. The given table shows the numbers of active and recovered cases of a certain disease. Assuming that the linear trend for both continues, on which day will recovered cases be twice that of the active cases?

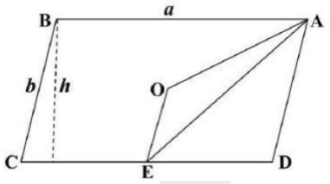
Day	0	1	4	7	10
Active cases	990	1000	1030	1060	1090
Recovered cases	760	800	920	1040	1160

1. 61
2. 62
3. 63
4. 64

210. A boat weighs 60 kg and oarsmen A and B weigh 80 and 90 kg, respectively. Rowing at a constant power, the time required to complete a course is proportional to the total weight. Rowing alone, A and B complete the course in 1 and 1½ hours, respectively. Assuming that their powers add up, how long will they take to complete the course if they row together?

1. 49.4 min
2. 57.5 min
3. 62.6 min
4. 72.5 min

211. Consider a parallelogram ABCD with centre O and E as the midpoint of side CD. The area of the triangle OAE, is



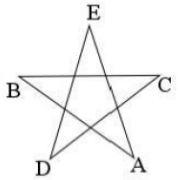
1. $\frac{1}{5}ah$
2. $\frac{1}{6}ah$
3. $\frac{1}{8}ah$
4. $\frac{1}{7}ah$

212. The sum of the first n even numbers is

1. divisible by n and not by (n + 1)
2. divisible by (n + 1) and not by n
3. divisible by both n and (n + 1)
4. neither divisible by n nor by (n + 1)

213. A, B, C, D and E are the vertices of a regular pentagon as shown in the figure

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The angle ∠ABC is
1.48° 2. 72° 3.54° 4.36°

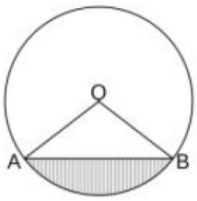
214. On a 200 m long straight road, maximum number of poles are fixed at 20 m interval. How many of these poles should be removed in order to have maximum number of poles at an interval of 40 m on the road?
1. 8 2. 6 3.5 4.4

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215. A book has 40 pages and each page has x lines. If the number of lines were reduced by 2 in each page, the number of pages would increase by 10 for the identical text. What is the value of x?
1. 7 2. 10 3. 20 4. 30

216. If all the planets in our solar system were to move in the same plane, it would necessarily imply that
1. The Sun is at the center of the solar system
2. The visible planets will appear aligned along a straight line in the sky as seen from the earth
3. Motion of planets is governed by Newton's law of gravity
4. The radii of the orbits of the planets are in harmonic progression

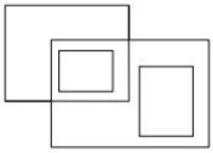
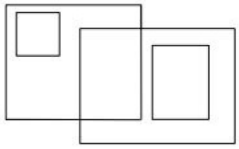
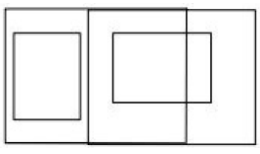
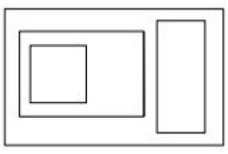
217. As shown in the figure, a chord AB of circle of unit radius subtends at angle of 90° at the center o. The area of the shaded region is



1. $\frac{1}{2}\left(\pi-\frac{1}{2}\right)$ 2. $\frac{1}{4}(\pi-2)$
3. $\frac{1}{2}(\pi-2)$ 4. $\frac{1}{4}\left(\pi-\frac{1}{2}\right)$

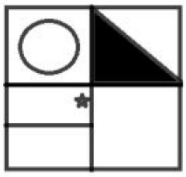
218. A piece in a board game starts at the centre of the board having 5 × 5 squares. The piece can be moved one square horizontally or vertically in one move. If all its moves are random, the chance that it will be in one of the outer squares at the end of 2 move is
1.1/4 2. 2/3 3. 16/25 4. 1/2

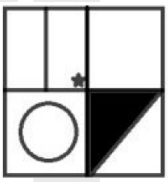
219. An appropriate Venn diagram to represent the relationships between the categories 'inflammable substance', 'water', 'petrol' and 'liquid' is

1. 
2. 
3. 
4. 

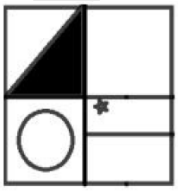
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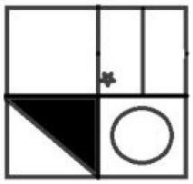
220. Which of the following figures matches exactly the figure below, but for orientation?



1. 

2. 

3. 

4. 

221. The square of a two digit number, with non-zero digits, is the number itself preceded by the digit C. Then C is

1.1 2. 2 3. 4 4. 6

222. The number of dates between 1st January 2000 and 31st December 2020 when written in the format DDMMYYYY that read the same from left to right and right to left (e.g. 12th February 2021) is

1.6 2. 7 3. 20 4. 21

223. Two windows of a building are exactly one above the other and their lower edges are 2m and 4m above the ground. The angle of elevation of the bird from the lower edge of the lower window is 60° and that from the lower edge of the upper window is 30°. How high is the bird above the ground?

1.5 m 2. 8 m 3. 10 m 4. 15 m

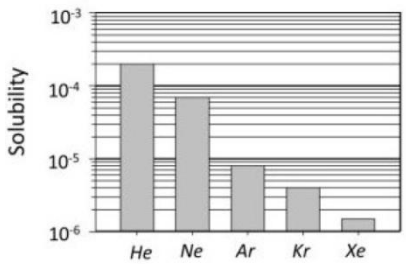
224. Six persons P, Q, R, S, T and U sit around a circular table with equal distance between neighbours. P is to the immediate left of R. T and S do not sit next to each other, and T and R are diametrically opposite to each other. Which of the following is NOT possible?

1. Q and P are sitting diametrically opposite to each other
2. P and U are sitting diametrically opposite to each other
3. S and T are sitting diametrically opposite to each other
4. S and Q are sitting diametrically opposite to each other

225. Machine A cuts rods whose mean length is 10 cm with a standard deviation of 3 mm. Machine B cuts rods of the mean length 20 cm with a standard deviation of 4 mm. Rods of 30 cm mean length are made, each by joining one rod from each machine. The standard deviation in the length of the joined rod is

1.10 mm 2. 7 mm 3. 5 mm 4. 3.5 mm

226. The bar chart shows the solubility of five species of noble gases in a solvent. The ratio of the solubility of He and Kr is



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1. 200/4 2. 100/3 3. 900/7 4. 300/2

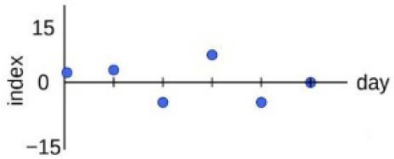
227. Water from a completely filled cylindrical jar is poured into smaller cylindrical jars having 1/10th of its diameter but same height. How many smaller jars can be completely filled with water?
1.10 2. 31
3. 100 4. 314

228. At a particular location, a mobile app shows that there are 6, 13, 28 and 50 infected persons with radii of 1, 2, 3, and 4 km, respectively. Within which radius is the density of infected persons the largest?
1.1 km 2. 2 km 3. 3 km 4. 4 km

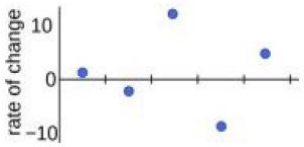
229. A and B have coins of Rs. 1, Rs. 2, Rs. 5 and Rs. 10, in the ratio 4:3:6:2 and 3:5:7:3, respectively. A has Rs. 6/- more than B. Which of the following can be the number of coins with A and B, respectively?
1.42, 36 2. 45, 54
3. 60, 54 4. 60, 72

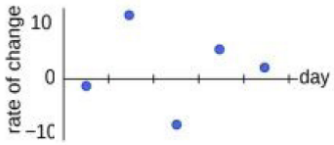
230. Six indistinguishable balls are to be distributed amongst A, B and C, such that each gets at least one. Then the number of ways to make this distribution is
1.6 2. 10
3. 18 4. 15

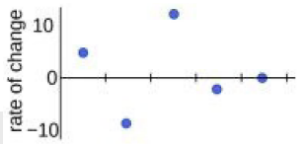
231. The graph shows the day-on-day changes in a certain index.

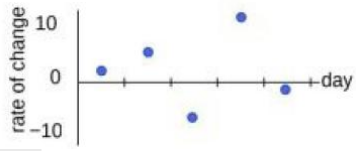


Which of the following is the correct graph of the rate of change of the index?

