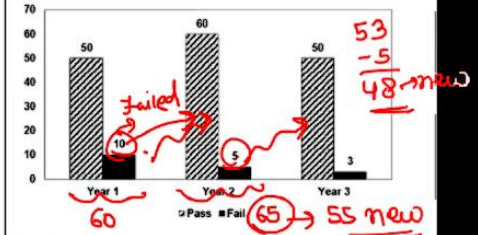
Q.9



The number of students passing or failing in an exam for a particular subject are presented in the bar chart above. Students who pass the exam cannot appear for the exam again. Students who fail the exam in the first attempt must appear for the exam in the following year. Students always pass the exam in their second attempt.

The number of students who took the exam for the first time in the year 2 and the year 3 respectively, are _____.

A)	65 and 53
(B)	60 and 50
(C)	55 and 53
(D)	55 and 18

Q.10

Seven cars P, Q, R, S, T, U and V are parked in a row not necessarily in that order. The cars T and U should be parked next to each other. The cars S and V also should be parked next to each other, whereas P and Q cannot be parked next to each other. Q and S must be parked next to each other. R is parked to the immediate right of V. T is parked to the left of U.

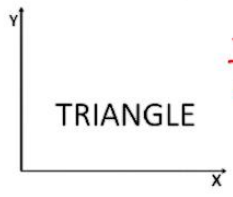
Based on the above statements, the only INCORRECT option given below is:

(A)	There are two cars parked in between Q and V.
(B)	Q and R are not parked together.
(C)	V is the only car parked in between S and R.
(D)	Car P is parked at the extreme end.

Q.1 Getting to the top is _____ than staying on top.

(A)	more easy
(B)	much easy
(C)	easiest
(D)	easier

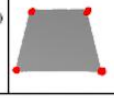
Q.2



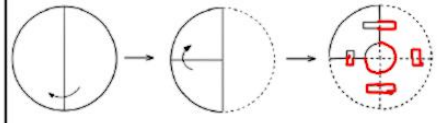
The mirror image of the above text about the X-axis is

(A)	⊥RIANGLE
(B)	⊥RIANGLE
(C)	⊥RIANGLE
(D)	⊥RIANGLE

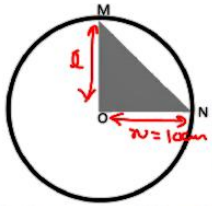
Q.1	The ratio of boys to girls in a class is 7 to 3. Among the options below, an acceptable value for the total number of students in the class is:
(A)	21
(B)	37
(C)	30
(D)	73

Q.2	A polygon is convex if, for every pair of points, P and Q belonging to the polygon, the line segment PQ lies completely inside or on the polygon. Which one of the following is NOT a convex polygon?
(A)	
(B)	
(C)	
(D)	

Q.3	Consider the following sentences: (i) Everybody in the class is prepared for the exam. (ii) Babu invited Danish to his home because he enjoys playing chess. Which of the following is the CORRECT observation about the above two sentences?
(A)	(i) is grammatically correct and (ii) is unambiguous
(B)	(i) is grammatically incorrect and (ii) is unambiguous
(C)	(i) is grammatically correct and (ii) is ambiguous
(D)	(i) is grammatically incorrect and (ii) is ambiguous

Q.4	 A circular sheet of paper is folded along the lines in the directions shown. The paper, after being punched in the final folded state as shown and unfolded in the reverse order of folding, will look like _____.
(A)	
(B)	

Q.3



Area = $\pi(r^2)$ = 100π

OM = ON = radius = x

$\frac{1}{2}x^2 = 50$

$x = 10cm$

In the above figure, O is the center of the circle and, M and N lie on the circle.

The area of the right triangle MON is 50 cm².

What is the area of the circle in cm² ?

(A)	2π
(B)	50π
(C)	75π
(D)	100π

Q.4

If $\begin{cases} "\oplus" \text{ means } "-", \\ "\otimes" \text{ means } "\div", \\ "\Delta" \text{ means } "+", \\ "\nabla" \text{ means } "\times", \end{cases}$

+2 -3 + [(4 ÷ 2) x 4]

+2 -3 + [8] = 10 - 3 = 7

then, the value of the expression $\Delta 2 \oplus 3 \Delta ((4 \otimes 2) \nabla 4)$ **=**

(A)	-1
(B)	-0.5
(C)	6
(D)	7

Q.5

"The increased consumption of leafy vegetables in the recent months is a clear indication that the people in the state have begun to lead a healthy lifestyle"

Which of the following can be logically inferred from the information presented in the above statement?

(A)	The people in the state did not consume leafy vegetables earlier.
(B)	Consumption of leafy vegetables may not be the only indicator of healthy lifestyle.
(C)	Leading a healthy lifestyle is related to a diet with leafy vegetables.
(D)	The people in the state have increased awareness of health hazards causing by consumption of junk foods.

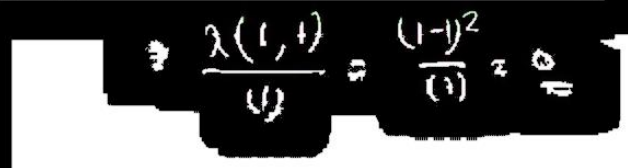
Q.6

Oxpeckers and rhinos manifest a symbiotic relationship in the wild. The oxpeckers warn the rhinos about approaching poachers, thus possibly saving the lives of the rhinos. Oxpeckers also feed on the parasitic ticks found on rhinos.

In the symbiotic relationship described above, the primary benefits for oxpeckers and rhinos respectively are,

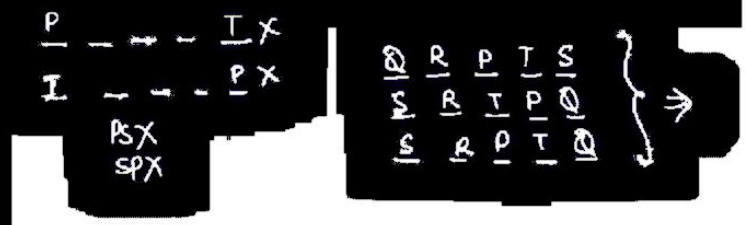
(A)	Oxpeckers get a food source, rhinos have no benefit.
(B)	Oxpeckers save their habitat from poachers while the rhinos have no benefit.
(C)	Oxpeckers get a food source, rhinos may be saved from the poachers.
(D)	Oxpeckers save the lives of poachers, rhinos save their own lives.

