

Grade 5: NGN LOGIC OLYMPIAD 2023

Student Name: _____

Maximum Time: 90 minutes

Maximum Marks: 100

EXAM INSTRUCTIONS

- There are **33** questions in this paper.
 - Section A (Basic Level):** 2 Marks, 15 Questions
 - Section B (Moderate Level):** 3 Marks, 10 Questions
 - Section C (Difficult Level):** 5 Marks, 8 Questions
- No points will be deducted for each incorrect answer. Do not skip any questions. Use your logical reasoning skills to guess the answer.
- Types of Questions: **Section A:** Pick one correct answer. **Section B:** Pick all correct answers. **Section C:** Fill in the blanks and pick all correct answers.
- The questions in Sections B and C are based on questions related to social impact and global citizenship. The questions in Section B will focus on solving social issues logically. Section C will discuss international global problems that need rational solutions.
- Pencils, erasers, rulers, and rough paper for calculations are allowed.
- To mark your answer, darken the circle in the Answer sheet; use a Blue/Black Ball Point Pen only.
- For some questions in Sections B and C, mark your answer by filling in the bubbles. For Eg: 346.

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<input type="radio"/> 0	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input checked="" type="radio"/>	<input type="radio"/> 5	<input type="radio"/> 6	<input type="radio"/> 7	<input type="radio"/> 8	<input type="radio"/> 9	Tens
<input type="radio"/> 0	<input type="radio"/> 1	<input type="radio"/> 2	<input checked="" type="radio"/>	<input type="radio"/> 4	<input type="radio"/> 5	<input type="radio"/> 6	<input type="radio"/> 7	<input type="radio"/> 8	<input type="radio"/> 9	Hundreds

NGNLearning.com/Logic-Olympiad

SECTION A: 2 MARKS EACH

1. If there are seven chairs in a row, how many ways can two people be seated?

Choose the correct number.

(A) 2
(B) 49
(C) 42
(D) 13
(E) None of these

2. If \times stands for $-$, \div stands for $+$, $+$ stands for \div , and $-$ stands for \times , which of the following equations will be true?

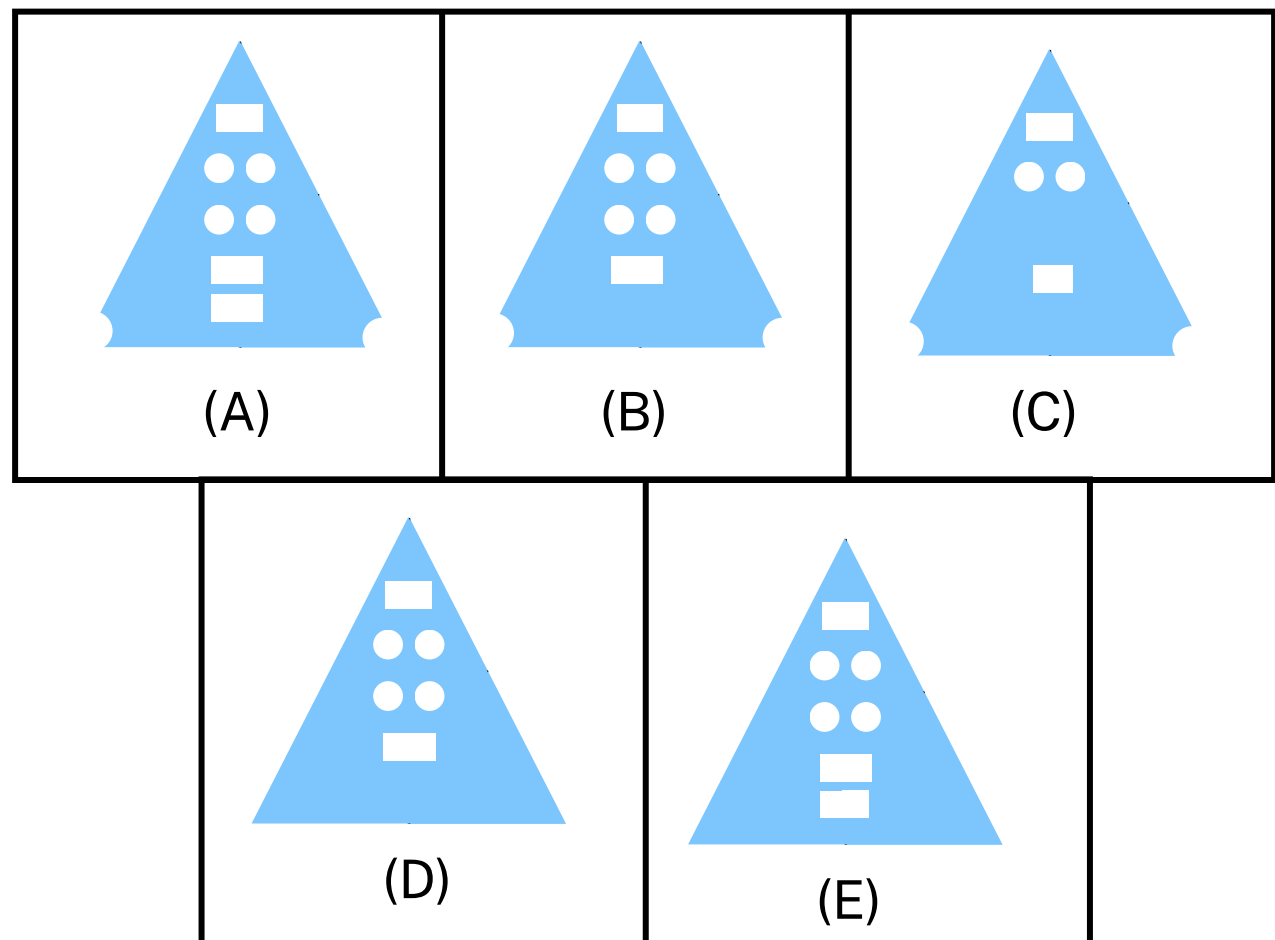
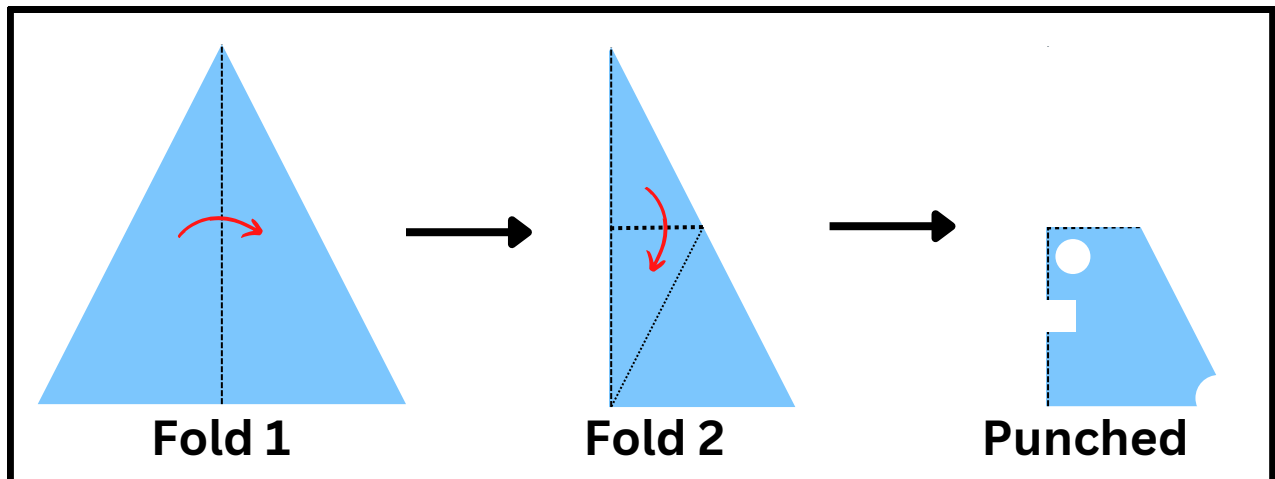
Choose the correct answer.

(A) $30 - 2 \div 4 \times 16 + 12 = 4$
(B) $16 \div 20 - 2 + 18 \times 3 = 1$
(C) $20 \times 4 + 4 \div 16 - 2 = 40$
(D) $4 - 3 \times 6 \div 20 + 5 = 2$
(E) $3 \div 2 - 5 \times 5 + 1 = 20$

SECTION A: 2 MARKS EACH

3. A triangular sheet of paper is folded and punched. How will it appear when opened?

Choose the correct answer.



SECTION A: 2 MARKS EACH

4. Based on the first two patterns shown below, find the number in the last grid that will complete the pattern.

Choose the correct number from the options.

1	2
6	8

2	3
6	12

4	5
6	?

(A) 22
(B) 26
(C) 24
(D) 16
(E) 15

SECTION A: 2 MARKS EACH

5. If \times stands for $+$, $+$ stands for \div , \div stands for $-$, and $-$ stands for \times , **choose** the value of $36 - 2 \times 12 + 6 \div 8$ from the options?

(A) 62

(B) 78

(C) 2.25

(D) 6

(E) 12.75

6. A couple of sentences are given below. But there is a grammatical mistake in them. **Choose** the part where you can find this mistake.