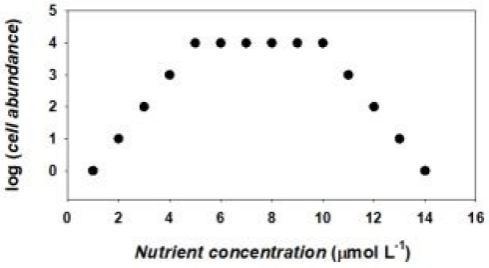
1. 

2. 

3. 

4. 

232. The figure shows the result of an experiment in which cells of a certain bacterium were grown in different nutrient concentrations while keeping all other parameters constant. Which of the following inferences is correct?

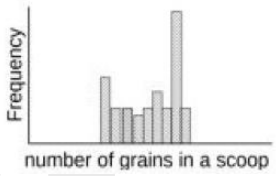


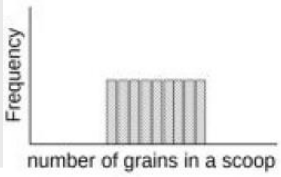
1. Nutrients do not have any role in cell growth.
2. There is a linear increase in cell abundance at low nutrient concentrations.

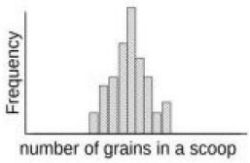
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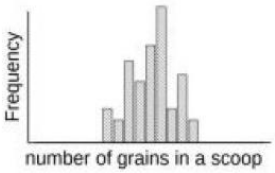
3. Cell abundance was limited by the availability of nutrients but a high nutrient concentration seems toxic for the bacteria.
4. Cell abundance decreased rapidly once nutrient concentration reached 5 μ mol L^{-1}.

233. An experiment is done to count the number of small grains that make up a level scoop, taking adequate precautions. If the measurements are repeated several times, which of the following frequency distributions is most unlikely to occur

1. 

2. 

3. 

4. 

234. Section A has 24 students. If one student of this section is exchanged for another in Section B, then the average mark of A is increased by 1.25, while that of B reduced by 1. The number of students in Section B is

1.16 2. 20 3. 25 4. 30

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235. A ranks 10^{th} from both the top and the bottom in merit among the girls in her class. B ranks 6^{th} from the top and 16^{th} from the bottom among boys in the same class. If A is immediately ahead of B in merit order, her rank in the entire class would be

1. 16^{th} from the top and 26^{th} from the bottom
2. 15^{th} from the top and 26^{th} from the bottom
3. 15^{th} from the top and 27^{th} from the bottom
4. 16^{th} from the top and 27^{th} from the bottom

236. In a test with multiple choice questions, candidates get 4 marks for a correct answer and lost 1 mark for an incorrect answer. Two candidates A and B attempting 18 and 13 questions, respectively, secure equal marks. How many more INCORRECT answers does A have compared to B?

1. 3 2. 4 3. 5 4. 6

237. If 90 people are to be seated randomly in 15 rows of 6 seats each, what is the probability that a person gets a seat at either end of a row?

1. 1/2 2. 1/4 3. 1/3 4. 1/15

238. A 360 ml aqueous solution contains 40% alcohol. How much will be the approximate percentage of alcohol if 3600 ml of water is added to the solution?

1. 2.6 2. 3.6 3. 4.0 4. 1.0

239. The arithmetic mean of five numbers is zero. The numbers may not be distinct. Which of the following must be true?

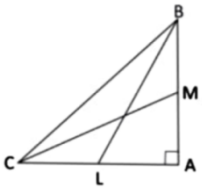
1. The product of the numbers is zero
2. At most two of these numbers are positive
3. There cannot be exactly one zero
4. There cannot be exactly one non-zero number

240. A 5 kg watermelon contains 99% water by weight. Some of the water evaporates and the melon now contains 98% water by weight. What is the weight (in kg) of watermelon now?

1. 4.5 2. 2.5 3. 4.8 4. 4.9

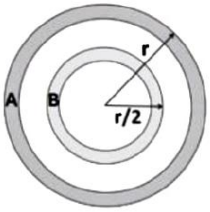
241. Consider a right angled triangle BAC with medians CM and BL having the same length. The ratio of the length of BC to that of ML is

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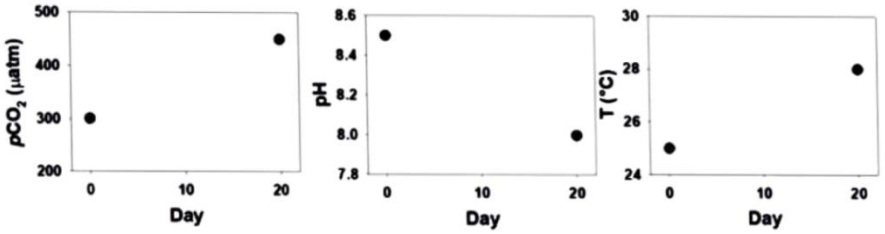
1. 2 2. 3/4 3. 4/3 4. 1

242. There are two concentric circular tracks A and B of width 2 m each as shown in the figure. If r = 30 m, what is the ratio of the areas of Track A to Track B?



1. 28/13 2. 2/1 3. 29/14 4. 5/3

243. Given figure represents pH, partial pressure of CO_2 (pCO_2) and temperature (T) in an experiment conducted in a water sample over 20 days. Which of the following statements can definitely be made based on this experiment?

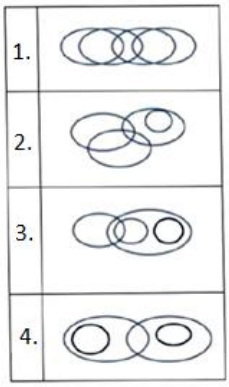


1. High CO_2 causes global warming
2. High temperature causes acidification
3. There is a decrease in pH and an increase in both T and pCO_2 over 20 days
4. pH and pCO_2 are positively correlated while pH and T are inversely correlated

244. A set of 27 similar looking coins has 26 identical coins and one dummy coin having less weight. What is the minimum number of weighings that will ensure identification of the dummy coin using a two-pan balance?

1. 3 2. 4 3. 5 4. 6

245. An appropriate diagram showing the relationship between the categories FOOD, VEGETABLES, ROOTS and ICE CREAMS is



Select the Correct option

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246. The wholesale price per unit of an item is C_0 up to first 19 units. The unit price falls by 10% if 20 to 29 units are purchased and by another 10% if 30 or more units are purchased. If 120 units are bought, the total price paid is approximately
1. 99 C_0
2. 97 C_0
3. 91 C_0
4. 81 C_0

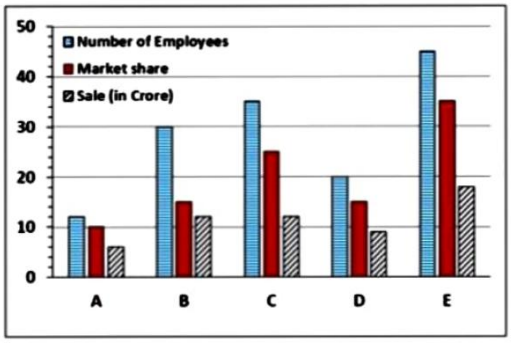
247. Of all the English magazines published in a country, magazine M is read by the highest number of readers. It necessarily follows that
1. M is the most popular English magazine published in the country
2. M is the most popular English magazine in the country
3. M is the most popular magazine in the country
4. The study has not considered the readership of English magazines published outside the country

248. On a track of 200 m length, S runs from the starting point and R starts 20 m ahead of S at the same time. Both reach the end of the track at the same time. S runs at a uniform speed of 10 m/s. If R also runs at a uniform speed, then how much more time would R take to run the entire course?
1. 0.5 second
2. 1.0 second
3. 1.5 seconds
4. 2.2 seconds

249. A battalion consists of elephants, horses and soldiers totaling to 3500. There are twice as many horses as elephants and one-fourth of the soldiers are riding these animals. In the stand still position, number of feet on ground is 7500. The number of horses in the battalion is
1. 525
2. 625
3. 550
4. 600

250. Two digital clocks show times 09h 13m and 09h 17m, respectively, at one instant. Exactly 30 seconds later the clocks show 09 h 14 m and 09g 17 m, respectively. Which one of the following options is a possible difference between the times maintained by the two clocks?
1. 3 m 00 s
2. 30 s
3. 4 m 00 s
4. 4 m 30 s

251. The graph shows number of employees, market share (as % by number of units sold), and sale (in Rs. crore) for five companies A, B, C, D, E.