Q.9	A function, λ, is defined by $\lambda(p,q)=\begin{cases}(p-q)^2, & \text{if } p \geq q,\\ p+q, & \text{if } p<q.\end{cases}$ The value of the expression $\frac{\lambda(-(-3+2),(-2+3))}{(-(-2+1))}$ is:
(A)	-1
(B)	0
(C)	$\frac{16}{3}$
(D)	16



Q.10	Humans have the ability to construct worlds entirely in their minds, which don't exist in the physical world. So far as we know, no other species possesses this ability. This skill is so important that we have different words to refer to its different flavors, such as imagination, invention and innovation. Based on the above passage, which one of the following is TRUE?
(A)	No species possess the ability to construct worlds in their minds.
(B)	The terms imagination, invention and innovation refer to unrelated skills.
(C)	We do not know of any species other than humans who possess the ability to construct mental worlds.
(D)	Imagination, invention and innovation are unrelated to the ability to construct mental worlds.

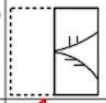
Q.1	Five persons P, Q, R, S and T are to be seated in a row, all facing the same direction, but not necessarily in the same order. P and T cannot be seated at either end of the row. P should not be seated adjacent to S. R is to be seated at the second position from the left end of the row. The number of distinct seating arrangements possible is:
(A)	2
(B)	3
(C)	4
(D)	5



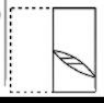
Q.2	Consider the following sentences: (i) The number of candidates who appear for the GATE examination is staggering. (ii) A number of candidates from my class are appearing for the GATE examination. (iii) The number of candidates who appear for the GATE examination are staggering. (iv) A number of candidates from my class is appearing for the GATE examination. Which of the above sentences are grammatically CORRECT?
(A)	(i) and (ii)
(B)	(i) and (iii)
(C)	(ii) and (iii)
(D)	(ii) and (iv)

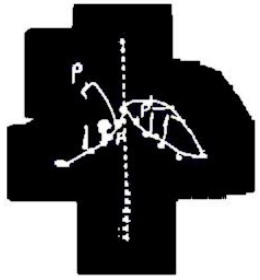
Q.2

A transparent square sheet shown above is folded along the dotted line. The folded sheet will look like _____.

(A) 

(B) 

(C) 



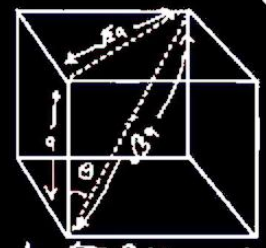
Q.3 If θ is the angle, in degrees, between the longest diagonal of the cube and any one of the edges of the cube, then, cos θ =

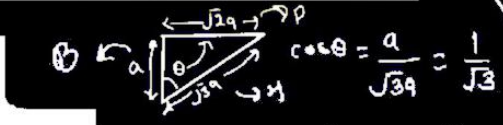
(A) $\frac{1}{2}$

(B) $\frac{1}{\sqrt{3}}$

(C) $\frac{1}{\sqrt{2}}$

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





Q.4 If $\left(x-\frac{1}{2}\right)^2-\left(x-\frac{3}{2}\right)^2=x+2$, then the value of x is:

(A) 2

(B) 4

(C) 6

(D) 8

$(a-b)^2$

$x^2+\frac{1}{4}-x-\left(x^2+\frac{9}{4}-3x\right)=x+2$

$x^2+\frac{1}{4}-x-x^2-\frac{9}{4}+3x=x+2$

$-x-2+3x=x+2$

$-4=-x \Rightarrow x=4$

Q.5 Pen : Write :: Knife : _____

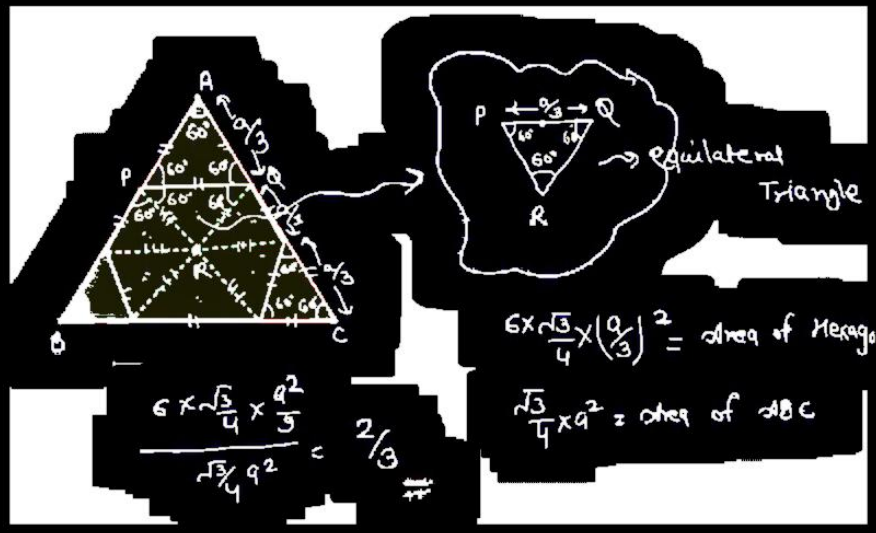
Which one of the following options maintains a similar logical relation in the above?

(A) Vegetables

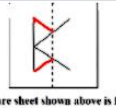
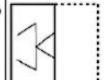
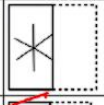
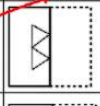
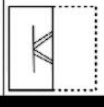
(B) Sharp

(C) Cut

(D) Blunt



Q.1	The people _____ were at the demonstration were from all sections of society.
(A)	whose
(B)	which
(C)	who
(D)	whom

Q.2	 A transparent square sheet shown above is folded along the dotted line. The folded sheet will look like _____.
(A)	
(B)	
(C)	
(D)	

Q.3	For a regular polygon having 10 sides, the interior angle between the sides of the polygon, in degrees, is:
(A)	396
(B)	324
(C)	216
(D)	144

Q.4	Which one of the following numbers is exactly divisible by $\left(11^{13}+1\right)$?
(A)	$11^{26}+1$
(B)	$11^{33}+1$
(C)	$11^{39}-1$
(D)	$11^{52}-1$

$\frac{180}{3}$

180°

$(n-2) \times 180°$

90°

360°

$\frac{360}{4}$

$= (10-2) \times 180°$

$= 8 \times 180°$

$\frac{540°}{5}$

108°

Total angle of a polygon of 10 side = $8 \times 180°$

angle in b/w two side = $\frac{180 \times 8}{10} = 144°$

Q.1	The current population of a city is 11,02,500. If it has been increasing at the rate of 5% per annum, what was its population 2 years ago?
(A)	9,92,500
(B)	9,95,006
(C)	10,00,000
(D)	12,51,506