Netherlands is located in Western Europe, known for its flat landscapes, windmills, and colorful tulip fields. Its capital city, Amsterdam, is famous for its canals and museums.

(A) Netherlands is located in Western Europe,

(B) known for its flat landscapes,

(C) windmills, and colorful tulip fields.

(D) Its capital city, Amsterdam,

(E) is famous for its canals and museums.

SECTION A: 2 MARKS EACH

7. Read the entire paragraph. Find the **odd sentence** from the paragraph given below.
Choose the correct answer.

(1) Women's health is at risk due to the lack of access to affordable and adequate healthcare. (2) This can lead severe lack of preventative care and inadequate treatment for health conditions specific to women. (3) Also, many low-income individuals cannot afford the cost of necessary medications. (4) Finally, cultural and societal biases can also limit women's access to healthcare and their ability to advocate for their health needs.

Credit: NGN Research

Find the odd sentence.

(A) Sentence 1
(B) Sentence 2
(C) Sentence 3
(D) Sentence 4
(E) None of these



SECTION A: 2 MARKS EACH

8. Maya buys three items from a stationery shop. She has to select three items from 4 pens, 5 erasers, and 5 pencils from different companies. How many ways can she select if she buys at least two pens? **Choose** the correct option.

(A) 48

(B) 120

(C) 144

(D) 124

(E) 100

9. Based on the first two grid patterns, find the numbers that will fill the blank boxes.

Choose the correct answer.

2	3
4	13

3	4
5	25

5	6
?	?

(A) 6, 49

(B) 7, 61

(C) 7, 49

(D) 6, 61

(E) 9, 85

SECTION A: 2 MARKS EACH

10. Below is a square grid with the same sum of the numbers in each row, column, and diagonal. But some of the **numbers are missing**. The numbers are consecutive even numbers starting from 2. Find the **sum of the missing numbers in the third row**. **Choose** the correct answer.

4		12
		2
	14	

(A) 18

(B) 14

(C) 24

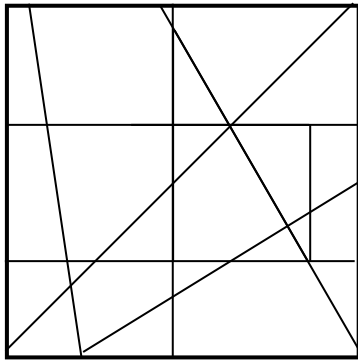
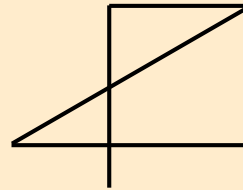
(D) 22

(E) Can't determine

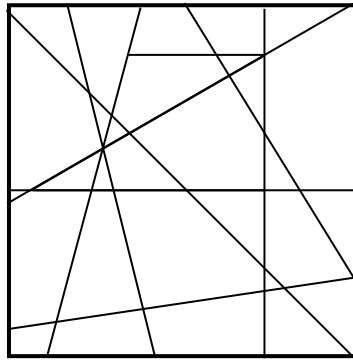
SECTION A: 2 MARKS EACH

11. Figure (X) is embedded in the given options. Find Figure (X). Also, the size and shape must match the figure. **Choose** the option.

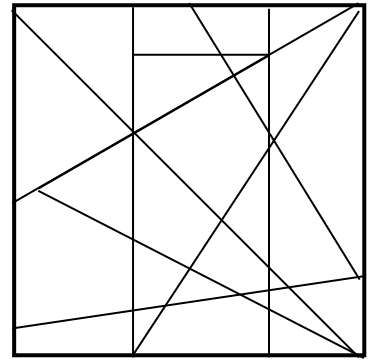
Figure (X)



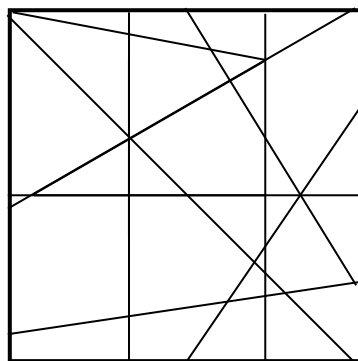
(A)



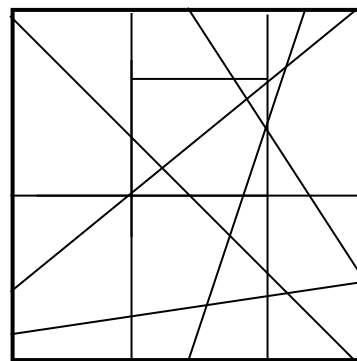
(B)



(C)



(D)



(E)

SECTION A: 2 MARKS EACH

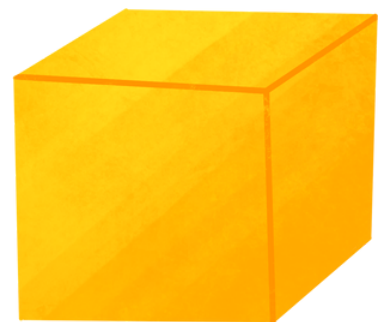
12. If the word "JACK" is coded as 25, and the word "BARK" is coded as 32, what will be the code for "JAM"?

Choose the correct answer from the options.

(A) 18
(B) 29
(C) 12
(D) 24
(E) None of these

13. A cube is painted yellow and is cut into 64 small cubes. How many cubes will have at least two faces painted? **Choose** the correct answer.

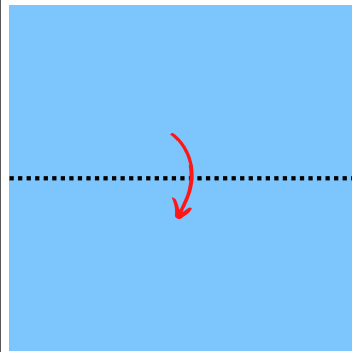
(A) 32
(B) 12
(C) 24
(D) 36
(E) 40



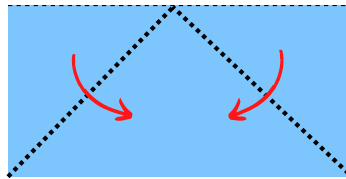
SECTION A: 2 MARKS EACH

14. A square sheet of paper is folded and punched. How will it appear when opened?

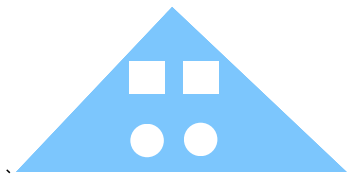
Choose the correct unfolded figure.



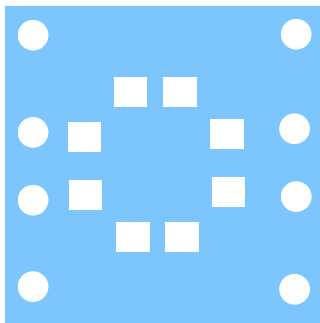
Fold 1



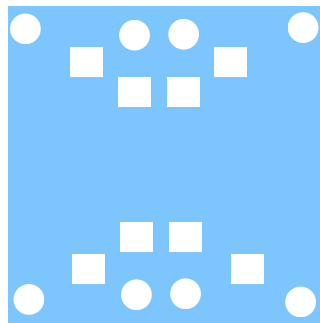
Fold 2



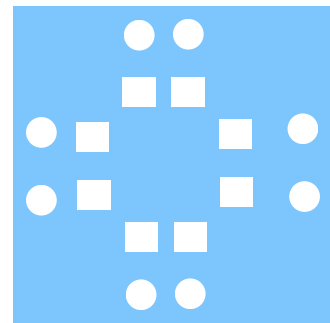
Punched



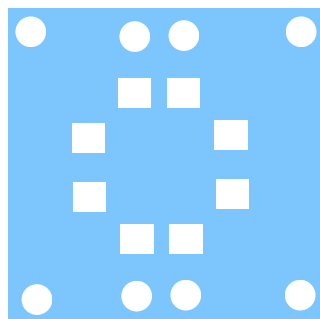
(A)



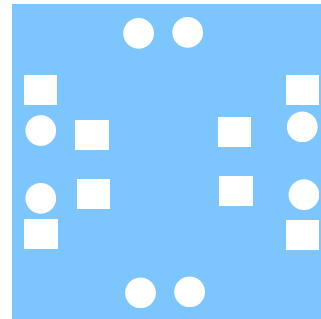
(B)



(C)



(D)



(E)

SECTION A: 2 MARKS EACH

15. If the code for "WARM" is "RAWM," and the code for "TRIM" is "IRTM," what is the code for "NATE"? **Choose** the correct option.

(A) ETNA

(B) TEAN

(C) TAEN

(D) ETAN

(E) None of these

SECTION B: 3 MARKS EACH

16. **2022:** Asim is a teacher in Marib, Yemen, at the NGN Elementary School. Due to ongoing war and internal conflicts, Asim finds enrolling students at his school challenging. So, he now teaches his students online. In one instance, he conducts a math competition with three teams, A, B, and C. He has to select three team leaders from **eleven boys and eight girls**.

Choose from the options the number of ways he can select the leaders such that there are **at least 2 girl leaders**.