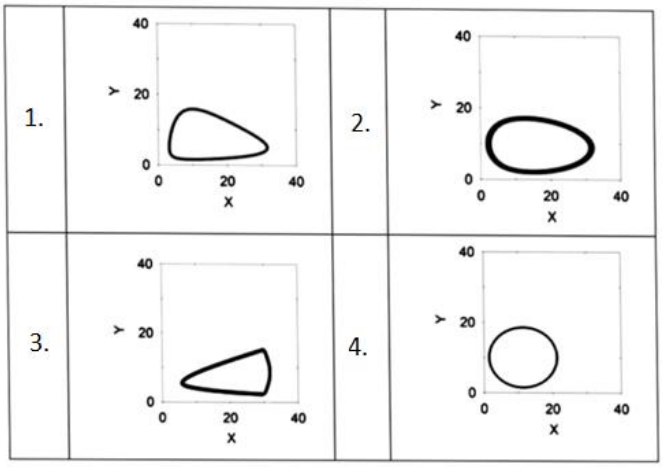


Select the correct statement
1. A has the highest market share per employee, C has the highest sale for its market share
2. C has the highest market share per employee, B has the highest sale for its market share
3. D has the highest market share per employee, E has the highest sale for its market share
4. A has the highest market share per employee, B has the highest sale for its market share

252. Consider the following four statements
Statement 1: “Statement 3 is true.”
Statement 2: “Statement 1 is true”
Statement 3: “Statement 1 is true and Statement 2 is false”
Statement 4: “Statement 1, 2 and 3 are false”
Which of the above statements must be true for the four statements to be mutually consistent?
1. Statement 1
2. Statement 2
3. Statement 3
4. Statement 4

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253. Which one of the following, drawn on a linear scale, represents the circle shown in the figure above?



Select the correct option.

254. The number of three digit PINs, in which the third digit is the sum of the first two digits, is
1. 55 2. 9 3. 45 4. 11

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255. On a spherical globe of radius 10 units, the distance between A and B is 25 units. If it is uniformly expanded to a globe of radius 50 units, the distance between them in the same units would be
1. 75 2. 125 3. 150 4. 625

256. THE ABILITY TO REASON ACCURATELY IS VERY IMPORTANT, AS IS THE ABILITY TO COUNT. AS AN EXERCISE IN BOTH, LET US COUNT HOW MANY TIMES THE LETTER "E" OCCURS IN THIS PARAGRAPH. THE CORRECT COUNT IS
Which option when put in the blank in the above paragraph will make the final sentence accurate?
1. SIXTEEN 2. SEVENTEEN
3. EIGHTEEN 4. NINETEEN

257. A person takes loan of Rs. 1,50,000 at a compound interest rate of 10% per annum. If the loan is repaid at the end of the 3rd year, what is the total interest paid?
1. 45000 2.82600 3.94600 4.49650

258. The standard deviation of data $x_1, x_2, x_3, \ldots, x_n$ is $\sigma(\sigma > 0)$. Then the standard deviation of data $3x_1 + 2, 3x_2 + 2, 3x_3 + 2, \ldots, 3x_n + 2$ is
1. 3σ 2. σ 3. $3\sigma + 2$ 4. 9σ

259. A boy can escape through a window of size at least 4 feet. The 28 windows of a house are of sizes $2, 3, 4$ or 5 feet and their numbers are proportional to their sizes. The number of windows available for the boy to escape through is
1. 2 2.9 3.10 4.18

260. The difference of the squares of two distinct two-digit numbers with one being obtained by reversing the digits of the other is always divisible by
1. 4 2.6 3.10 4.11

261. In an assembly election, parties A, B, C, D and E won 30, 25, 20, 10 and 4 seats, respectively; whereas independents won 9 seats. Based on this data, which of the following statements must be INCORRECT?
1. No party has majority.
2. A and C together can form the government.

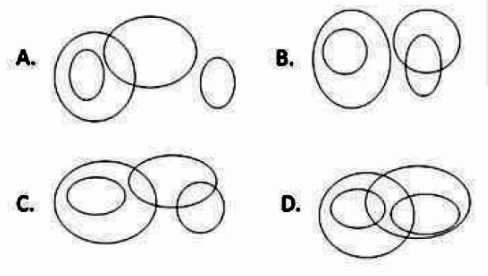
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3. A and D with the support of independents get the majority.
4. An MLA from E can become Chief Minister.

262. In an examination containing 10 questions, each correct answer is awarded 2 marks, each incorrect answer is awarded -1 and each unattempted question is awarded zero. Which of the following CANNOT be a possible score in the examination?

1. -9 2. -7 3. 17 4. 19

263. An appropriate diagram to depict the relationships between the categories INSECTS, BIRDS, EXTINCT ANIMALS and PEACOCKS is



1. A 2. B 3. C 4. D

264. The ratio of ages of a mother and daughter is 14:1 at present. After four years, the ratio of their ages will be 16:3. What was the age of mother when the daughter was born?

1. 26 2. 28 3. 30 4. 32

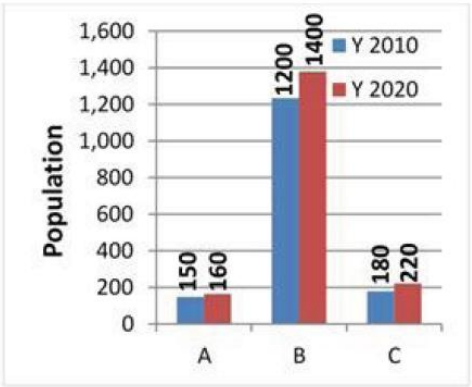
265. Person A tells the truth 30% of the times and B tells the truth 40% of the times, independently. What is the minimum probability that they would contradict each other?

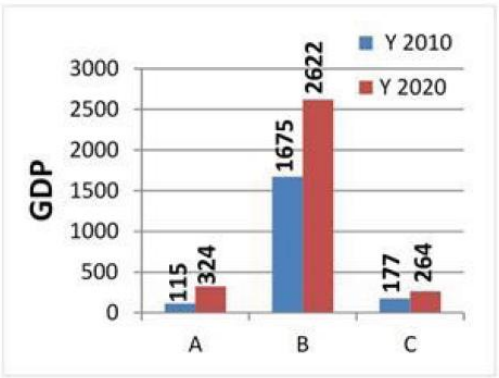
1. 0.18 2. 0.42 3. 0.46 4. 0.50

266. A device needs 4 batteries to run. Each battery runs for 2 days. If there are a total of 6 batteries available, what is the maximum number of days for which the device can be run by strategically replacing the batteries till all the batteries are completely drained of power?

1. 2 2. 3 3. 4 4. 5

267. The populations and gross domestic products (GDP) in billion USD of three countries A, B and C in the years 2010 and 2020 are shown in the two figures below.





In terms of increase in per capita GDP from 2010-2020, their ranking from high to low is

1. A, B, C 2. B, A, C
3. B, C, A 4. C, A, B

268. **A** and **B** have in their collection, coins of Re. 1, Rs. 2, Rs. 5 and Rs. 10 in the ratio 3 : 2 : 2 : 1 and 4 : 3 : 2 : 1, respectively. The total number of coins with each of them is equal. If the value of coins with **A** is Rs. 270/-, what is the value of the coins (in Rs.) with **B**?

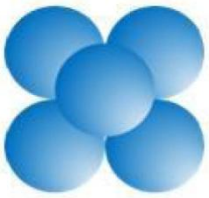
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1. 213 2. 240 3. 275 4. 282

269. If the speed of a train is increased by 20%, its travel time between two stations reduces by 2 hrs. If its speed is decreased by 20%, the travel time increases by 3 hrs. What is the normal duration of travel (in hrs)?
1. 11.5 2. 12.0 3. 13.2 4. 14.0

270. In a group of 7 people, 4 have exactly one sibling and 3 have exactly two siblings. Two people selected at random from the group, what is the probability that they are NOT siblings?
1. 5/21 2. 16/21 3. 3/7 4. 4/7

271. Five identical incompressible spheres of radius 1 unit are stacked in a pyramidal form as shown in the figure. The height of the structure is

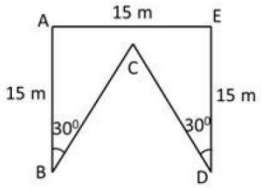


Top view

1. $2+\sqrt{2}$ 2. $2+\sqrt{3}$ 3. $2+2\sqrt{2/3}$ 4. 3

272. Two datasets A and B have the same mean. Which of the following MUST be true?
1. Sum of the observations in A = Sum of the observations in B.
2. Mean of the squares of the observations in A= Mean of the squares of the observations in B.
3. If the two datasets are combined, then the mean of the combined dataset = mean of A + mean of B.
4. If the two datasets are combined, then the mean of the combined dataset = mean of A.