$I\left[1.05\right]^2 = 11.025$ lacs

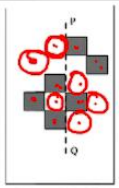
$I =$ 10 lacs

$x\left[1+\frac{\text{rate}}{100}\right]^{\text{year}}$

Q.2	p and q are positive integers and $\frac{p}{q}+\frac{q}{p}=3$, then, $\frac{p^2}{q^2}+\frac{q^2}{p^2}=$
(A)	3
(B)	7
(C)	9
(D)	11

$\frac{p^2}{q^2}+\frac{q^2}{p^2}+2\frac{p}{q}\times\frac{q}{p}=9$

$\frac{p^2}{q^2}+\frac{q^2}{p^2}=7$

Q.3	 The least number of squares that must be added so that the line P-Q becomes the line of symmetry is _____
(A)	4
(B)	5
(C)	6
(D)	7

Q.4	*Nostalgia* is to *anticipation* as Past is to Future Which one of the following options maintains a similar logical relation in the above sentence?
(A)	Present, past
(B)	Future, past
(C)	Past, future
(D)	Future, present

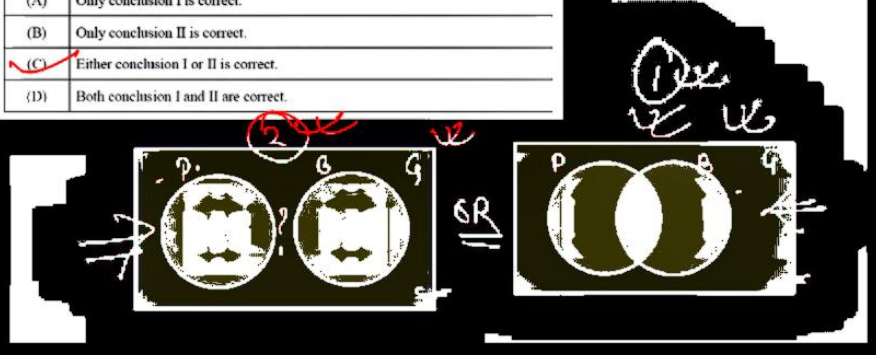
Q.5	Consider the following sentences: (i) I woke up from sleep. (ii) I ~~woked~~ up from sleep. (iii) I was woken up from sleep. (iv) I was ~~wokened~~ up from sleep. Which of the above sentences are grammatically CORRECT?
(A)	(i) and (ii)
(B)	(i) and (iii)
(C)	(ii) and (iii)
(D)	(i) and (iv)

wake woke woke

waken woken woken

passive voice

Q.6	Given below are two statements and two conclusions. Statement 1: All purple are green. Statement 2: All black are green. Conclusion I: Some black are purple. Conclusion II: No black is purple. Based on the above statements and conclusions, which one of the following options is logically CORRECT?
(A)	Only conclusion I is correct.
(B)	Only conclusion II is correct.
(C)	Either conclusion I or II is correct.
(D)	Both conclusion I and II are correct.



Year 3:-

$210 = S.P. - (300 ₹ + 0.15 S.P.)$

$510 = 0.85\ S.P.$

$S.P. = 600 ₹$

$800 : 600 = 4 : 3$

Q.10	Six students P, Q, R, S, T and U, with distinct heights, compare their heights and make the following observations. Observation I: S is taller than R. Observation II: Q is the shortest of all. Observation III: U is taller than only one student. Observation IV: T is taller than S but is not the tallest. The number of students that are taller than R is the same as the number of students shorter than _____.
(A)	T
(B)	R
(C)	S
(D)	P

① S > R

② Q

③ U > Q

④ P > T > S > R > U > Q

4 | 3

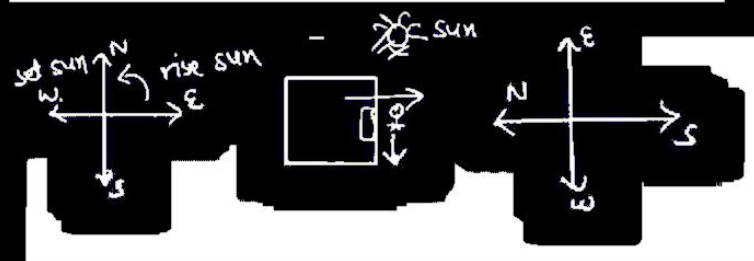
Q.1	Consider the following sentences: (i) After his surgery, Raja hardly could walk. (ii) After his surgery, Raja could barely walk. (iii) After his surgery, Raja barely could walk. (iv) After his surgery, Raja could hardly walk. Which of the above sentences are grammatically CORRECT?
(A)	(i) and (ii)
(B)	(i) and (iii)
(C)	(iii) and (iv)
(D)	(ii) and (iv)

hardly / barely / accordingly / rarely / rarely

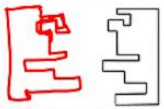
or

in the end of the sentence

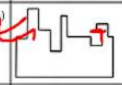
Q.2	Ms. X came out of a building through its front door to find her shadow due to the morning sun falling to her right side with the building to her back. From this, it can be inferred that building is facing _____
(A)	North
(B)	East
(C)	West
(D)	South

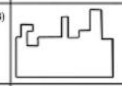


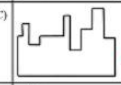
Q.7

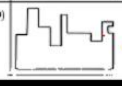


A jigsaw puzzle has 2 pieces. One of the pieces is shown above. Which one of the given options for the missing piece when assembled will form a rectangle? The piece can be moved, rotated or flipped to assemble with the above piece.

(A) 

(B) 

(C) 

(D) 

Q.8	The number of hens, ducks and goats in farm P are 65, 91 and 169, respectively. The total number of hens, ducks and goats in a nearby farm Q is 416. The ratio of hens:ducks:goats in farm Q is 5:14:13. All the hens, ducks and goats are sent from farm Q to farm P. The new ratio of hens:ducks:goats in farm P is_____
(A)	5:7:13
(B)	5:14:13
(C)	10:21:26
(D)	21:10:26

Hens = $\frac{5}{5+14+13} \times 416 = 5 \times 13 = 65$

duck = $14 \times 13 = 182$

Goat = $13 \times 13 = 169$

Hens 130

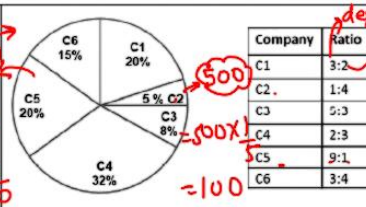
ducks 273

Goats = 338

130 : 273 : 338

10 : 21 : 26

Q.9



Company	Ratio
C1	3:2
C2	1:4
C3	5:3
C4	2:3
C5	9:1
C6	3:4

The distribution of employees at the rank of executives, across different companies C1, C2, …, C6 is presented in the chart given above. The ratio of executives with a management degree to those without a management degree in each of these companies is provided in the table above. The total number of executives across all companies is 10,000.