Credit: NGN Research

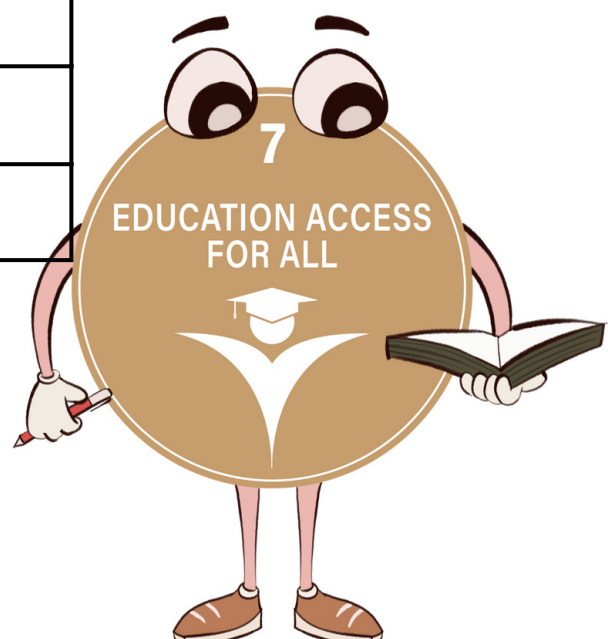
(A) 5814

(B) 1848

(C) 2640

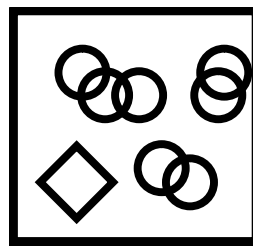
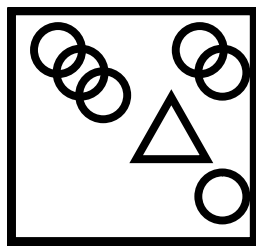
(D) 2184

(E) 1250

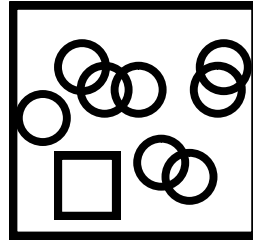
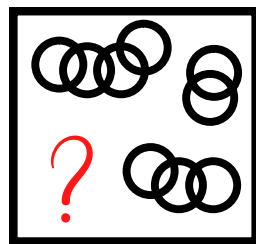


SECTION B: 3 MARKS EACH

17. **2022:** Jamal is a doctor in Karbala, Iraq. Due to negative perceptions surrounding certain women's health issues, there are only a few female patients in his hospital. He selects some female volunteers to get relevant data about females in the area. The selection is made based on their critical thinking skills. One of the questions is to find the following figure in the sequence shown below. **Choose** all the correct polygon(s) that can **complete the sequence**.



Credit: NGN Research



(A) Rhombus

(B) Regular Hexagon

(C) Square

(D) Pentagon

(E) Hexagon



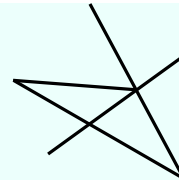
SECTION B: 3 MARKS EACH

18. **2022:** NGN Foundation builds a school in Cape Town, South Africa. The school focuses on STEM (Science, Technology, Engineering, and Mathematics) education to ensure students with relevant skills can successfully acquire 21st-century skills. To improve their critical thinking skills, Erik asks his students to find the diagram in which Figure (X) is hidden.

Credit: NGN Research

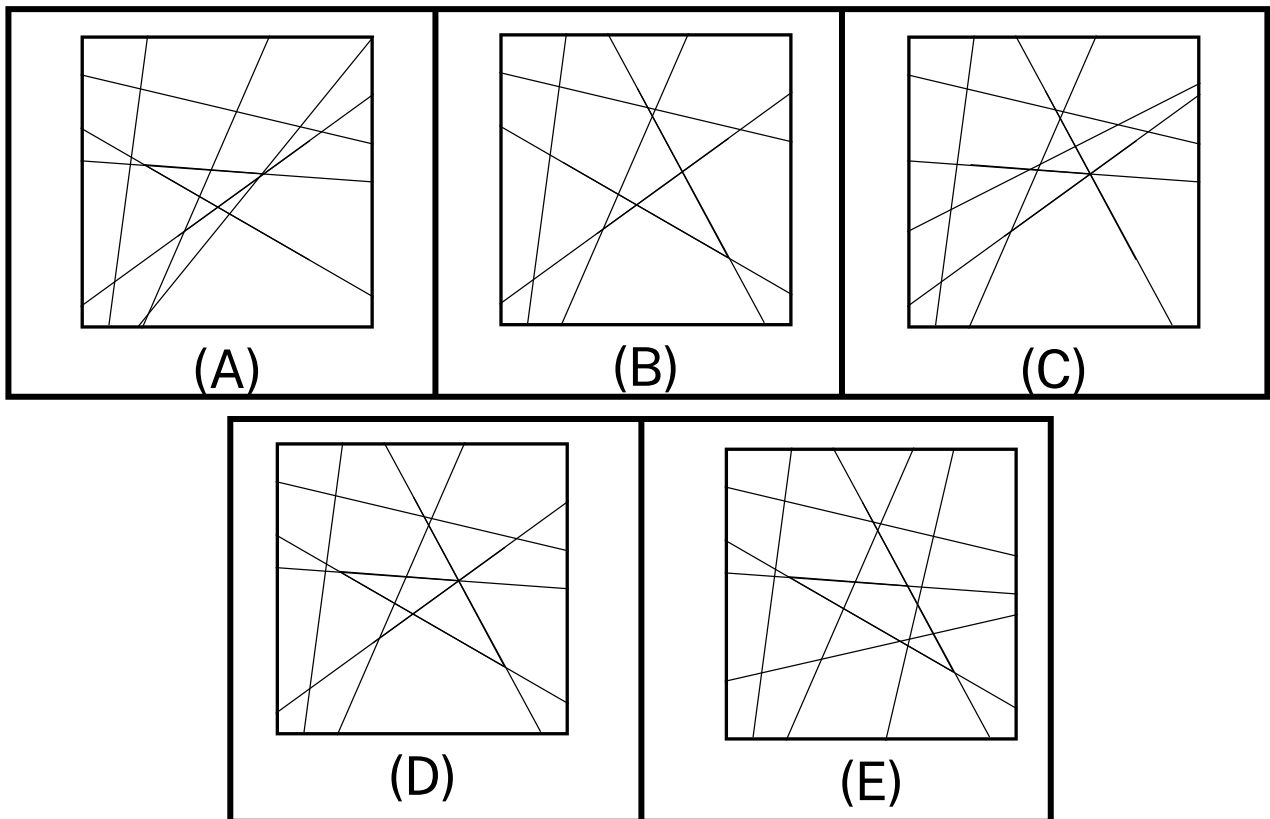
Choose the correct answer from the options.

Figure(X) →



Find the missing figure (X).

Note: Figure(X) should be in exact shape and size.



SECTION B: 3 MARKS EACH

19. **2022:** The local government in Shanghai, China, decided to charge tolls to drivers in congested areas. The basic idea of this initiative is to encourage people to use public transport instead of using their cars for non-essential trips. Min, a college student, writes a paragraph noting the advantages and disadvantages of the charging system. But some grammatical things could be improved. **Choose** all the parts of the sentences with grammatical errors in them.

(1) Congestion charges in a metropolitan city can reduce traffic congestion significantly.

(2) These charges can encourage the public to use public transport and bikes, which are eco-friendly.

(3) Also, congestion charges will increase the revenue that can be used to improve public transport infrastructure. **(4)** But some issues can arise due to these charges. **(5)** Mainly, it can negatively impact low-income families with no alternative means of transportation.

Credit: NGN Research

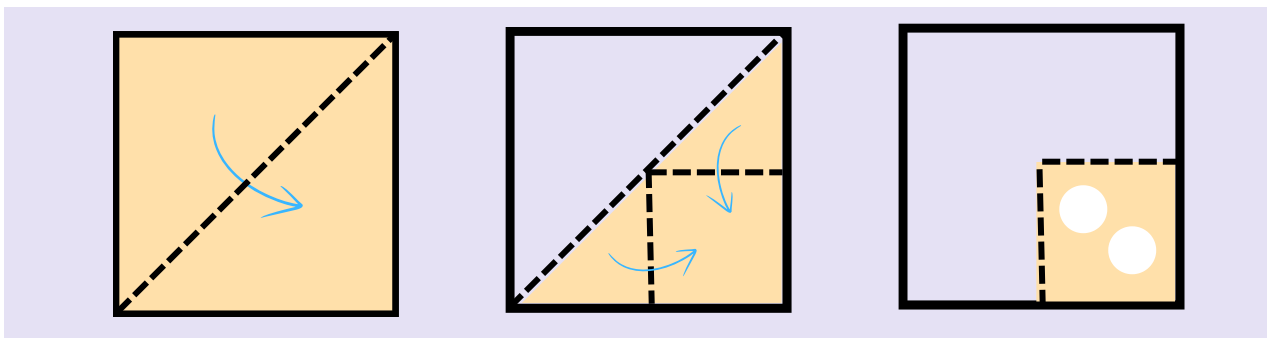
(A) Sentence 1	(B) Sentence 2
(C) Sentence 3	(D) Sentence 4
(E) Sentence 5	