273. The figure shows map of a field bounded by ABCDE. If AB and DE are perpendicular to AE, then the perimeter of the field is



1. 70 m 2. 75 m 3. 80 m 4. 85 m

274. In a meeting of 45 people, there are 40 people who know one another and the remaining know no one. People who know each other only hug, whereas those who do not know each other only shake hands. How many handshakes occur in this meeting?
1. 225 2. 10 3. 210 4. 200

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275. In the following finite sequence of integers, how many terms are divisible by their immediately preceding terms?
8, 3, 4, 9, 3, 5, 9, 5, 9, 9, 9, 4, 5, 6, 3, 3, 5, 7, 2, 3, 9, 9
1. 3 2. 4 3. 5 4. 6

276. Rounding off 4.58500001 to the second decimal place will give
1. 4.6 2. 4.58 3. 4.59 4. 4.585

277. Four students Akash, Bikram, Ramesh and Dewan joined a college in 1991, 1992, 1993 and 1994 but not necessarily in that order. Each student joined one of the four departments viz. Physics, Chemistry,

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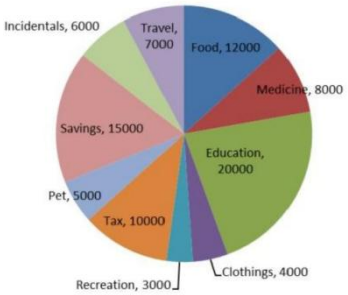
Mathematics and Biology. No two students joined the same department. One of those who joined the college before 1993 joined Chemistry. No one joined the college after Ramesh. Dewan joined Physics. Akash joined one year after Dewan but didn't join Chemistry. The student who joined in 1992, joined the department of

1. Physics 2. Chemistry 3. Mathematics 4. Biology

278. Two rectangular pieces of land both having all sides and diagonals in whole numbers in meters have areas in the ratio 4 : 3 and the smaller (in area) piece has diagonal 41m and one side 9m. However, the bigger piece has a smaller diagonal. The diagonal of the bigger piece is

1. 25 4. 29 5. 32 6. 34

279. Average monthly expenses (in rupees) incurred by a family are as shown in the chart.



What is the value of the central angle corresponding to the amount spent on recreation?

1. 12° 2. 13° 3. 14° 4. 15°

280. Train travel time between stations A and B is 39 hours. Every day a pair of trains leave from A to B and B to A at 6 AM. If the service starts on a Monday, on which earliest day will the same train rakes start the journeys again from their original stations?

1. Wednesday 2. Thursday 3. Friday 4. Saturday

281. Consider two 24-hour clocks A and B. Clock A gets faster by 8 min and Clock B gets slower by 12 min every hour. They are synchronized to the correct time at 05:00 hrs. Within the following 24 hours at a certain instant Clock A shows 15:12 hrs and Clock B shows 12:12 hrs. What is the true time at that instant?

1. 13:48 2. 14:00 3. 14:12 4. 14:36

282. In a family of four, the engineer is the son of the chemist and brother of the teacher. The chemist is the wife of the lawyer and the mother of the teacher. Which of the following conclusions is necessarily true?

1. The teacher is the sister of the engineer.
2. The teacher is the son of the chemist.
3. The lawyer is the father of the teacher.
4. The lawyer is the brother of the teacher.

283. Consider the equation $3^x - 3^y = 3^4$. A solution to this equation with x and y integers

1. satisfies $x > 4, y > 4$
2. satisfies $x > 5, y > 3$
3. satisfies $x > 6, y > 2$
4. is not possible

284. The following 13 observations are molecular weights of 13 compounds (in amu):
65, 61, 63, 65, 61, 60, 65, 83, 65, 84, 61, 65, 62
Which of the following is true of the molecular weights?

1. Mean = Median < Mode
2. Median < Mode = Mean
3. Mode = Median < Mean
4. Median < Mean < Mode

285. Which of the following powers of 3 is the largest factor of
$1 \times 2 \times 3 \times 4 \times \ldots \times 30$?

1. 3^{10} 2. 3^{13} 3. 3^{14} 4. 3^{15}

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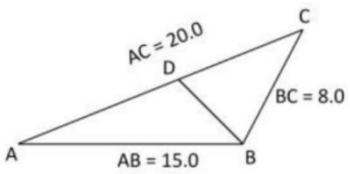
286. Which of the integers 10, 11, 12 and 13 can be written as the sum of squares of four integers (allowing repetition)?
1. Only 10 2. Only 10 and 11 3. Only 10, 11 and 12 4. All

287. In a queue each woman is preceded and followed by exactly two men. A particular woman is positioned, from among the women, fourth from the front. The woman's position in the queue from the front is
1. 9^{th} 2. 10^{th} 3. 11^{th} 4. 12^{th}

288. Sets $x_1, x_2, \ldots, x_{100}$ and $y_1, y_2, \ldots, y_{150}$ have means zero and the same standard deviations. Which of the following is the ratio of $\sum_1^{100} x_i^2$ to $\sum_1^{150} y_i^2$ closest to?
1. 1 : 1 2. $\sqrt{2}:\sqrt{3}$ 3. 2 : 3 4. 4 : 9

289. When an alarm goes off, policemen X and Y chase thief T, on foot and on a cycle respectively, along the same straight road. Initially the distance between X and Y was 4 times that between T and X. If X runs twice as fast as T and Y rides twice as fast as X, then
1. X and Y will catch up with T at the same time
2. X will catch T first
3. Y will catch T first
4. Y will cross X during the chase

290. In the figure ΔABC and ΔBDC are similar.



Then BD = ?

1. 8.0 2. 7.2 3. 7.5 4. 6.0

291. Every day a child adds to her piggy bank the same number of coin as are already there in it. If she starts with one coin then the piggy-bank gets full in 8 days. The number of days it will take to fill if she starts with two coins, is
1. 4 2. 5 3. 6 4. 7

292. In a grid puzzle, each row and column in the 9 × 9 grid, as well as each 3 × 3 sub-grid shown with heavy borders, must contain all the digits 1 – 9.

	8		4		9	6	5	3
6	4	2	8				7	
					?	8		
		7			5		4	2
			7		1			
8	5		6			1		
		6						
	1				4	7	3	6
2	7	3	5	6	8		1	

In the above partially filled grid, the square marked "?" contains
1. 2 2. 3 3. 6 4. 7

293. From a two-digit number, the sum of its digits is subtracted. The resulting number is
1. always divisible by 6
2. always divisible by 9
3. never divisible by 4
4. never divisible by 5

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294. Two cylindrical candles have unequal heights and diameters. The shorter lasts for 13 hours and the longer for 9 hours. They are lit at the same time and after 5 hours their heights are the same. What is the ratio of their original heights?

1. 1 : 2 2. 13 : 18 3.9 : 13 4. $\sqrt{5}:3$

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295. In a class of 30 students, those with roll numbers 1 to 20 secure an average of 72% marks, while those with roll numbers 11 to 30 secure an average of 75% marks. If the average marks of the entire class are 70%, what is the average marks of roll numbers 11 to 20 (in percent)?

1. 68 2. 74 3. 78 4. 84

296. By selling two items at the same price, a person gains 20% on one item and loses 20% on the other. Then over all

1. he neither loses nor gains 2. he loses 5%
3. he loses 4% 4. he gains 4%

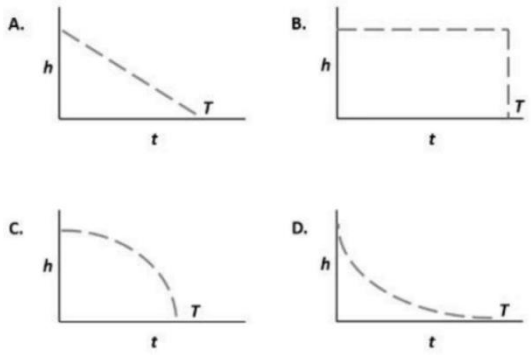
297. In a district, every second teacher who teaches chemistry also teaches physics and every third teacher who teaches physics also teaches chemistry. The ratio of teachers who only teach chemistry to those who only teach physics is

1. 3:2 2. 1:2
3. 2:3 4. 2:1

298. An athlete running on a track falls short of the finish line by 10 m when she runs at a constant speed for a given time. If she increases her speed by 20%, she overshoots by 20 m in the same time. What is the length of the track?