The total number of management degree holders among the executives in companies C2 and C5 together is_____.

A)	225
(B)	600
(C)	1900
(D)	2500

Q. 10	Five persons P, Q, R, S and T are sitting in a row not necessarily in the same order. Q and R are separated by one person, and S should not be seated adjacent to Q. The number of distinct seating arrangements possible is:
(A)	4
(B)	8
(C)	10
(D)	16

Q.5	Four persons P, Q, R and S are to be seated in a row. R should not be seated at the second position from the left end of the row. The number of distinct seating arrangements possible is:
(A)	6
(B)	9
(C)	18
(D)	24

4 × 3 × 2 × 1 = 24

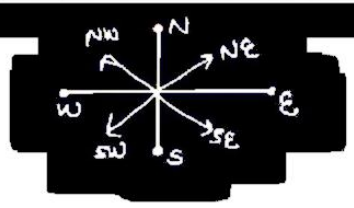
(−) _ R _ _ _ = 6

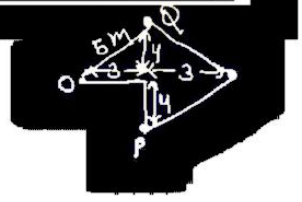
_ _ _ _

3 fixed 2 1

18

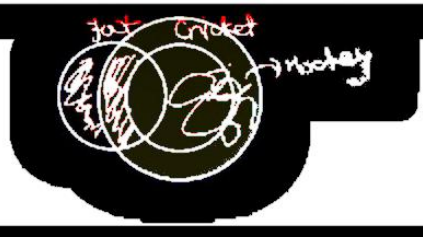
Q.6	On a planar field, you travelled 3 units East from a point O. Next you travelled 4 units South to arrive at point P. Then you travelled from P in the North-East direction such that you arrive at a point that is 6 units East of point O. Next, you travelled in the North-West direction, so that you arrive at point Q that is 8 units North of point P. The distance of point Q to point O, in the same units, should be _____
(A)	3
(B)	4
(C)	5
(D)	6





Q.7	The author said, "Musicians rehearse before their concerts. Actors rehearse their roles before the opening of a new play. On the other hand, I find it strange that many public speakers think they can just walk on to the stage and start speaking. In my opinion, it is no less important for public speakers to rehearse their talks." ↳ Equal Based on the above passage, which one of the following is TRUE?
(A)	The author is of the opinion that rehearsing is important for musicians, actors and public speakers.
(B)	The author is of the opinion that rehearsing is less important for public speakers than for musicians and actors.
(C)	The author is of the opinion that rehearsing is more important only for musicians than public speakers.
(D)	The author is of the opinion that rehearsal is more important for actors than musicians.

Q.8	1. Some football players play cricket. 2. All cricket players play hockey. Among the options given below, the statement that logically follows from the two statements 1 and 2 above, is:
(A)	No football player plays hockey.
(B)	Some football players play hockey.
(C)	All football players play hockey.
(D)	All hockey players play football.



Q.5 ____ is to *surgery* as *writer* is to _____.

Which one of the following options maintains a similar logical relation in the above sentence?

(A) Plan, outline — Doctor : Surgery

(B) Hospital, library — writer : Book

(C) Doctor, book — Hospital : Surgeon

(D) Medicine, grammar — writer : Library

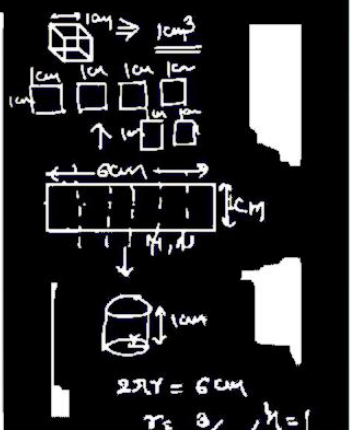
Q.6 We have 2 rectangular sheets of paper, M and N, of dimensions 6 cm x 1 cm each. Sheet M is rolled to form an open cylinder by bringing the short edges of the sheet together. Sheet N is cut into equal square patches and assembled to form the largest possible closed cube. Assuming the ends of the cylinder are closed, the ratio of the volume of the cylinder to that of the cube is _____

(A) $\frac{\pi}{2}$

(B) $\frac{3}{\pi}$

(C) $\frac{9}{\pi}$

(D) 3π



Q.7

Items	Cost (₹)	Profit %	Marked Price (₹)
P	5,400	---	5,860
Q	7200	25	10,000

Details of prices of two items P and Q are presented in the above table. The ratio of cost of item P to cost of item Q is 3:4. Discount is calculated as the difference between the marked price and the selling price. The profit percentage is calculated as the ratio of the difference between selling price and cost, to the cost (Profit % $= \frac{\text{Selling price} - \text{Cost}}{\text{Cost}} \times 100$).

The discount on item Q, as a percentage of its marked price, is _____

(A) 25

(B) 12.5

(C) 10

(D) 5

$\frac{(P)_{cost}}{(Q)_{cost}} = \frac{3}{4}$

$\frac{4}{3} \times 5400 = (Q)_{cost}$

$(Q)_{cost} = 7200$ ₹

$25 = \frac{\text{Selling Price} - 7200}{7200} \times 100$

S.P. = 9000 ₹

% Discount $= \frac{10K - 9K}{10K} \times 100$ — 10K ₹ ? 9K ₹

Q.8 There are five bags each containing identical sets of ten distinct chocolates. One chocolate is picked from each bag.