SECTION B: 3 MARKS EACH

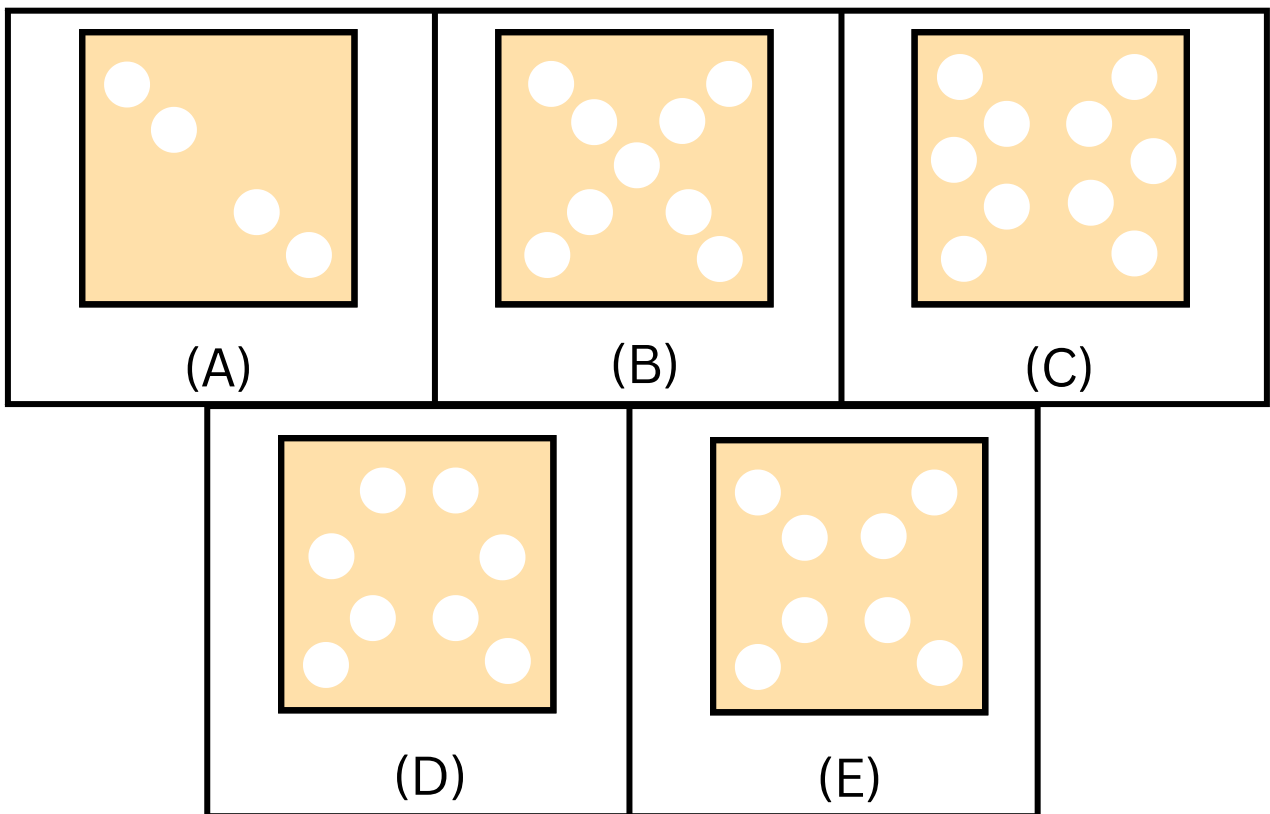
20. **2022:** In Tokyo, Japan, Chiyo leads a group of scientists to find a more efficient and safer way for space travel. She learns about optimizing space by folding some elements inside a spaceship. A paper is folded and punched in a certain way, as shown below.

Choose the correct unfolded paper from the options.

Credit: NGN Research



Choose the correct unfolded options.



SECTION B: 3 MARKS EACH

21. **2022:** NGN Foundation provides logical and mathematical instruction to children with special needs in Moscow, Russia. Vlad introduces the students to essential logic skills by showing them a **square grid** of numbers in which the sum of the numbers in each row, column, and diagonal is the same. But some of the numbers still need to be included. The numbers are **consecutive odd numbers starting from 5**.

Credit: NGN Research

Choose all the missing numbers in the middle row.

11		
?	?	5
7		15

- | |
|--------|
| (A) 19 |
| (B) 9 |
| (C) 21 |
| (D) 13 |
| (E) 17 |



SECTION B: 3 MARKS EACH

22. **2022:** A local university in Khartoum, Sudan, wants to promote volunteerism among its students. They establish a program where students can earn academic credit for participating in volunteer projects in the community. Ahmed writes about his project, as shown below. However, some of the sentences in the paragraph may be out of context.

Choose all the odd sentences in the paragraph.

(1) In communities and individuals alike, volunteering is a powerful way to address the issues they care about. **(2)** Volunteering can be emotionally demanding, leading to burnout. **(3)** Volunteering can also help promote social justice and equity by addressing systemic issues and the needs of marginalized populations. **(4)** Sometimes, volunteers may feel their contributions are not valued or recognized by the organization. **(5)** Additionally, volunteering can bring benefits to the volunteer, such as personal growth, a sense of purpose, and even physical and mental health benefits.

Credit: NGN Research

(A) Sentence 2	(B) Sentence 3
(C) Sentence 4	(D) Sentence 5
(E) None of these	

SECTION B: 3 MARKS EACH

23. **2022:** In Delhi, India, the local government monitors cyberbullying activities of bullies and hackers. In one instance, they received coded messages that required decoding. The word "CATCH" is coded as "BBSGD," and the word "BAD" is coded as "ABC."

What does the code "ZMDSS" stand for?

Choose the correct answer from the options given below.

(A) ANGER
(B) CLEAR
(C) ALERT
(D) ALARM
(E) AVATAR



Credit: NGN Research

SECTION B: 3 MARKS EACH

24. **2022:** NGN Foundation deploys a satellite to gather useful information about poverty-stricken areas in Ohio, USA. The satellite collects numbers in the grid format. The numbers in each grid follow a pattern. Determine the pattern to find the missing numbers.

Credit: NGN Research

Choose all the correct numbers from the options.

8	4
6	12

15	7
3	5

?	?
2	11

- | |
|--------|
| (A) 7 |
| (B) 8 |
| (C) 9 |
| (D) 10 |
| (E) 11 |



SECTION B: 3 MARKS EACH

25. **2022:** Arya writes a letter to Jessica, who lives in Adelaide, Australia, about environmental issues. In her letter, Arya discusses the new technologies used to protect the environment. Embarrassingly, she makes some grammatical errors. **Find the total** number of grammatical mistakes in the paragraph given below. Incorrect use of punctuation also should be counted.

Choose the correct answer.

Carbon capture and storage (CCS) is a technology that captures carbon dioxide emissions from power plants and industrial facilities and stores them underground. The captured carbon dioxide can then be used for enhanced oil recovering or stored in deep underground formations where it will not contribute to climate change. While CCS technology is considered one of the most promising ways to reduce CO₂ emissions, its still in the early stages of development. Also, the cost of capturing and storing CO₂ still needs to be lowered.

Credit: NGN Research

(A) 1	(B) 2
(C) 3	(D) 4
(E) 5	

SECTION C: 5 MARKS EACH

26-29. **2022:** As a result of the Russo-Ukrainian conflict, Europe faced a considerable fuel crisis. However, Europe's fuel shortage was not solely caused by the Russo-Ukrainian conflict but by a cascade of crises and poor decisions over time. Aside from the Russian invasion of Ukraine, the backlash from the 2020 pandemic was the most immediate cause. Many homes in Eastern and Central Europe used coal and wood to heat them. So the fuel shortage worsened the coal shortage. In addition, people's health and well-being were adversely affected by the increased use of dirty fossil fuels and wood. As a result, a new EU package was passed to meet the immediate needs of Europeans. To mitigate the fuel crisis, alternative energy sources, such as wind and solar energy, can be utilized more effectively, and intelligent power grids can aid in energy distribution and management.

Credit: THE BORGES PROJECT,
<https://borgenproject.org>

SECTION C: 5 MARKS EACH

26. **Choose all** the reasons for the energy crisis in Europe.

(A) The Russo-Ukrainian war

(B) The new EU package

(C) The food scarcity

(D) The 2020 pandemic

(E) The increased use of dirty fossil fuels

27. What will be the possible sentence(s) that can immediately follow the paragraph? **Choose** all the options.

(A) A significant concern remains the fuel crisis in Europe, and long-term solutions remain a challenge.

(B) To mitigate the impact of the fuel crisis, the EU has improved energy efficiency in buildings and transportation.

(C) The ongoing conflict in eastern Europe has disrupted agricultural production and damaged infrastructure.

(D) Also, the pandemic has had an impact on Europe, both in terms of public health.

(E) None of these.