1. 134 m 2. 156 m 3. 160 m 4. 164 m

299. A cylindrical container has a tiny hole at the bottom. The container is intially filld to its brim with water. If T is the time taken for it to be completely emptied, the graph of height of the water column as a function of time is closest to



1. A 2. B 3. C 4. D

300. Rajesh went to Sunil's house situated 1 km North-East of his house. From there, he went to Arjun's house that is situated 707 m South of Sunil's house. What is the distance between Rajesh's current location and his house (to the nearest metre)?

1. 800 m 2. 600 m 3. 707 m 4. 1000 m

301. An experiment consists of tossing four fair coins independently. The outcome of the experiment is considered favourable, if the number of heads is greater than the number of tails. The probability of a favoruable outcome from a signle experiment is

1. $\frac{1}{2}$ 2. $\frac{3}{16}$ 3. $\frac{5}{16}$ 4. $\frac{3}{4}$

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302. Among finches males and females have one of the three colors – Red, Blue or Yellow – on their head. During the mating season, males and females pair up randomly. For a large population of finches with 50% red, 30% blue and 20% yelow coloured individuals among both males and females, what is the expected number of pairings between red males and yellow females if the total number of pairs formed is 10000?

1. 2500 2. 1500 3. 1000 4. 600

303. The length of bristlemouth fish is uniformly distributed between 2 and 4 inches. If a fisherman randomly catches 5 bristlemouth fishes, what is the probability that at least one of them will be 3 inches or longer?

1. 0.03125 2. 0.15625 3. 0.84375 4. 0.96875

304. The diagrams show the distribution of trees in two forest patches A and B. Each patch is divided into smaller "quadrats". The number of trees in each quadrat is shown. Which one of the following statements about the means (μ) and standard deviations (σ) of the numbers of trees in the two patches is true?

Forest Patch *A*

1	1	1	1	1
1	1	1	1	1
1	1	1	1	1
1	1	1	1	1
1	1	1	1	1

Forest Patch *B*

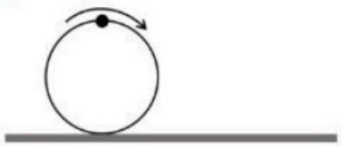
2	0	0	0	0
0	0	0	0	0
0	0	0	7	0
0	10	0	0	0
0	0	0	0	6

1. $\mu(A) = \mu(B), \sigma(A) = \sigma(B)$ 2. $\mu(A) > \mu(B), \sigma(A) > \sigma(B)$
3. $\mu(A) = \mu(B), \sigma(A) < \sigma(B)$ 4. $\mu(A) < \mu(B), \sigma(A) < \sigma(B)$

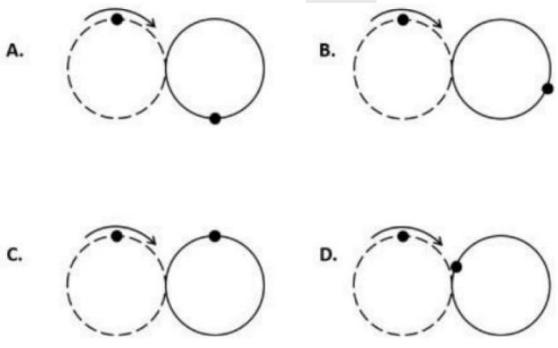
305. What would be the minimum number of notes for Rs. 4849 if notes are available only in denominations of Rs. 2, 5, 20, 50, 500?

1. 19 2. 20 3. 21 4. 22

306. A ring is rolling along a straight track as shown. The topmost point of the ring is marked.



Which of the diagrams shows a possible position of the ring at a later time, relative to the original position (shown by dashed circle)?



1. A 2. B 3. C 4. D

307. A group of 540 persons is to be seated row wise such that the number of persons in each row is 4 less than in the previous row. Which of the following number of rows is not possible?

1. 5 2. 6 3. 8 4. 9

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308. Out of a class of 100 students who can speak at least one of English or Hindi, 41 students can speak English. 21 students can speak both English and Hindi. How many students can speak Hindi?
1. 58 2. 80 3. 59 4. 38

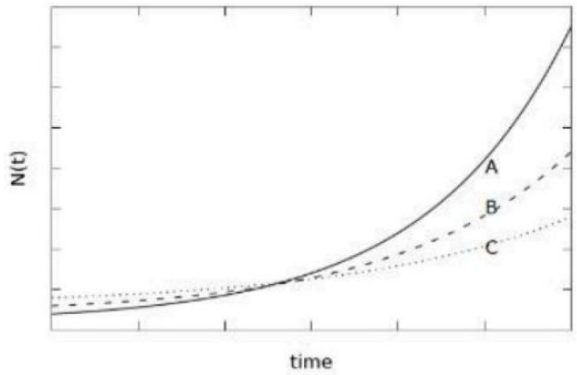
309. The son was born when his mother was 28 years old. The father is older to the mother by 4 years. If the current ages of the father and mother are in the ratio 9:8, what is the current age (in years) of the son?
1. 2 2. 3 3. 4 4. 5

310. In a class, among the boys B is taller than 10 boys, but shorter than 13 others. Among girls, G is taller than 6 girls, but shorter than 8 others. Two boys and three girls are shorter than B, but taller than G. If no two persons have the same height, then in the entire class, B is
1. taller than 21, but shorter than 18 others
2. taller than 20, but shorter than 18 others
3. taller than 20, but shorter than 19others
4. taller than 19, but shorter than 19 others

311. The hypotenuse of a right triangle, whose sides are integers, is 17 cm. Its area in sq. cm is
1. not calculable due to insufficient data 2. 60
3. 68 4. 225

312. On a one-way road, to demarcate 4 lanes, line segments of 3.5 m length are painted with gaps of 3.5 m along the length of the road. What is the total length of the painted lines (in m) over a 350 m stretch of the road?
1. 300 2. 400 3. 525 4. 700

313. The graph shows the growth curves for three independent populations (A, B and C). The growth model for each of these populations is $N(t) = N_0e^{rt}$
where N(t) is the population at time t, N_0 is the initial population and r is the per capita growth rate.



If r_A, r_B, r_C are the intrinsic growth rates of populations A, B and C respectively, which of these statements is true?
1. $r_A = r_B = r_C$ 2. $r_A > r_B = r_C$ 3. $r_A = r_B > r_C$ 4. $r_A > r_B > r_C$

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314. Choose the best alternative:
CURRY is to SPICE as _____ is to COLOUR
1. CANVAS 2. PAINTING 3. BRUSH 4. BRIGHTNESS

315. A spherical ball is placed inside a cubic box. If the diameter of the ball is same as the sides of the box, what approximate percentage of volume will be empty ?
(1) 12% (2) 24% (3) 36% (4) 48%

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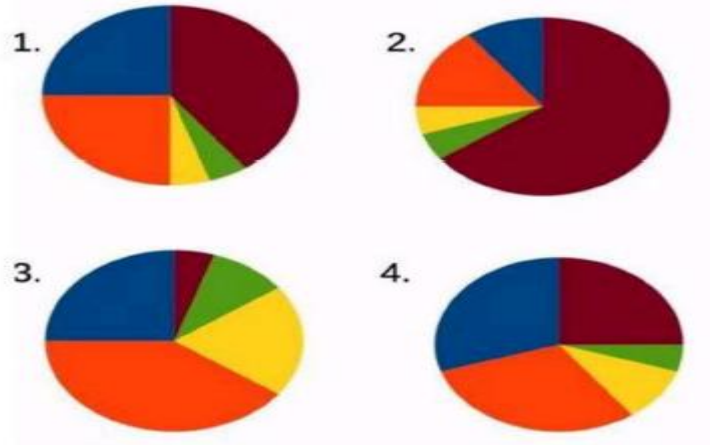
316. Choose the correct chronological order of the following:
A:match , B: trophy, C: toss, D:result.
1. C,A,D,B 2. A,D,B,C 3. C,B,A,D 4. D,C,B,A

317. Frank, Sam, Tom and David came first, second, third and fourth in a race but not necessarily in this order. Only one had first letter of position matching that of his name. If Tom Came first and Sam did not come second then
1. David came third
2. Frank came fourth
3. David came fourth
4. Sam came fourth

318. How many 4-digit numbers can be generated from the digits 1,2,3,4,5 such that no digit appears more than once, and digit 1 is always somewhere to the left of the digit 2?
1. 72
2. 36
3. 12
4. 6

319. Choose the option to fill in the blank that will make the following statement logically correct:
THE NUMBER OF OCCURRENCES OF THE LETTER "N" IN THIS SENTENCE IS CORRECTLY COUNTED AS.....
1. SIX 2. SEVEN 3.EIGHT 4. NINE

320. Which of the following pie-charts depicts the distribution of students in the five subjects such that physics and chemistry get equal number of students, 40% of the total go to the life sciences and remaining are equally divided into maths and earth sciences?