The probability that at least two chocolates are identical is _____

(A) 0.3024

(B) 0.4235

(C) 0.6976

(D) 0.8125

2, 3, 4, 5

1 - none is identical

= 1 - 0.3024 = 0.6976

$C_1, C_2, C_3, C_4, C_5 \cdots C_{10}$ — C_1

$C_1, C_2 \cdots C_{10}$ — Bag 2

$C_1, C_2 \cdots C_{10}$ — Bag 3

none is identical (Bag 1)

$= \frac{10}{10} \times \frac{9}{10} \times \frac{8}{10} \times \frac{7}{10} \times \frac{6}{10} = 0.3024$

Q.3	In a company, 35% of the employees drink coffee, 40% of the employees drink tea and 10% of the employees drink both tea and coffee. What % of employees drink neither tea nor coffee?
(A)	15
(B)	25
(C)	35
(D)	40

100 → 35 → Coff, 40 → Tea, 10 → Both ⇒ 35+40−10 = 65

Q.4	⊕ and ⊙ are two operators on numbers p and q such that $p \oplus q = \frac{p^2+q^2}{pq}$ and $p \odot q = \frac{p^2}{q}$; If $x \oplus y = 2 \odot 2$, then x =
(A)	$\frac{y}{2}$
(B)	y
(C)	$\frac{3y}{2}$
(D)	$2y$

$\frac{x^2+y^2}{xy} = 2$

$x^2+y^2 = 2xy$

$x^2+y^2-2xy=0$

$(x-y)^2=0 \Rightarrow x=y$

Q.5	Four persons P, Q, R and S are to be seated in a row, all facing the same direction, but not necessarily in the same order. P and R cannot sit adjacent to each other. S should be seated to the right of Q. The number of distinct seating arrangements possible is:
(A)	2
(B)	4
(C)	6
(D)	8

PRX / RPX

RQSP, PQSR → 2

RPQSX, PRQSX

Q.6	Statement: Either P marries Q or X marries Y Among the options below, the logical NEGATION of the above statement is:
(A)	P does not marry Q and X marries Y. +ve
(B)	Neither P marries Q nor X marries Y.
(C)	X does not marry Y and P marries Q. +ve
(D)	P marries Q and X marries Y. +ve ✗

→ +ve

If P and Q are married, then X and Y are not married.

OR

If P and Q are not married, then X and Y are married.

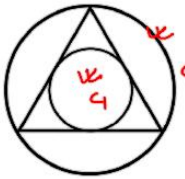
OR

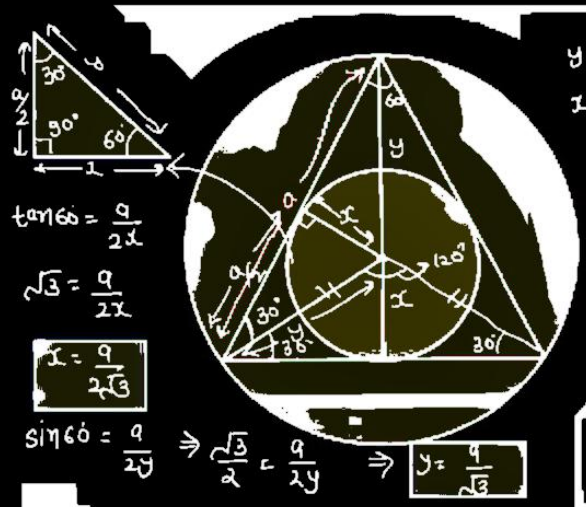
If X and Y are married, then P and Q are not married.

OR

If X and Y are not married, then P and Q are married.

Q.7	Consider two rectangular sheets, Sheet M and Sheet N of dimensions 6 cm x 4 cm each. Folding operation 1: The sheet is folded into half by joining the short edges of the current shape. Folding operation 2: The sheet is folded into half by joining the long edges of the current shape. Folding operation 1 is carried out on Sheet M three times. Folding operation 2 is carried out on Sheet N three times. The ratio of perimeters of the final folded shape of Sheet N to the final folded shape of Sheet M is _____.
(A)	13 : 7
(B)	3 : 2
(C)	7 : 5
(D)	5 : 13

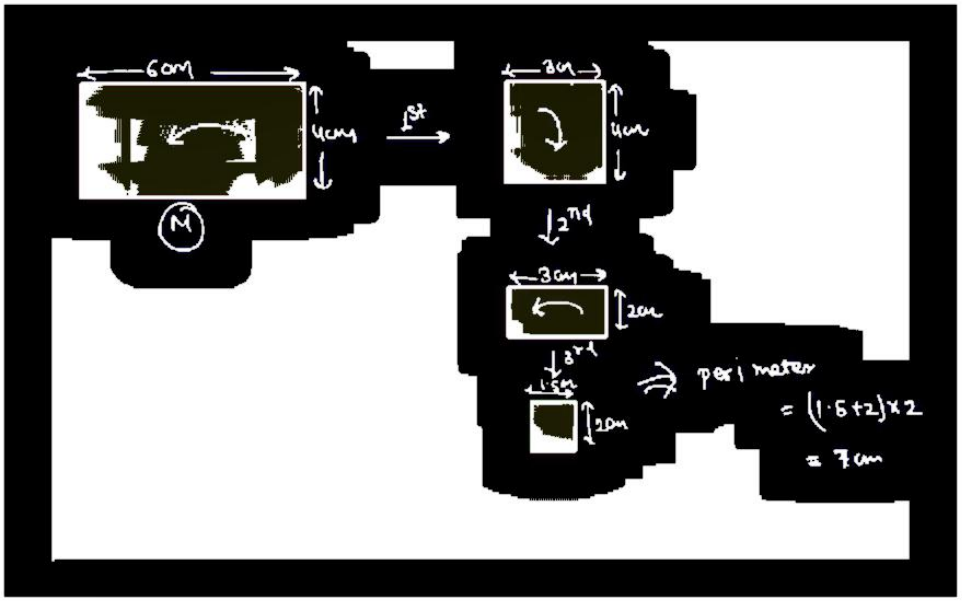
Q.8	 The ratio of the area of the inscribed circle to the area of the circumscribed circle of an equilateral triangle is____
(A)	$\frac{1}{8}$
(B)	$\frac{1}{6}$
(C)	$\frac{1}{4}$
(D)	$\frac{1}{2}$