SECTION C: 5 MARKS EACH

28. Yulia participated in an event in Kyiv, Ukraine, where a cubical cake was prepared to bring joy to older adults affected by the ongoing conflict. She puts chocolate sauce on all the faces of the cake except the base and cuts it into 27 small cubical cake pieces **having exactly two faces covered with chocolate sauce**.

Choose the correct number from the options.

(A) 23	(B) 16
(C) 19	(D) 18
(E) 12	

29. A local company in Lviv, Ukraine, loads coal cargoes of dimensions 3 m x 4 m x 5 m into a container of dimensions 50 m x 20 m x 30 m to meet the urgent needs of people in Kharkiv, Ukraine. Find the number of cargoes that can be loaded into the container.

Choose all the correct answers.

(A) 500	(B) 320
(C) 480	(D) 432
(E) 420	

SECTION C: 5 MARKS EACH

30-33. **2022:** Ireland's housing crisis was caused by population growth, urban concentration, and the burst of the global housing bubble in the late 2000s. The housing market needed to catch up with the need, resulting in a lack of affordable rental living spaces. The average annual number of new houses built was 15000, far below the estimated 45000 needed. High costs and the housing bubble have made it difficult to build new affordable housing, putting many citizens in poverty. The government widely used Housing Assistance Payment (HAP) program, but subsidies given through HAP toward the private rental sector did not work well. Some of the possible solutions are discussed here. First, we can increase the supply of houses in targeted areas. The government should invest in social housing. The government could also implement rent controls to help keep housing costs affordable for renters. On a serious note, we also need to address underlying factors that contribute to housing insecurity, such as poverty and unemployment, through policies such as giving out living wages, social protection, and jobs to needy people.

Credit: THE BORGES PROJECT,
<https://borgenproject.org>

SECTION C: 5 MARKS EACH

30. **Choose all** the possible solutions to tackle the housing crisis in Ireland.

- | |
|--|
| (A) Implement rent control in specific areas. |
| (B) Subsidies toward the private rental sector. |
| (C) Moderate the supply of houses. |
| (D) Bursting the housing bubble in the future. |
| (E) Address the underlying issues of the poverty crisis. |

31. **Choose all** the reasons for the housing crisis in Ireland.

- | |
|--|
| (A) Rent Controls. |
| (B) Famine. |
| (C) High population growth. |
| (D) Bursting the housing bubble in 2010. |
| (E) Urban concentration. |

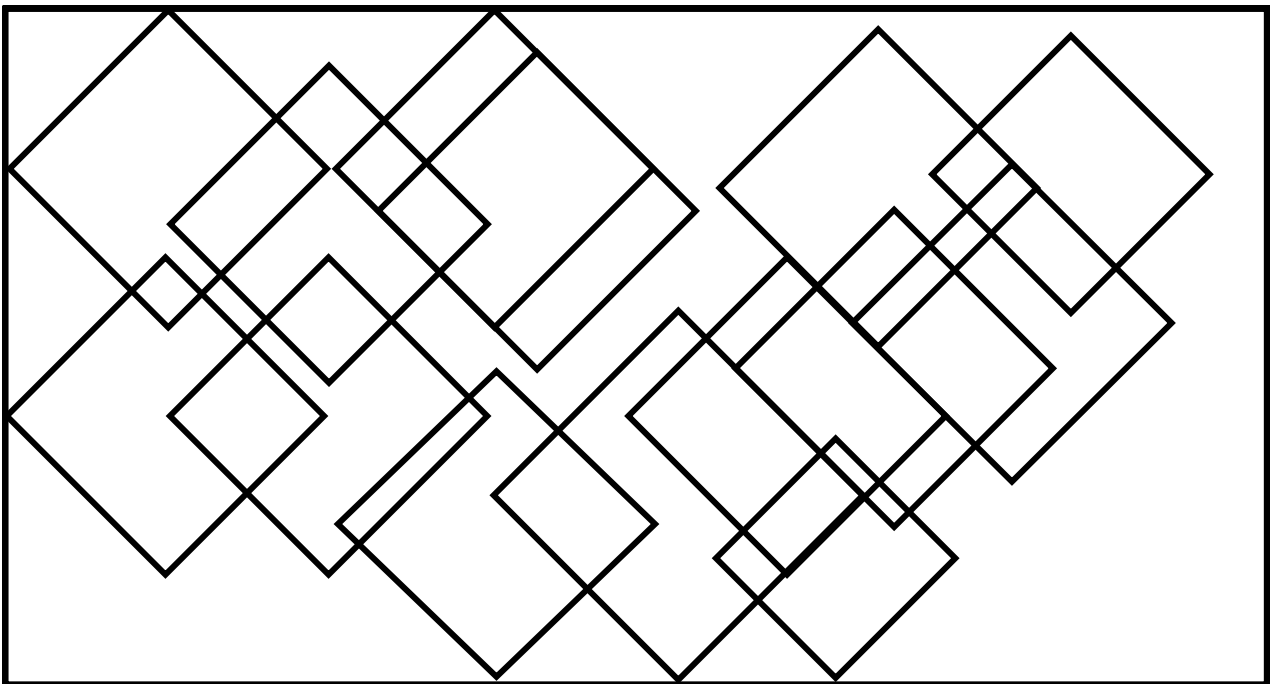
SECTION C: 5 MARKS EACH

32. In Dublin, Ireland, NGN Foundation is developing new AI robots to identify cheap materials to build houses. These robots are given the task of retrieving Material X, a cheap building material hidden in the waste dump shown below. **Find the total number of shapes** having the same shape and size as Material X's in the waste. **Choose** your answer from the options.

Material X



Waste



0	1	2	3	4	5	6	7	8	9	Ones
0	1	2	3	4	5	6	7	8	9	Tens
0	1	2	3	4	5	6	7	8	9	Hundreds

SECTION C: 5 MARKS EACH

33. In Galway, Ireland, NGN Foundation interviews an architect to make affordable and space-efficient houses. As part of the interview, the interviewer asks architecture for the difference between the maximum and minimum whole numbers if the numbers 2, 10, 5, 9, and 1 are used exactly once with the mathematical operations. Also, the use of parentheses is not allowed. Further, One of the possible values will be $2 - 10 + 5 + 9 + 1 = 7$.

Choose the correct number as the difference between the maximum and minimum values.

Note: The mathematical operations can be repeated.

0	1	2	3	4	5	6	7	8	9	Ones
0	1	2	3	4	5	6	7	8	9	Tens
0	1	2	3	4	5	6	7	8	9	Hundreds





ANSWER KEY

Preparatory Classes Available

Step-Wise Solution Available

NGNLearning.com/Logic-Olympiad

SECTION A: ANSWER KEY

1. (C)

Step 1: The first person can choose any one of the 7 chairs. The second person can only choose from the remaining 6 chairs.

Step 2: Using the fundamental counting principle, there will be $7 \times 6 = 42$ different ways to do this.

(A) 2
(B) 49
(C) 42
(D) 13
(E) None of these

SECTION A: ANSWER KEY

2. (D)

Step 1: Observe (D)

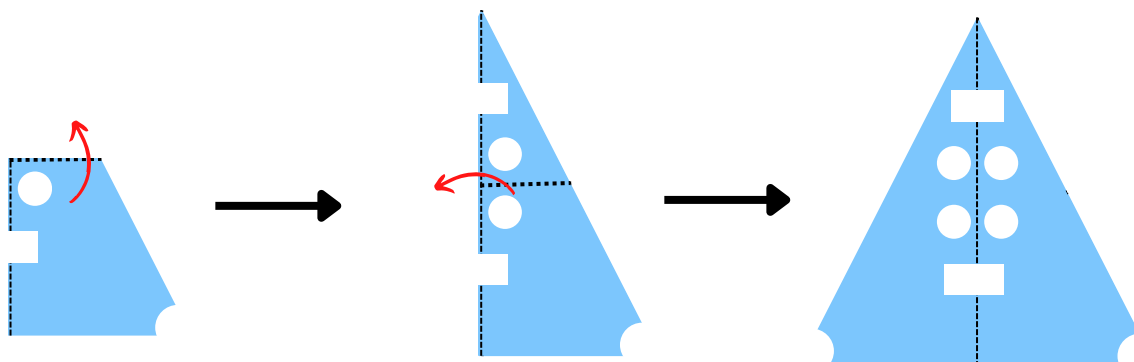
Step 2: $4 - 3 \times 6 \div 20 + 5 = 2$ converts to $4 \times 3 - 6 + 20 \div 5 = 2$

Step 3: Applying PEMDAS, we get $4 \times 3 - 6 + 20 \div 5 = 12 - 6 + 4$, which is equal to 2.

(A) $30 - 2 \div 4 \times 16 + 12 = 4$
(B) $16 \div 20 - 2 + 18 \times 3 = 1$
(C) $20 \times 4 + 4 \div 16 - 2 = 40$
(D) $4 - 3 \times 6 \div 20 + 5 = 2$
(E) $3 \div 2 - 5 \times 5 + 1 = 20$

SECTION A: ANSWER KEY

3. (B)



<p>(A)</p>	<p>(B)</p>	<p>(C)</p>
<p>(D)</p>	<p>(E)</p>	

SECTION A: ANSWER KEY

4. (B)

Step 1: For the first grid, the 4th number = 1st number x 2nd number + 3rd number, i.e.,
 $8 = 1 \times 2 + 6$.