321. Fifteen distinct points are randomly placed on the circumference of a circle. How many distinct straight lines at the most can be formed by pairs among these points?
1. 105 2. 455 3.30 4. 210

322. A water bottle costs Rs.20 that includes cost of the bottle. If the water costs Rs 15 more than the bottle, then what is the cost of the bottle?
1. Rs. 2.50 2. Rs. 5 3.Rs. 7.50 4.Rs. 10

323. The average of seven numbers is 71. If We exclude one of these numbers, the average becomes 75. What is that number ?
1. 75 2. 74 3.73 4.47

324. In a board meeting of 20 directors, 6 shook everyone else's hands but the remaining 14 did not shake each another's. The total number of handshakes in the meeting was
(1)26 (2)84 (3)99 (4)190

325. If water of pH 8 is diluted 100 times with neutral water (pH=7) then it will
1. become acidic
2. remain basic
3. become neutral
4. become heavy

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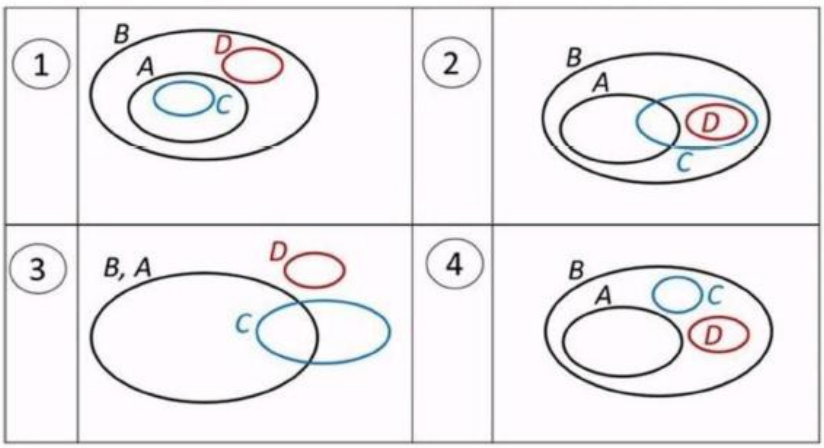
326. If a map is placed in such a manner that southwest becomes east, then what will north become?
1. Northeast 2.Southwest 3.Northwest 4. Southeast

327. A square sheet of 10 cm sides is folded along its diagonal to form an isosceles right triangle, and then hypotenuses are folded successively two times to form isosceles right triangles. What is the length of each equal side after the third folding ?
1. 0.625 cm 2.1.25 cm 3.2.5 cm 4.5 cm

328. The words TEST, EXAM and EAST are coded as 1382, 2182 and 1937 but not necessarily in that order. How would the word MATE be coded?
1. 9321 2. 7321 3. 7312 4.1982

329. All those who pass on entrance test take admission into a certain institute. Out of these, some graduate with a degree in 2 years while some fail and are removed, and all graduates from that institute get jobs in the same year. In 2022, no one took admission in that institute .Which of the following does NOT follow necessarily?
1. No one wrote the entrance test in 2022
2. No one passed the entrance test in 2022
3. No one graduated from the institute in 2024
4. No one got a job from the institute in 2024

330. Which one of the following Venn diagrams is NOT consistent with the following statements?
All A are B
No D is A
Some A are C



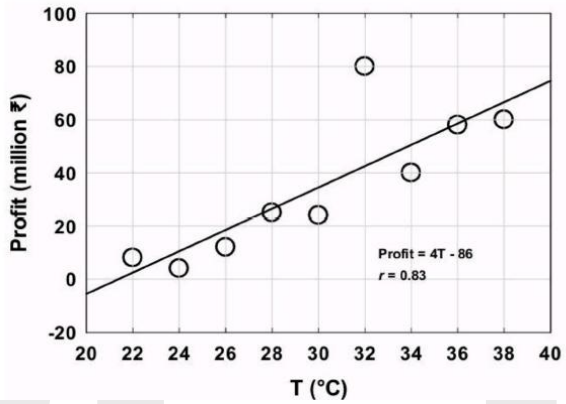
331. If I walked east 100 metres, turned right and walked 60 metres, turned left and walked 150 metres and turned left again, I would be facing
1. East 2. North 3.West 4. South

332. In a population of microbial cells, the initial population is 50, and the growth rate is 0.1 per hour. If the population grows exponentially, what will the approximate size of the population be after 10 hours?
1. 51 2. 82 3.136 4.156

333. In the fictional country of Numberia, which of the following provinces is the odd one out
1. SONECON 2. CUGHUSTER
3. FATWOHUM 4. CAFIVENGUS

334. The given figure shows data points and a line fit by least squared method between profit in ice-cream business and mean temperature (T) for a city. Which one of the following inferences can definitely be drawn?(The correlation coefficient r is also given in the figure)

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1. The sum of the squared values of differences between the observed and expected values of temperature is the minimum.
2. 83% of the variation in profit is explained by the variation in temperature.
3. Rise in temperature causes profit to increase.
4. At 25^0 C, estimated profit is 14 million₹.

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335. The value of a company is measured as the total value of its shares owned by different investors. Rakesh owns $\frac{2}{15}$ of the shares of a company. He sells $\frac{1}{3}$ of his shares for Rs. 75,000/-. What is the total value of the company at that time?

1. Rs. 15,75,800
2. Rs. 16,87,500
3. Rs. 17,75,800
4. Rs. 18,27,500

336. A cylindrical container of radius 20 cm was filled with water up to 25 cm height. A solid spherical ball of radius 7 cm was then immersed in the water. What would be the approximate increase in water level in the container after the ball was fully immersed?

1. 1.14 cm
2. 2.28 cm
3. 5.50 cm
4. 7.00 cm

337. What will be the digit at the unit's place of $1^3+2^3+3^3+4^3+5^3+6^3+7^3+8^3+9^3$?

1. 0
2. 5
3. 7
4. 9

338. Kavita starts from her house and walks 200 m northward, then turns 45° right and walks 70 m . After that, she turns 90° right and walks 70 m . Which of the following is the closest value of the shortest distance between Kavita's current location and her house?

1. 296 m
2. 240 m
3. 200 m
4. 223 m

339. Numbers of Rose, Lotus, and Marigold plants in a garden are in the proportion 8:5:7. Later, 75%, 40% and 50% more plants of their respective categories were added. What will be the new proportion of plants, in the same order?

1. 5:3:4
2. 4:2:3
3. 5:4:3
4. 7:4:5

340. Rahul and his father started jogging on a circular track of radius $'r'(r>2)$. Rahul completed one round and stopped. His father got tired half way into the first round and returned to his starting point along a straight line. What is the ratio of the distances covered by Rahul and his father?

1. $\pi r/(\pi+2)$
2. $2\pi/(\pi+2)$
3. 1
4. 2

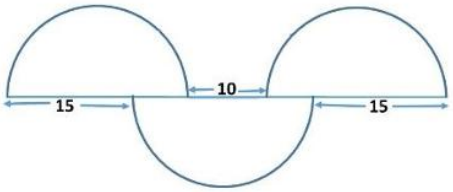
341. Consider the following statements:
Statement I: All Booklets are Manuals.
Statement II: All Manuals are Catalogues.

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If Statements I and II are True, which one of the following conclusions can be conclusively drawn?
1. All Manuals are Booklets.
2. All Catalogues are Booklets.
3. All Booklets are Catalogues.
4. All Catalogues are Manuals.

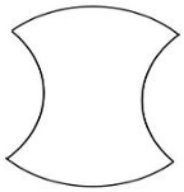
342. Suresh asked Ramesh to identify the person in a photo that the latter is holding. Ramesh responds, "I have no brothers or sisters. However, that man's father is my father's son." Who is the person in the photo?
1. Suresh
2. Ramesh
3. Ramesh's son
4. Ramesh's cousin

343. Three identical semi-circles are arranged as shown. What is the diameter of the semi-circles?



1. 5π
2. 20
3. $\frac{15\pi}{2}$
4. 25

344. A circle of radius 1 unit is divided into four quarters and rejoined as shown below.

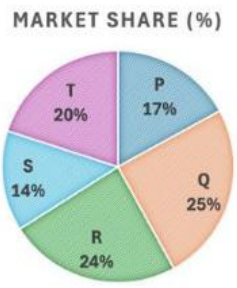


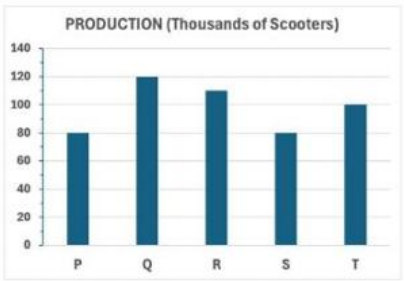
What is the area of this shape?
1. π
2. 1
3. 2
4. 4

345. A stock market trader has lost two thirds of her investment on a day. Next day she recovered one third of the previous day's loss. What fraction of her initial investment is she left with?
1. $\frac{1}{3}$
2. $\frac{2}{3}$
3. $\frac{2}{9}$
4. $\frac{5}{9}$

346. In a code, the word DELTOID is written as 3152893. Then LOTION could be written as
1. 582986
2. 582981
3. 198396
4. 198392

347. The market share (%) and annual production of scooters from five automobile companies P, Q, R, S, and T are shown in graphs.