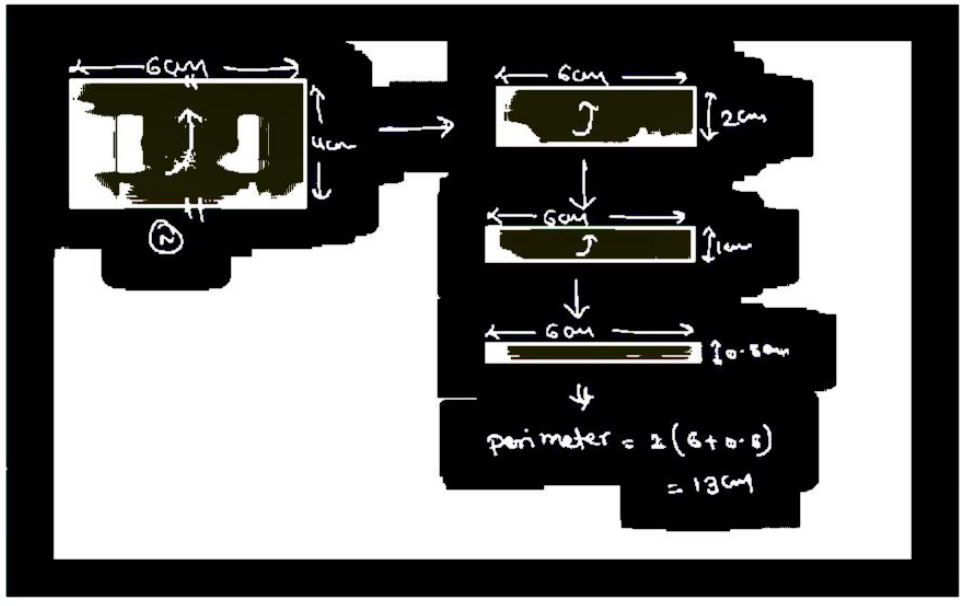


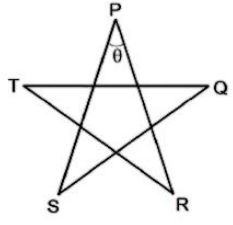
Q.9	Consider a square sheet of side 1 unit. The sheet is first folded along the main diagonal. This is followed by a fold along its line of symmetry. The resulting folded shape is again folded along its line of symmetry. The area of each face of the final folded shape, in square units, equal to _____
(A)	$\frac{1}{4}$
(B)	$\frac{1}{8}$
(C)	$\frac{1}{16}$
(D)	$\frac{1}{32}$

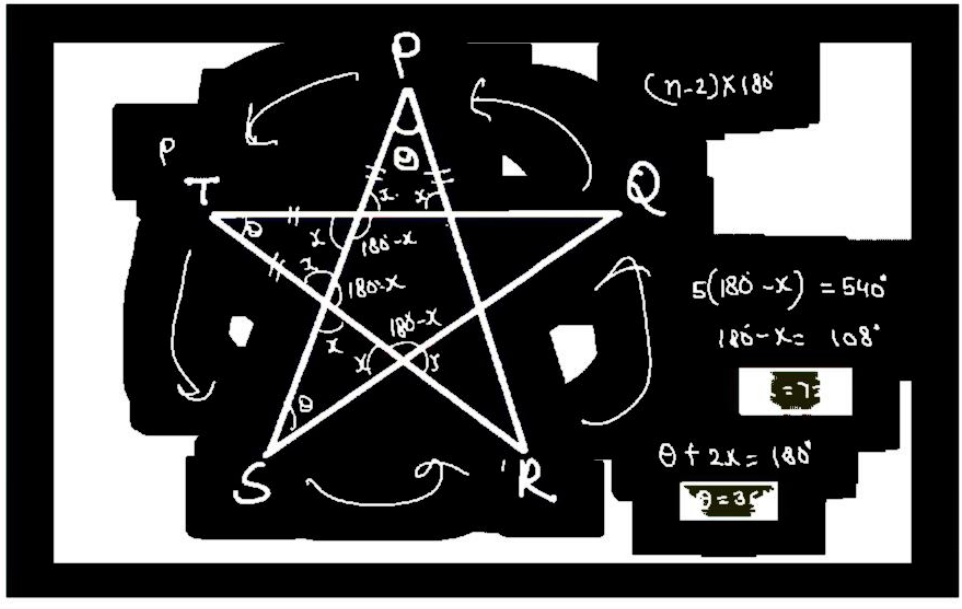
Area = $\frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} = \frac{1}{8} m^2$

Q.10	The world is going through the worst pandemic in the past hundred years. The air travel industry is facing a crisis, as the resulting quarantine requirement for travelers led to weak demand. In relation to the first sentence above, what does the second sentence do?
(A)	Restates an idea from the first sentence.
(B)	Second sentence entirely contradicts the first sentence.
(C)	The two statements are unrelated.
(D)	States an effect of the first sentence.





Q.8	 Five line segments of equal lengths, PR, PS, QS, QT and RT are used to form a star as shown in the figure above. The value of θ, in degrees, is _____
(A)	36
(B)	45
(C)	72
(D)	108



Q.3	A digital watch X beeps every 30 seconds while watch Y beeps every 32 seconds. They beeped together at 10 AM. The immediate next time that they will beep together is _____
(A)	10.08 AM
(B)	10.42 AM
(C)	11.00 AM
(D)	10.00 PM

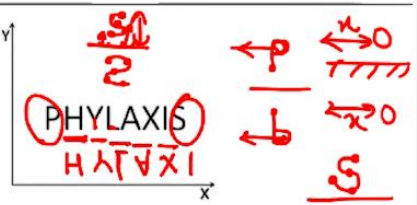
Q.4	If $\oplus+\odot=2$; $\oplus+\Delta=3$; $\odot+\Delta=5$; $\Delta\times\otimes=10$, Then, the value of $(\otimes-\oplus)^2$, is:
(A)	0
(B)	1
(C)	4
(D)	16

Q.5	The front door of Mr. X's house faces East. Mr. X leaves the house, walking 50 m straight from the back door that is situated directly opposite to the front door. He then turns to his right, walks for another 50 m and stops. The direction of the point Mr. X is now located at with respect to the starting point is _____
(A)	South-East
(B)	North-East
(C)	West
(D)	North-West

Q.6	Given below are two statements 1 and 2, and two conclusions I and II. Statement 1: All entrepreneurs are wealthy. Statement 2: All wealthy are risk seekers. Conclusion I: All risk seekers are wealthy. Conclusion II: Only some entrepreneurs are risk seekers. Based on the above statements and conclusions, which one of the following options is CORRECT?
(A)	Only conclusion I is correct
(B)	Only conclusion II is correct
(C)	Neither conclusion I nor II is correct
(D)	Both conclusions I and II are correct

Q.7	A box contains 15 blue balls and 45 black balls. If 2 balls are selected randomly, without replacement, the probability of an outcome in which the first selected is a blue ball and the second selected is a black ball, is _____
(A)	$\frac{3}{16}$
(B)	$\frac{45}{236}$
(C)	$\frac{1}{4}$
(D)	$\frac{3}{4}$