Step 2: For the second, the same pattern follows,
 4th number = 1st number x 2nd number + 3rd number, i.e., $12 = 2 \times 3 + 6$.

Step 3: For the third, the fourth number will be
 $4 \times 5 + 6 = 26$.

(A) 22
(B) 26
(C) 24
(D) 16
(E) 15

SECTION A: ANSWER KEY

5. (B)

Step 1: As per the code, $36 - 2 \times 12 + 6 \div 8$ converts to $36 \times 2 - 12 \div 6 + 8$.

Step 2: Applying PEMDAS, we get $72 - 2 + 8 = 72 - 10 = 62$.

(A) 62
(B) 78
(C) 2.25
(D) 6
(E) 12.75

6. (A)

Step 1: The correct usage should be "The Netherlands" instead of "Netherlands."

(A) Netherlands is located in Western Europe,
(B) known for its flat landscapes,
(C) windmills, and colorful tulip fields.
(D) Its capital city, Amsterdam,
(E) is famous for its canals and museums.

SECTION A: ANSWER KEY

7. (C)

Step 1: The third sentence does not directly connect with healthcare-related issues faced by women. Whereas the other sentences directly talk about issues faced by just women.

(A) Sentence 1
(B) Sentence 2
(C) Sentence 3
(D) Sentence 4
(E) None of these

SECTION A: ANSWER KEY

8. (C)

Step 1: There are two different scenarios:

- (1) Maya buys three pens.
- (2) Maya buys two pens and one pencil or eraser.

Step 2: For Scenario 1, the number of ways she can select is equal to $4 \times 3 \times 2 = 24$.

Step 3: For Scenario 2, the number of ways she can select is equal to $4 \times 3 \times 10 = 120$.

Step 4: Therefore, in total, there will be $120 + 24 = 144$ ways to select.

(A) 48
(B) 120
(C) 144
(D) 124
(E) 100

SECTION A: ANSWER KEY

9. (B)

Step 1: For the first grid, the 3rd number is the next number that comes after the 1st and the 2nd number. i.e., 1, 2, 3. 4th number = square of the 1st number + square of the 2nd number.

i.e., $5 = 1 \times 1 + 2 \times 2$

Step 2: The same pattern applies to the second grid.

Step 3: For the third grid, the 3rd number will be 7. 4th number = $5 \times 5 + 6 \times 6 = 61$.

(A) 6, 49	(B) 7, 61
(C) 7, 49	(D) 6, 61
(E) 9, 85	

SECTION A: ANSWER KEY

10. (D)

Step 1: The completed square grid is shown here.

4	6	12
18	10	2
8	14	14

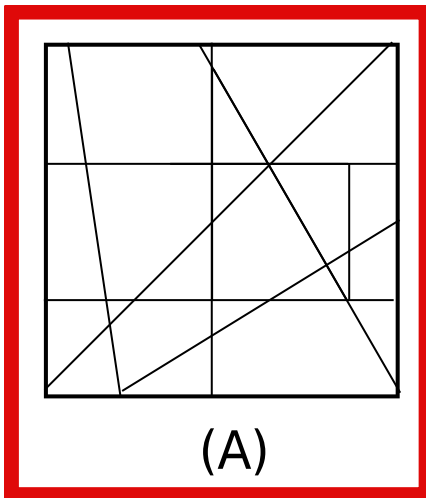
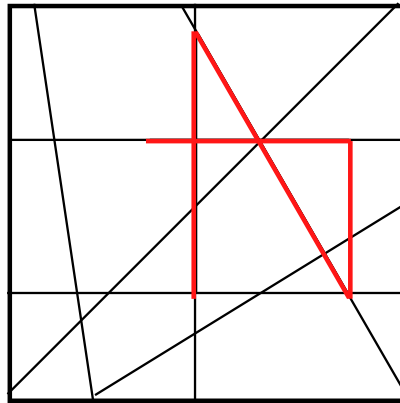
Step 2: The sum of the missing numbers in the third row will be $8 + 14 = 22$.

(A) 18
(B) 14
(C) 24
(D) 22
(E) Can't determine

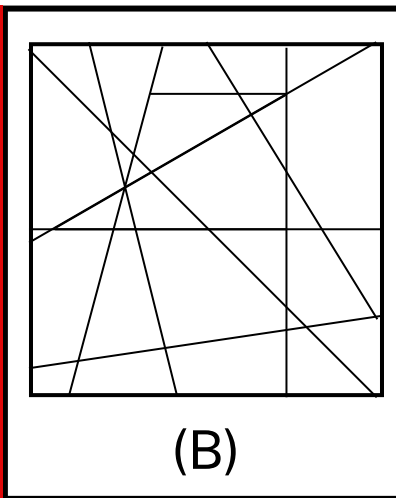
SECTION A: ANSWER KEY

11. (A)

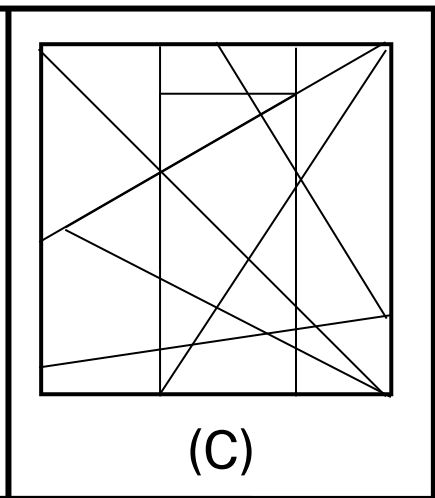
Step 1: We can see a rotated Figure (X) in Option A, as shown here.



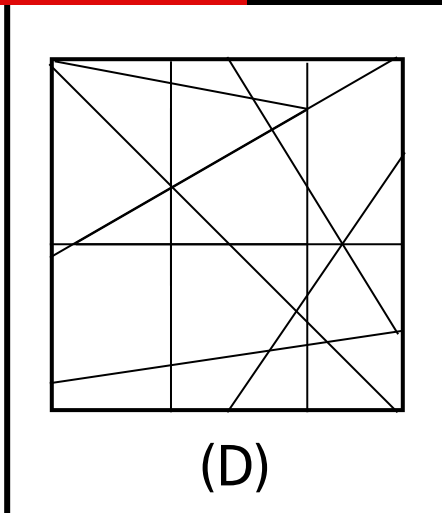
(A)



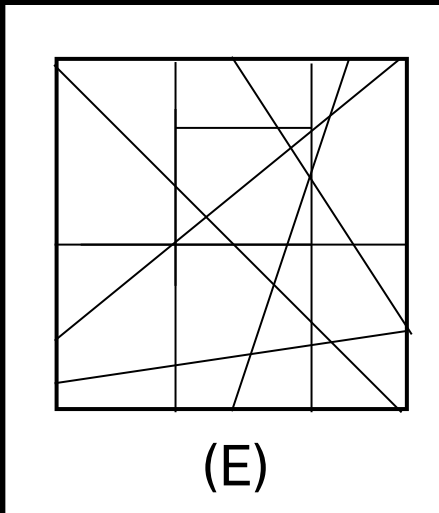
(B)



(C)



(D)



(E)

SECTION A: ANSWER KEY

12. (D)

Step 1: The ranks of J, A, C, and K in the alphabetic series are 10, 1, 3, and 11, respectively. $10 + 1 + 3 + 11 = 25$.

Step 2: The ranks of B, A, R, and K in the alphabetic series are 2, 1, 18, and 11, respectively. $2 + 1 + 18 + 11 = 32$.

Step 3: The ranks of J, A, and M are 10, 1, and 13, respectively. The sum of the ranks is 24.

(A) 18
(B) 29
(C) 12
(D) 24
(E) None of these

SECTION A: ANSWER KEY

13. (A)

Step 1: The cubes having three faces painted are situated in the corner. There are 8 such cubes.

Step 2: The cubes having two faces painted are situated on the edges. There are 24 such cubes.

Step 3: There are no cubes having four faces painted.

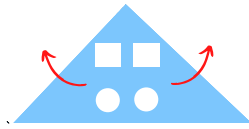
Step 4: The total will be $8 + 24 = 32$.