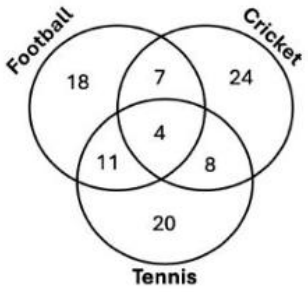
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If the profit of a company is directly proportional to the ratio of market share to production, then which of the following statements is/are CORRECT?
Statement X : Companies T and P have same profit

Statement Y : Company R has the maximum profit

Statement Z : Company S has the minimum profit
1. X and Y
2. X and Z
3. Y and Z
4. Only Z

348. The given Venn diagram shows numbers of players playing one or more than one sport.



The percentage of players who play exactly two sports is closest to %.
1. 5
2. 14
3. 28
4. 32

349. A car has wheels of diameter 36 cm . If it runs at a speed of 60 km/h, then the rotation per minute (RPM) will be closest to .
1. 884
2. 898
3. 906
4. 986

350. A number is mistakenly divided by 2 instead of being multiplied by 2 . What is the change in the result caused by this mistake?
1. 25%
2. 50%
3. 75%
4. 100%

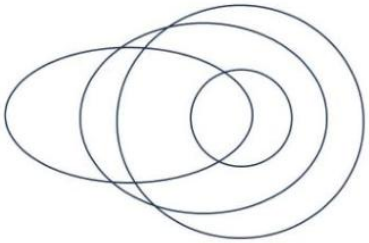
351. Sum of the digits of a two-digit number 'ab' is subtracted from the number and the result is divided by 9. Then the result of this will be
1. always a
2. always b
3. neither a nor b
4. either a or b depending on a+b

352. The initial monthly salaries of employees John, Riya, and Sunil were in the proportion 4:3:5. After an increase of Rs 10000 monthly to all, the new proportion becomes 6:5:7. What was the initial salary of Sunil?
1. Rs 20000
2. Rs 25000
3. Rs 30000
4. Rs 35000

353. Three friends, Mr. Rahman, Mr. George and Mr. Vedant, met after a long time. They were wearing red, green and violet colour shirts. Mr. Rahman and the person wearing violet shirt noticed that none of the three is wearing a colour that starts with same letter as his name. Which one of the following is the correct match of the persons with the colour of their shirts?
1. Rahman-Violet, George-Red, Vedant-Green
2. Rahman-Green, George-Violet, Vedant-Red
3. Rahman-Green, George-Red, Vedant-Violet
4. Rahman-Red, George-Violet, Vedant-Green

354. The following diagram represents the relationship between four categories.

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The categories could be
1. Rivers, water bodies, oceans, sources of evaporation
2. Parliamentarians, celebrities, elected persons, professional politicians
3. Monkeys, four-legged animals, pet animals, land animals
4. Furniture, chairs, seats, wooden objects

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355. Suppose $a_1, a_2, \ldots, a_{300}$ are integers such that $a_{i-1} + a_i + a_{i+1} = 2025$ for all i =2, 3, …, 299.
If $a_7 = -5$, $a_9 = 37$, then the value of a_{106} is
1. 1993 2. 37 3. -5 4. 2030

356. Five students graduated from a college, not all in the same year, after each has studied for four years. If batchmates Jiten and Anwar were between Ramesh and Prakash but senior to Sam while Ramesh had left the college before Jiten took admission, then it is certain that
1. Anwar was the most senior
2. Ramesh was the most senior
3. Sam was the most junior
4. Prakash was the most junior

357. What is the minimum number of pourings required to transfer exactly 6L of water from a 12L fully filled container to an 8L empty container when a 5L empty container is also available to use?
1.4 2.5 3.6 4. 7

358. Which among the following cities can be said most appropriately to bear the same relation to Tamil Nadu that Pune bears to Maharashtra; Surat to Gujarat and Asansol to West Bengal?
1. Tirupati 2. Mysore 3. Chennai 4. Coimbatore

359. In a community, some artists are teachers, no teacher is a painter, all painters are artists, and all teachers are professionals. Then it can be definitely asserted that
1. no painter is a professional
2. all artists are professionals
3. no professionals are teachers
4. some artists are professionals

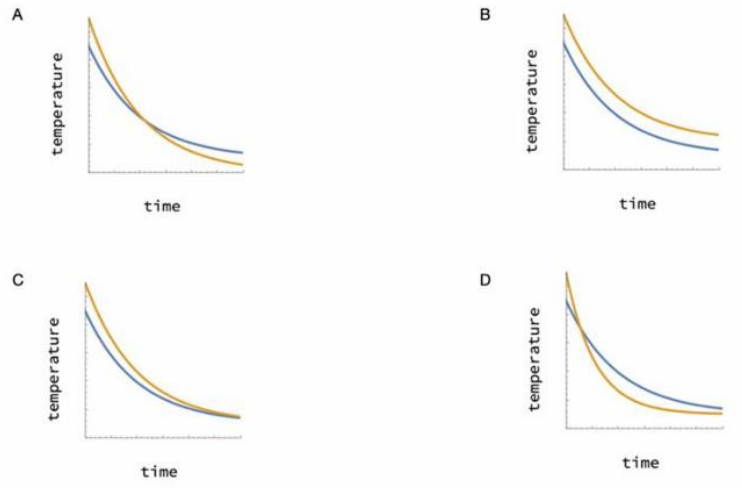
360. In an exam, questions of three difficulty levels hard, medium, and easy fetch respectively 7, 3 and 2 marks if correct and 0 if incorrect. Three students got 30 marks each but in three different ways, though the total number of questions correctly answered by each student was the same. Then what could be the total number of questions correctly answered by each of these students?
1. 12 2. 10 3.9 4. 6

361. A recent survey suggests that the total fertility rate in a country has fallen below 2.1, the population replacement ratio. This necessarily implies that the
1. Infant mortality rate has increased reducing the net fertility ratio.
2. Total population will decline.
3. Population of young people is going to increase with a faster rate in the long run if the same status continues.
4. Proportion of elderly people is going to decrease in the long run if the same status continues.

362. How many 5-digit numbers can be formed from the digits 0, 2, 3, 4, 5, 6, 7 and 9, using each at most once, which are divisible by 5?
1. 120 2. 240 3. 360 4. 720

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363. Two identical metal bars are heated to different temperatures and allowed to cool in the same surroundings. Which one of the following figures correctly shows their cooling curves?

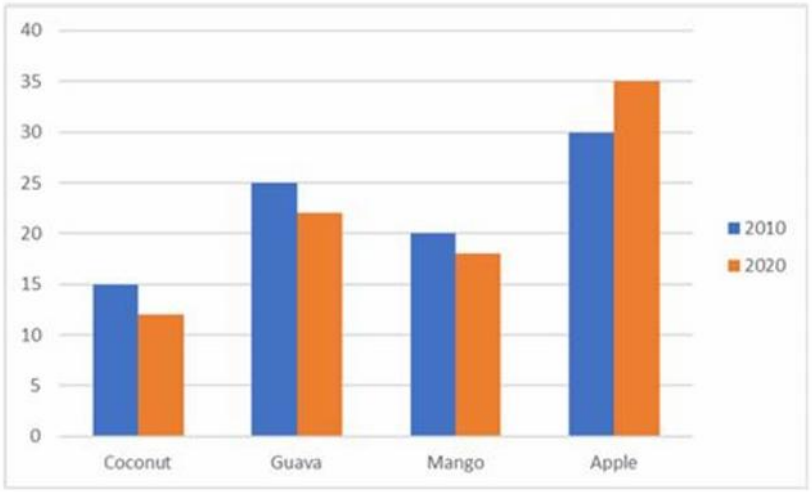


1. A 2.B 3. C 4. D

364. A lady bought some apples, each costing Rs.25, and some bananas each costing Rs 6, for a total of Rs. 378. In how many ways could she have chosen the numbers of apples and bananas?