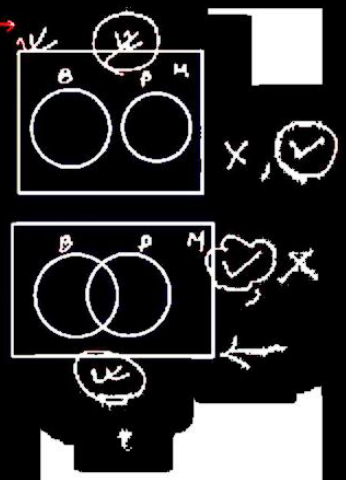
Q.1	(i) Arun and Aparna are here. (ii) Arun and Aparna is here. (iii) Arun's families is here. (iv) Arun's family is here. **Which of the above sentences are grammatically CORRECT?**
(A)	(i) and (ii)
(B)	(i) and (iv)
(C)	(ii) and (iv)
(D)	(iii) and (iv)

Q.2	 **The mirror image of the above text about the x-axis is**
(A)	PHYLAXIS
(B)	ꟻHYLAXIS
(C)	ꟻHYLAXIS
(D)	ꟻHYLAXIS

Q.3	**Two identical cube shaped dice each with faces numbered 1 to 6 are rolled simultaneously. The probability that an even number is rolled out on each dice is:**
(A)	$\frac{1}{36}$
(B)	$\frac{1}{12}$
(C)	$\frac{1}{8}$
(D)	$\frac{1}{4}$

Q.4	$\oplus$ and $\odot$ are two operators on numbers p and q such that $p \odot q = p - q$, and $p \oplus q = p \times q$ **Then,** $(9 \odot (6 \oplus 7)) \odot (7 \oplus (6 \odot 5))$=
(A)	40
(B)	-26
(C)	-33
(D)	-40

Q.9	Given below are two statements 1 and 2, and two conclusions I and II. Statement 1: All bacteria are microorganisms. Statement 2: All pathogens are microorganisms. Conclusion I: Some pathogens are bacteria. Conclusion II: All pathogens are not bacteria. Based on the above statements and conclusions, which one of the following options is logically CORRECT?
(A)	Only conclusion I is correct
(B)	Only conclusion II is correct
(C)	Either conclusion I or II is correct.
(D)	Neither conclusion I nor II is correct.



Q.10	Some people suggest anti-obesity measures (AOM) such as displaying calorie information in restaurant menus. Such measures sidestep addressing the core problems that cause obesity: poverty and income inequality. Which one of the following statements summarizes the passage?
(A)	The proposed AOM addresses the core problems that cause obesity.
(B)	If obesity reduces, poverty will naturally reduce, since obesity causes poverty.
(C)	AOM are addressing the core problems and are likely to succeed.
(D)	AOM are addressing the problem superficially.

Q.1	Gauri said that she can play the keyboard _____ her sister.
(A)	as well as
(B)	as better as
(C)	as nicest as
(D)	as worse as

as good as
as nice as
as bad as

$11^{13}+1$

(A) $11^{26}+1$ is ?

(B) $11^{52}-1 = (11^{26})^2-(1)^2 = (11^{26}-1)(11^{26}+1)$

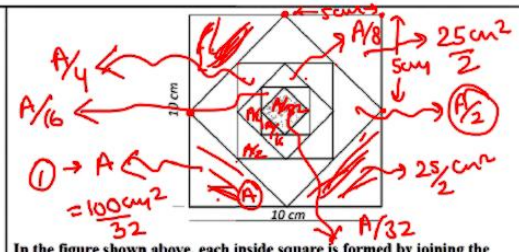
$((11^{13})^2-1)(11^{26}+1)$

$(11^{13}+1)(11^{13}-1)(11^{26}+1)$ / $(11^{13}+1)$

$\frac{24}{4} = \frac{4\times6}{4} = 6$

Q.5	*Oasis* is to *sand* as *island* is to _____ **Which one of the following options maintains a similar logical relation in the above sentence?**
(A)	Stone
(B)	Land
(C)	Water
(D)	Mountain

Q.6	**The importance of sleep is often overlooked by students when they are preparing for exams. Research has consistently shown that sleep deprivation greatly reduces the ability to recall the material learnt. Hence, cutting down on sleep to study longer hours can be counterproductive.** **Which one of the following statements is the CORRECT inference from the above passage?**
(A)	Sleeping well alone is enough to prepare for an exam. Studying has lesser benefit.
(B)	Students are efficient and are not wrong in thinking that sleep is a waste of time.
(C)	If a student is extremely well prepared for an exam, he needs little or no sleep.
(D)	To do well in an exam, adequate sleep must be part of the preparation.

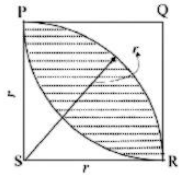
Q.7	 **In the figure shown above, each inside square is formed by joining the midpoints of the sides of the next larger square. The area of the smallest square (shaded) as shown, in cm² is:**
(A)	12.50
(B)	6.25
(C)	3.125
(D)	1.5625

Q.8	**Let X be a continuous random variable denoting the temperature measured. The range of temperature is [0, 100] degree Celsius and let the probability density function of X be $f(x) = 0.01$ for $0 \le X \le 100$.** **The mean of X is _____**
(A)	2.5
(B)	5.0
(C)	25.0
(D)	50.0

$\mu = \int_0^{100} x \cdot f(x)\, dx$

$= 0.01 \int_0^{100} x \cdot dx = \frac{0.01}{2}\left[x^2\right]_0^{100} = \frac{0.01}{2} \times 10^4 = 50$

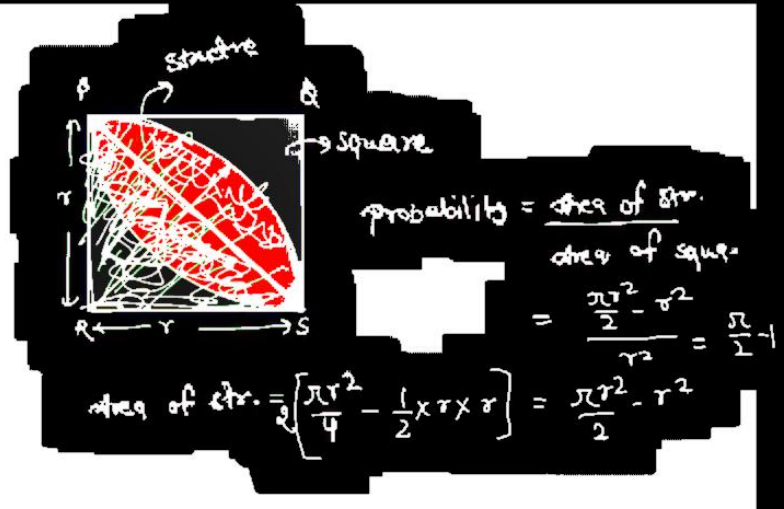
Q.9



In the figure shown above, PQRS is a square. The shaded portion is formed by the intersection of sectors of circles with radius equal to the side of the square and centers at S and Q.