(A) 32
(B) 12
(C) 24
(D) 36
(E) 40

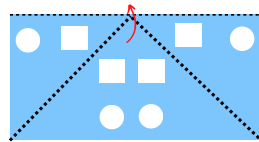
SECTION A: ANSWER KEY

14. (C)

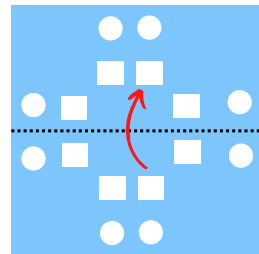
Step 1:

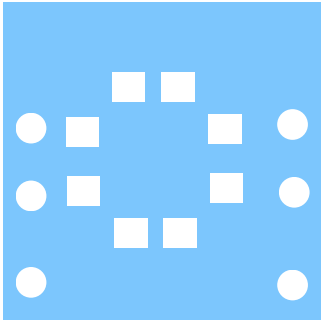
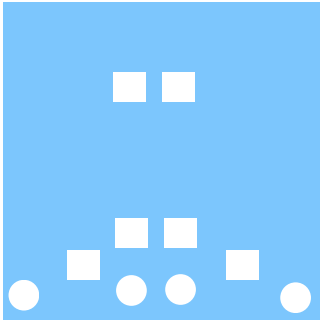
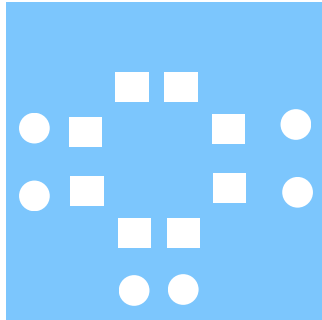
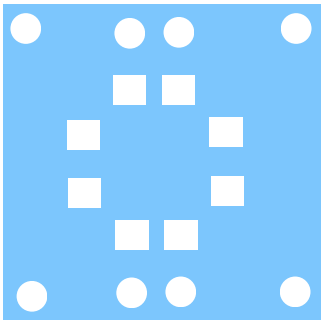
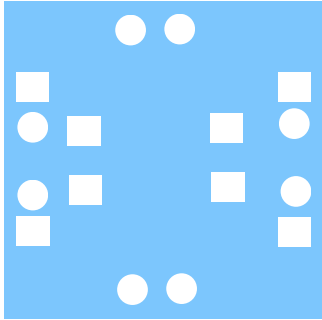


Step 2:



Step 3:



 <p>(A)</p>	 <p>(B)</p>	 <p>(C)</p>
 <p>(D)</p>	 <p>(E)</p>	

SECTION A: ANSWER KEY

15. (E)

Step 1: For WARM, the first and the third letter will be interchanged to get the code RAWM.

Step 2: The same pattern goes for the word TRIM.

Step 3: For NATE, we get the code TANE after interchanging the first and the third letter.

(A) ETNA
(B) TEAN
(C) TAEN
(D) ETAN
(E) None of these

SECTION B: ANSWER KEY

16. (D)

Step 1: There are four cases in which at least two girls are leaders.

Step 2: Girls are leaders of A and B - $8 \times 7 \times 11 = 616$,

Girls are leaders of B and C - $11 \times 8 \times 7 = 616$,

Girls are leaders of A and C - $8 \times 11 \times 7 = 616$,

Girls are leaders of A, B, and C - $8 \times 7 \times 6 = 336$

Step 3: $616 + 616 + 616 + 336 = 2184$

(A) 5814
(B) 1848
(C) 2640
(D) 2184
(E) 1250

SECTION B: ANSWER KEY

17. (B) (E)

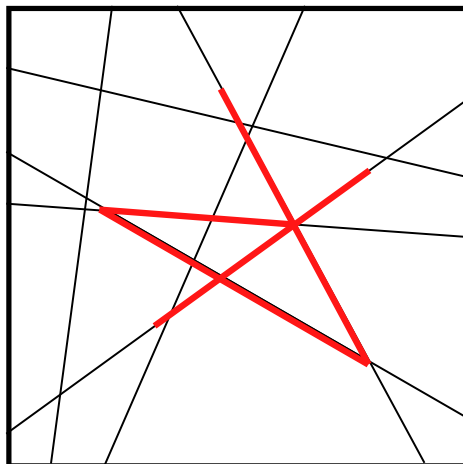
Step 1: The number of circles will increase by one after each pattern. The number of overlaps will equal the number of sides on the polygon in the pattern.

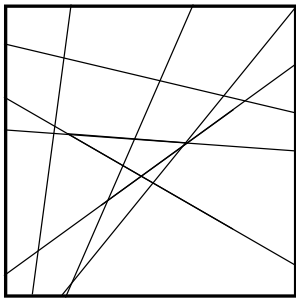
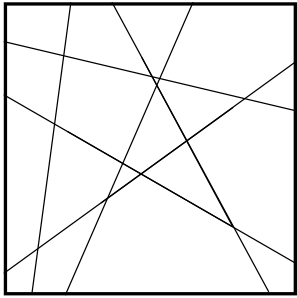
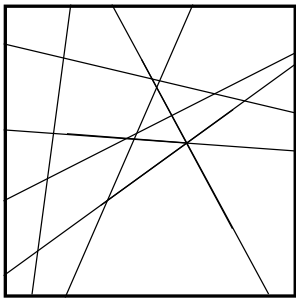
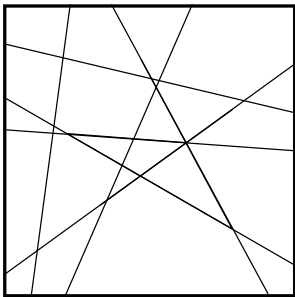
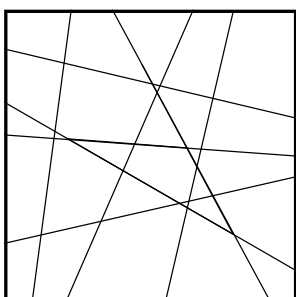
Step 2: There are 6 overlaps in the last figure. So, the polygon in the last figure will be six-sided, i.e., regular hexagon and hexagon.

(A) Rhombus
(B) Regular Hexagon
(C) Square
(D) Pentagon
(E) Hexagon

SECTION B: ANSWER KEY

18. (D)



 <p>(A)</p>	 <p>(B)</p>	 <p>(C)</p>
 <p>(D)</p>	 <p>(E)</p>	

SECTION B: ANSWER KEY

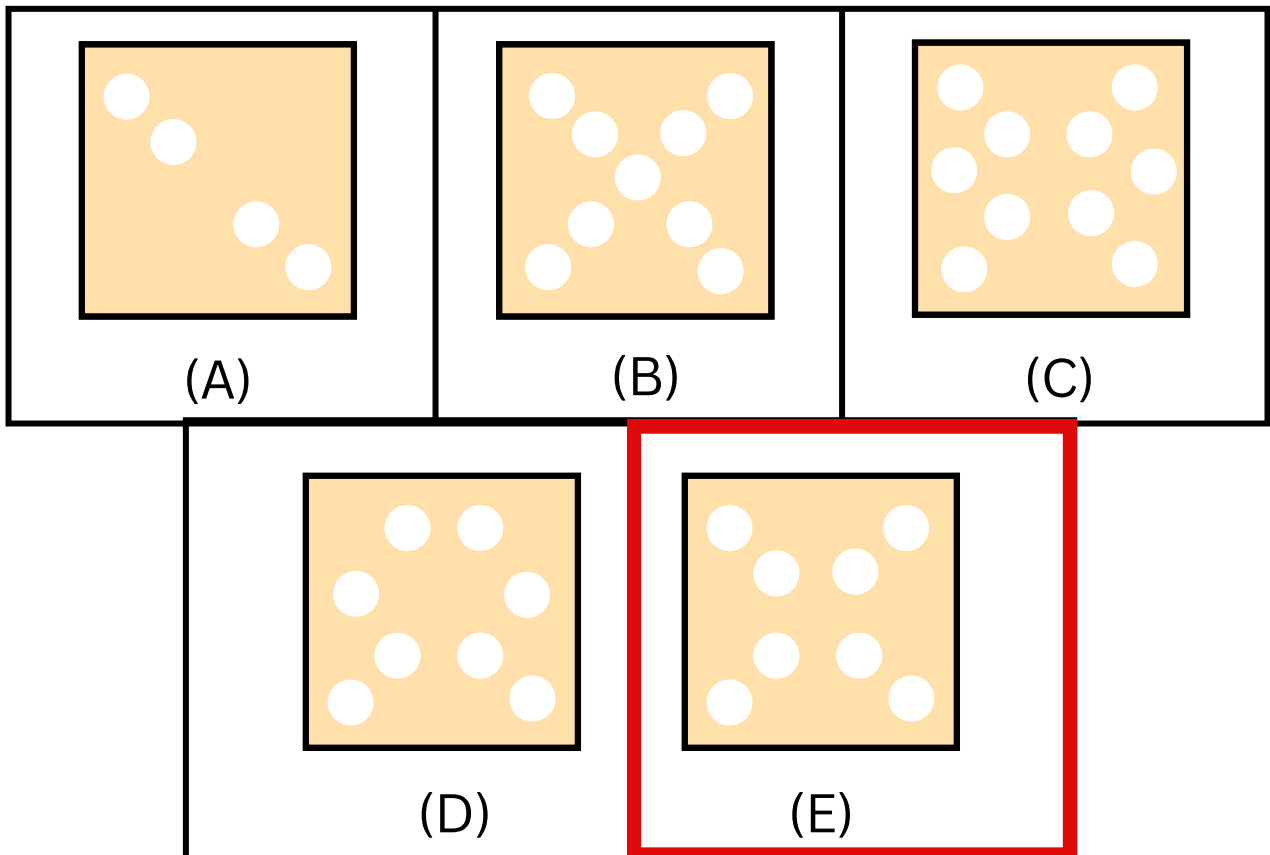
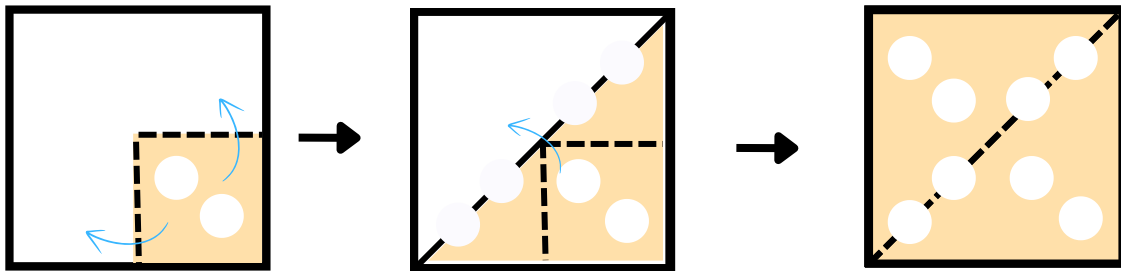
19. (B), (E)

(1) Congestion charges in a metropolitan city can reduce traffic congestion significantly. **(2) These** charges can encourage **the public** to use public transport and bikes, which are eco-friendly. **(3)** Also, congestion charges will increase the revenue that can be used to improve public transport infrastructure. **(4)** But some issues can arise due to these charges. **(5)** Mainly, it can negatively impact low-income families **who** do not have any alternative means of transportation.