1. 1 2.2 3. 3 4. 4

365. The numbers (in millions) of coconut, guava, mango and apple trees in a region in 2010 and 2020 are shown in the following figure.

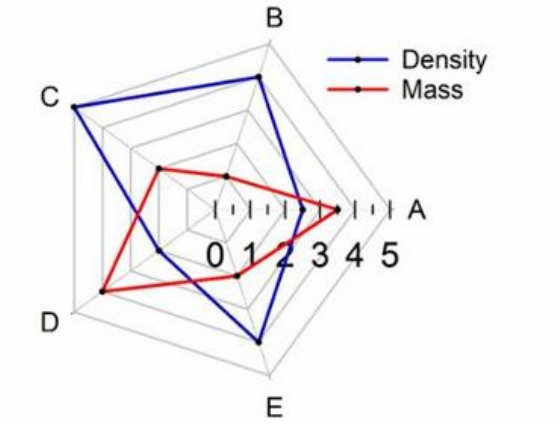


The maximum relative change in numbers was of

1. coconut trees 2. guava trees
3. mango trees 4. apple trees

366. The following figures shows densities and masses of five objects (A to E).

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The object with the largest volume is_____.

1. A 2. B 3. D 4. E

367. The geometric mean of 100 observations is 25. If each observation is multiplied by 4, what will be the new geometric mean?

1. 100 2. 50 3. 25 4. $(25\times 4)^{1/2}$

368. Alloy A is formed by mixing iron (Fe) and nickel (Ni) in the ratio 3:4, while alloy B is formed by mixing Fe and Ni in the ratio 9:5. If equal quantities of alloys A and B are melted together to form a new alloy C, what will be the ratio of Fe to Ni in the alloy C?

1. 4:3 2. 5:3 3.15:13 4. 13:9

369. The value of $1+\left(\frac{1}{2^1}+\frac{1}{3}\right)+\left(\frac{1}{2^2}+\frac{1}{5}+\frac{1}{6}+\frac{1}{7}\right)+\ldots+\left(\frac{1}{2^9}+\ldots+\frac{1}{1023}\right)$ lies between

1. 2 and 10 2. 11 and 20 3. 21 and 30 4. 31 and 40

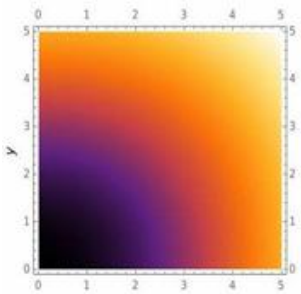
370. Three periodic events repeat every 24 seconds, 54 seconds, and 56 seconds. If they coincide at 10:20:00, when will they next coincide?

1.10:35:12 2.10:45:20 3.10:45:12 4. 10:35:20

371. In a class, 40% and 20% students passed in mathematics and Physics, respectively and 10% students passed in both subjects. What is the probability of a randomly selected student to have passed in Physics if the student already passed in Mathematics?

1. 1/2 2.1/20 3.1/4 4. 2/25

372. The following plot shows temperature as a function of x and y. Along which path is the temperature change minimum?



1. x = constant or y = constant 2. $\frac{y}{x^2}$ = constant

3. $y^2 + x^2$ = constant 4. yx = constant

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373. The minimum height of a plane vertical mirror that will allow a 6-feet tall person to see himself fully in it
1. depends on the distance between the person and the mirror
2. is 3 feet
3. is 4.5 feet
4. is 6 feet

374. Some, but not all, faces of a six-faced cubical fair die are painted red (R) and the remaining green (G); and the die is thrown until red faces come up on top 4 times. Consider the following sequences of colours listed left to right as they appear on the top.
A: GRRRR B: GRGRRR
Which one of the following is true?
1. A is more probable than B
2. B is more probable than A
3. Both have the same probability
4. Whether A or B is more probable depends upon how many faces are painted green

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CLASS ASSIGNMENT

ANSWER KEY

1. (2)	2. (1)	3. (1)	4. (2)	5. (3)	6. (3)
7. (2)	8. (1)	9. (3)	10. (4)	11. (2)	12. (1)
13. (3)	14. (2)	15. (1)	16. (1)	17. (4)	18. (1)
19. (2)	20. (2)	21. (4)	22. (2)	23. (3)	24. (2)
25. (2)	26. (1)	27. (2)	28. (1)	29. (4)	30. (2)
31. (1)	32. (2)	33. (4)	34. (4)	35. (3)	36. (3)
37. (2)	38. (4)	39. (3)	40. (1)	41. (2)	42. (2)
43. (4)	44. (3)	45. (3)	46. (2)	47. (1)	48. (3)
49. (3)	50. (3)	51. (3)	52. (2)	53. (4)	54. (3)
55. (3)	56. (3)	57. (3)	58. (4)	59. (3)	60. (3)
61. (4)	62. (3)	63. (3)	64. (3)	65. (2)	66. (1)
67. (2)	68. (4)	69. (2)	70. (4)	71. (4)	72. (2)
73. (1)	74. (2)	75. (4)	76. (1)	77. (1)	78. (4)
79. (4)	80. (3)	81. (4)	82. (4)	83. (3)	84. (4)
85. (1)	86. (1)	87. (2)	88.(1)	89. (1)	90. (2)
91. (4)	92. (3)	93. (3)	94. (2)	95. (1)	96. (2)
97. (1)	98. (3)	99.(3)	100.(4)	101.(3)	102.(4)
103.(4)	104.(4)	105.(3)	106.(3)	107.(2)	108.(2)
109.(4)	110.(4)	111.(1)	112.(3)	113.(2)	114.(3)
115.(2)	116. (2)	117. (3)	118. (2)	119. (4)	120. (3)
121. (1)	122. (1)	123. (3)	124. (3)	125. (4)	126. (3)
127. (2)	128. (4)	129. (2)	130. (4)	131. (3)	132. (2)
133. (4)	134. (4)	135. (1)	136. (3)	137. (3)	138. (2)
139. (2)	140. (2)	141. (1)	142. (3)	143. (2)	144. (2)
145. (1)	146. (3)	147. (2)	148. (2)	149. (3)	150. (3)
151. (2)	152. (4)	153. (1)	154. (1)	155. (3)	156. (3)
157. (2)	158. (1)	159. (4)	160. (4)	161. (3)	162. (1)
163. (4)	164. (1)	165. (3)	166. (1)	167. (2)	168. (1)
169. (3)	170. (1)	171. (3)	172. (4)	173. (3)	174. (2)
175.	176.	177.	178.	179.	180.
181.	182.	183.	184.	185.	186.
187.	188.	189.	190.	191.	192.
193.	194.	195.	196.	197.	198.
199.	200.	201.	202.	203.	204.
205.	206.	207.	208.	209.	210.
211.	212.	213.	214.	215.	216.
217.	218.	219.	220.	221.	222.
223.	224.	225.	226.	227.	228.
229.	230.	231.	232.	233.	234.
235.	236.	237.	238.	239.	240.
241.	242.	243.	244.	245.	246.
247.	248.	249.	250.	251.	252.
253.	254.	255. (2)	256. (4)	257. (4)	258. (1)
259. (4)	260. (4)	261. (3)	262. (4)	263. (3)	264. (1)
265. (3)	266. (2)	267. (1)	268. (2)	269. (2)	270. (2)
271. (1)	272. (4)	273. (2)	274. (3)	275.	276.
277.	278.	279.	280.	281.	282.
283.	284.	285.	286.	287.	288.
289.	290.	291.	292.	293.	294.
295.	296.	297.	298.	299.	300.
301.	302.	303.	304.	305.	306.
307.	308.	309.	310.	311.	312.
313.	314.	315.(4)	316.(1)	317.(2)	318.(2)

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319.(4)	320.(1)	321.(1)	322.(1)	323.(4)	324.(3)
325.(2)	326.(2)	327.(4)	328.(2)	329.(1)	330.(4)
331.(2)	332.(3)	333.(2)	334.(4)	335. (2)	336. (1)
337. (2)	338. (4)	339. (2)	340. (2)	341. (3)	342. (3)
343. (2)	344. (3)	345. (4)	346. (1)	347. (3)	348. (3)
349. (1)	350. (3)	351. (1)	352. (2)	353. (2)	354. (4)
355. (3)	356. (2)	357. (3)	358. (4)	359. (4)	360. (2)
361. (2)	362. (3)	363. (3)	364. (2)	365. (1)	366. (3)
367. (1)	368. (3)	369. (1)	370. (3)	371. (3)	372. (3)
373. (2)	374. (1)				

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