The probability that any point picked randomly within the square falls in the shaded area is _____

(A)	$4 - \frac{\pi}{2}$
(B)	$\frac{1}{2}$
(C)	$\frac{\pi}{2} - 1$
(D)	$\frac{\pi}{4}$



Q.10 **In an equilateral triangle PQR, side PQ is divided into four equal parts, side QR is divided into six equal parts and side PR is divided into eight equal parts. The length of each subdivided part in cm is an integer.**

The minimum area of the triangle PQR possible, in cm², is

(A)	18
(B)	24
(C)	$48\sqrt{3}$
(D)	$144\sqrt{3}$

$\frac{\sqrt{3}}{4} \times 24 \times 24$

6cm, 4cm, 3cm

24 cm

PQ = PR = QR

4 parts, 6 parts, 8 parts

8, 16, 24

16 → 4m → 2m

16/6 m = 2.67 m

Q.6 Listening to music during exercise improves exercise performance and reduces discomfort. Scientists researched whether listening to music while studying can help students learn better and the results were inconclusive. Students who needed external stimulation for studying fared worse while students who did not need any external stimulation benefited from music.

Which one of the following statements is the CORRECT inference of the above passage?

(A) Listening to music has no effect on learning and a positive effect on physical exercise.

(B) Listening to music has a clear positive effect both on physical exercise and on learning.

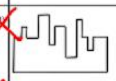
(C) Listening to music has a clear positive effect on physical exercise. Music has a positive effect on learning only in some students.

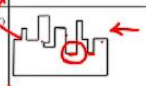
(D) Listening to music has a clear positive effect on learning in all students. Music has a positive effect only in some students who exercise.

Q.7

A jigsaw puzzle has 2 pieces. One of the pieces is shown above. Which one of the given options fits the missing piece when assembled will form a rectangle? The piece can be moved, rotated or flipped to assemble with the above piece

(A) 

(B) 

(C) 

(D) 

Q.8 The number of students in three classes is in the ratio 3:13:6. If 18 students are added to each class, the ratio changes to 15:35:21.

The total number of students in all the three classes in the beginning was:

(A) 22

(B) 66

(C) 88

(D) 110

3 : 13 : 6 ⇒ 22 min ⇒ 44 ⇒ 66 ⇒ 88 ⇒ 110

15 : 35 : 21 ⇒ 71 min

142 min

213 min

total 54

22 + 54 = 76 ✗

66 + 54 = 120 ✗

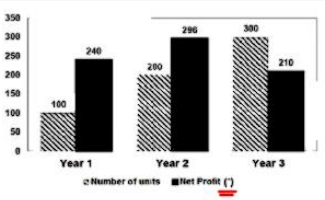
88 + 54 = 142

88 student → 3 : 13 : 6

12 : 52 : 24 ⇒ 88

30 : 70 : 42 ⇒ 15 : 35 : 21

Q.9



The number of units of a product sold in three different years and the respective net profits are presented in the figure above. The cost/unit in Year 3 was ₹ 1, which was half the cost/unit in Year 2. The cost/unit in Year 3 was one-third of the cost/unit in Year 1. Taxes were paid on the selling price at 10%, 13% and 15% respectively for the three years. Net profit is calculated as the difference between the selling price and the sum of cost and taxes paid in that year.

The ratio of the selling price in Year 2 to the selling price in Year 3 is _____ .

(A) 4:3

(B) 1:1

(C) 3:4

(D) 1:2

Assuming (1) = ₹

Year 3 = 1₹ → 15%

Year 2 = 2₹ → 13%

Year 1 = 3₹ → 10%

⇒ SP

↳ N.P. = S.P. − (cost + Tax)

Year 2

296 ₹ = S.P. − (400 ₹ + 0.13 S.P.)

696 ₹ = 0.87 S.P.

S.P. = 800 ₹

Q.7 Computers are ubiquitous. They are used to improve efficiency in almost all fields from agriculture to space exploration. Artificial intelligence (AI) is currently a hot topic. AI enables computers to learn, given enough training data. For humans, sitting in front of a computer for long hours can lead to health issues.

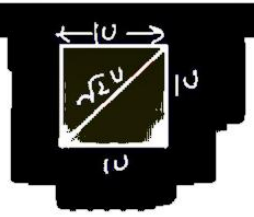
Which of the following can be deduced from the above passage?

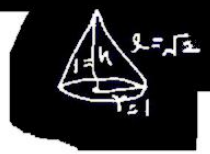
(i) Nowadays, computers are present in almost all places.
(ii) Computers cannot be used for solving problems in engineering.
(iii) For humans, there are both positive and negative effects of using computers.
(iv) Artificial intelligence can be done without data.

(A)	(ii) and (iii)
(B)	(ii) and (iv)
(C)	(i), (iii) and (iv)
(D)	(i) and (iii)

Q.8 Consider a square sheet of side 1 unit. In the first step, it is cut along the main diagonal to get two triangles. In the next step, one of the cut triangles is revolved about its short edge to form a solid cone. The volume of the resulting cone, in cubic units, is _____

(A)	$\frac{\pi}{3}$
(B)	$\frac{2\pi}{3}$
(C)	$\frac{3\pi}{2}$
(D)	3π

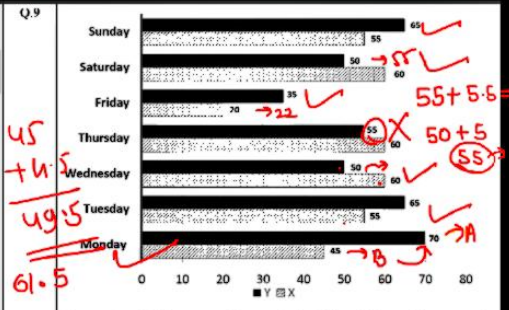




$= \frac{1}{3}\pi r^2 h$

$= \frac{\pi}{3}$

Q.9

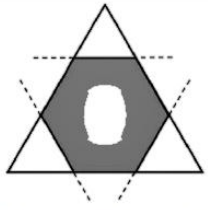


The number of minutes spent by two students, X and Y, exercising every day in a given week are shown in the bar chart above.

The number of days in the given week in which one of the students spent a minimum of 10% more than the other student, on a given day, is

(A)	4
(B)	5
(C)	6
(D)	7

Q.10



Corners are cut from an equilateral triangle to produce a regular convex hexagon as shown in the figure above.

The ratio of the area of the regular convex hexagon to the area of the original equilateral triangle is

(A)	2 : 3
(B)	3 : 4
(C)	4 : 5
(D)	5 : 6