(A) Sentence 1	(B) Sentence 2
(C) Sentence 3	(D) Sentence 4
(E) Sentence 5	

SECTION B: ANSWER KEY

20. (E)



SECTION B: ANSWER KEY

21. (C), (D)

11	9	19
21	13	5
7	17	15

(A) 19
(B) 9
(C) 21
(D) 13
(E) 17

SECTION B: ANSWER KEY

22. (A), (C)

Step 1: The letter talks about the advantages of volunteerism, as Sentence 1 is not an odd sentence.

Step 2: So, Sentences 2 and 4 are the odd ones out because they talk about the negatives of volunteering.

(A) Sentence 2	(B) Sentence 3
(C) Sentence 4	(D) Sentence 5
(E) None of these	

SECTION B: ANSWER KEY

23. (B), (C)

Step 1: The pattern will be "The sum of the numbers at the left bottom corner and right top corner always add up to 10. The sum of the numbers at the right bottom corner and right top corner always add up to 20."

Step 2: The number at the right top corner will be 8, and the number at the left top corner will be 9.

(A) 7
(B) 8
(C) 9
(D) 10
(E) 11

SECTION B: ANSWER KEY

24. (C)

Step 1: For CATCH, the letter before C is B, the letter after A is B, the letter before T is S, the letter after C is D, and the letter before H is G.

Step 2: For BAD, the letter before B is A, the letter after A is B, and the letter before D is C.

Step 3: Similarly, ALERT will be coded as ZMDSS.

(A) ANGER
(B) CLEAR
(C) ALERT
(D) ALARM
(E) AVATAR

SECTION B: ANSWER KEY

25. (C)

Step 1: The corrected paragraph is shown here:

Carbon capture and storage (CCS) is a technology that captures carbon dioxide emissions from power plants and industrial facilities and stores them underground. The captured carbon dioxide can then be used for enhanced oil **recovery** or stored in deep underground **formations**, where it will not contribute to climate change. While CCS technology is considered one of the most promising ways to reduce CO₂ emissions, **it's** still in the early stages of development. Also, the cost of capturing and storing CO₂ still needs to be lowered.

(A) 1	(B) 2
(C) 3	(D) 4
(E) 5	

SECTION C: ANSWER KEY

26. (A),(D)

Step 1: Reasons for the energy crisis include war and Covid-19 pandemic.

(A) The Russo-Ukrainian war

(B) The new EU package

(C) The food scarcity

(D) The 2020 pandemic

(E) The increased use of dirty fossil fuels

27. (A),(B)

Step 1: The following sentence should be about the energy crisis in Europe.

(A) A significant concern remains the fuel crisis in Europe, and long-term solutions remain a challenge.

(B) To mitigate the impact of the fuel crisis, the EU has improved energy efficiency in buildings and transportation.

(C) The ongoing conflict in eastern Europe has disrupted agricultural production and damaged infrastructure.

(D) Also, the pandemic has had an impact on Europe, both in terms of public health.

(E) None of these.

SECTION C: ANSWER KEY

28. (E)

Step 1: There will be 8 pieces having two faces covered with chocolate sauce along four vertical edges.

Step 2: There will be such 4 pieces on the edges of the top face of the cake.

Step 3: In total, there will be $8 + 4 = 12$ pieces.

(A) 23
(B) 16
(C) 19
(D) 18
(E) 12

SECTION C: ANSWER KEY

29. (A), (C), (E)

Step 1: One way is to do $50/5 \times 20/4 \times 30/3 = 500$ cargoes.

Step 2: Second way is to do $50/3 \times 20/4 \times 30/5 = 480$ cargoes.

Step 3: Third way is to do $20/3 \times 30/4 \times 50/5 = 420$ cargoes.

(A) 500

(B) 320

(C) 480

(D) 432

(E) 420

SECTION C: ANSWER KEY

30. (E)

(A) Implement rent control in specific areas.

(B) Subsidies toward the private rental sector.

(C) Moderate the supply of houses.

(D) Bursting the housing bubble in the future.

(E) Address the underlying issues of the poverty crisis.

31. (C), (E)

(A) Rent Controls.

(B) Famine.

(C) High population growth.

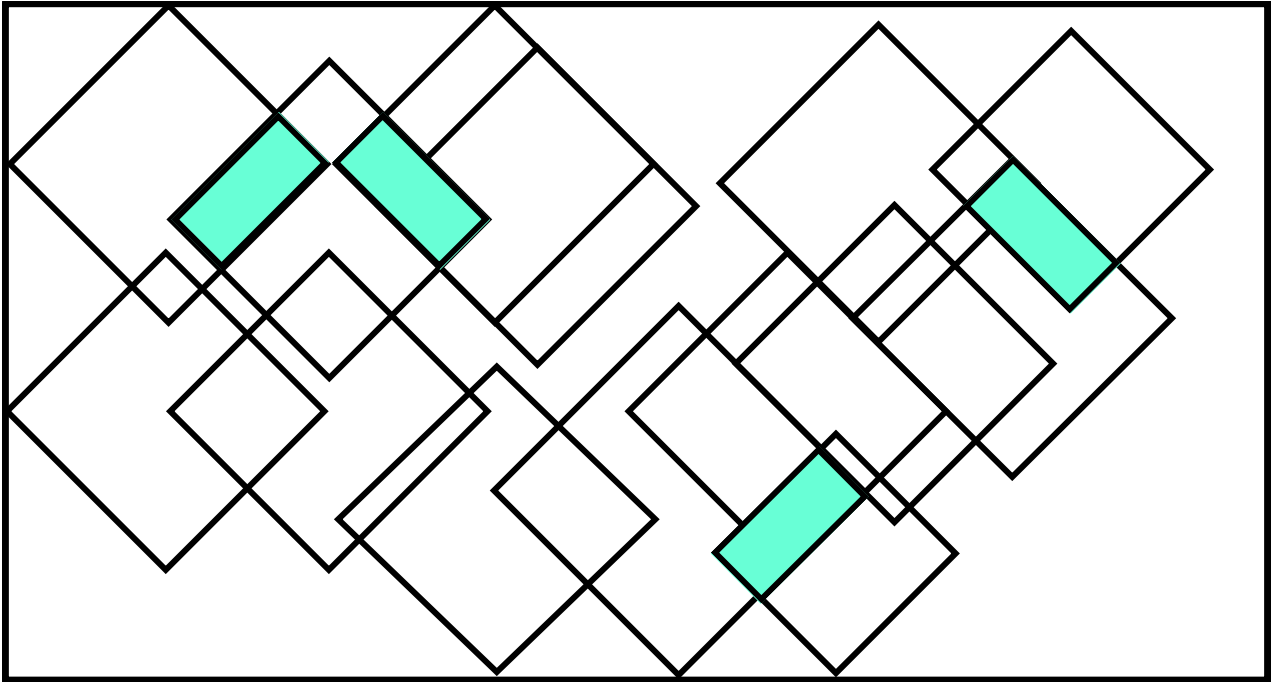
(D) Bursting the housing bubble in 2010.

(E) Urban concentration.

SECTION C: ANSWER KEY

32. (4)

Hazardous Waste



0	1	2	3	4	5	6	7	8	9	Ones
0	1	2	3	4	5	6	7	8	9	Tens
0	1	2	3	4	5	6	7	8	9	Hundreds

SECTION C: ANSWER KEY

33. 901

Step 1: The maximum value possible will be $2 \times 10 \times 5 \times 9 + 1 = 901$.

Step 2: The minimum value possible will be $10 \div 5 + 5 - 9 - 1 = 0$.

Step 3: The difference will be $901 - 0 = 901$.

0	1	2	3	4	5	6	7	8	9	Ones
0	1	2	3	4	5	6	7	8	9	Tens
0	1	2	3	4	5	6	7	8	9	Hundreds