

Grade 5: NGN LOGIC OLYMPIAD 2023 - Section A

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.

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

[NGNLearning.com/Logic-Olympiad](https://www.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?

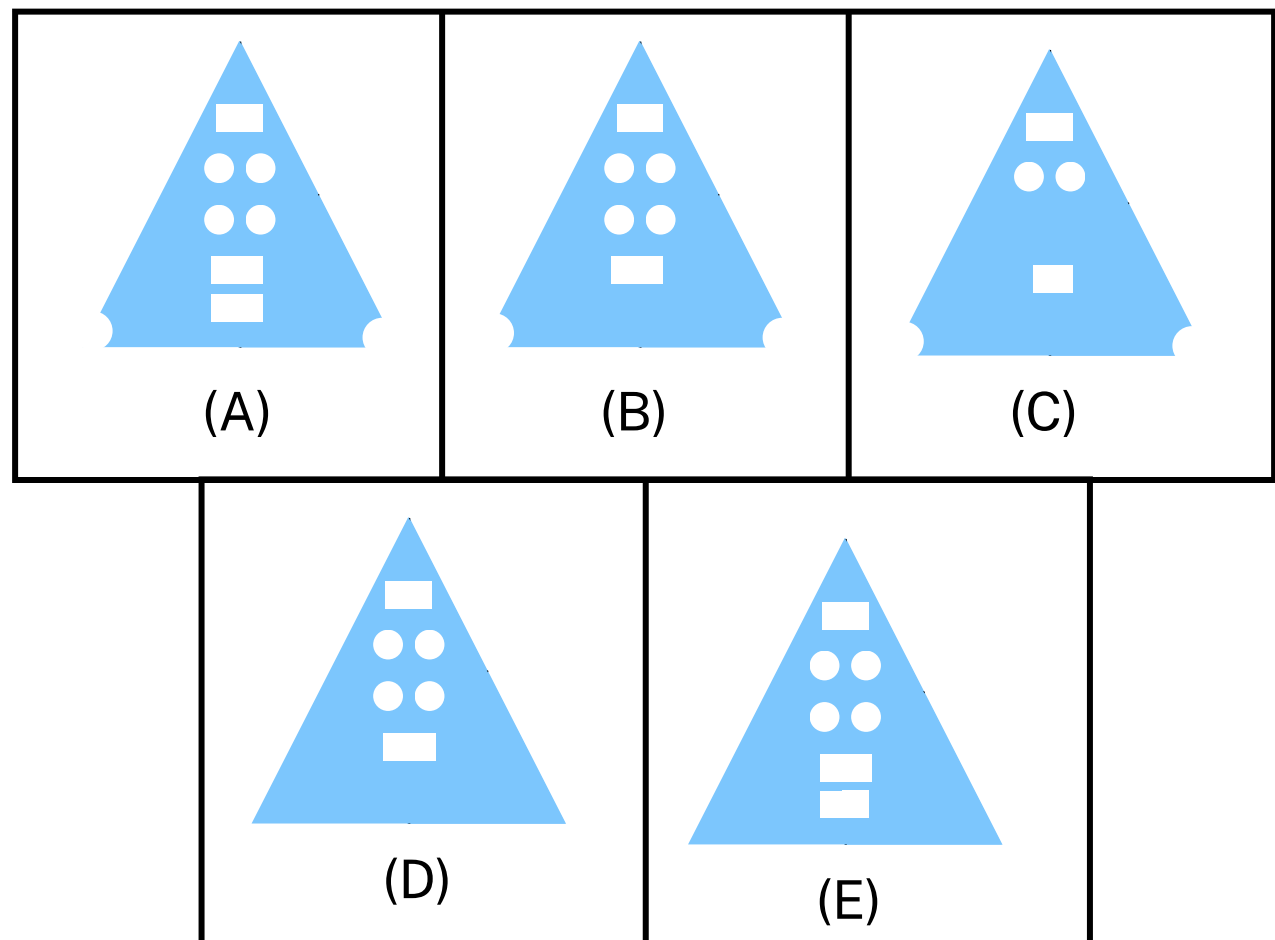
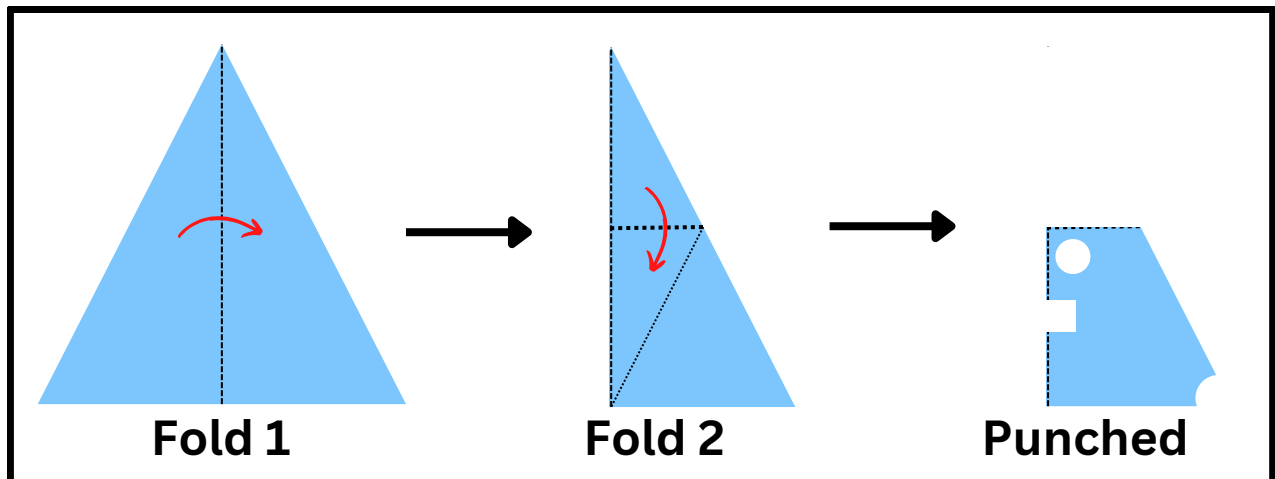
Choose the correct answer.

(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

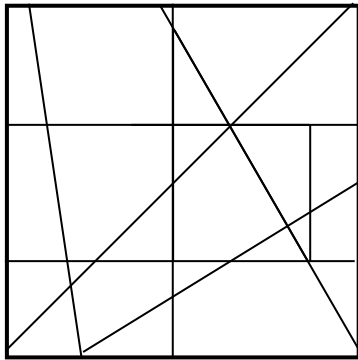
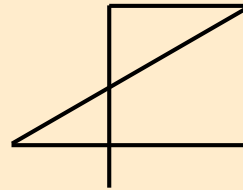
(D) 22

(E) Can't determine

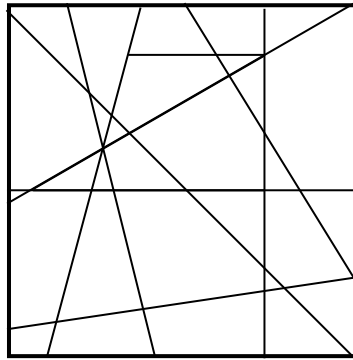
SECTION A: 2 MARKS EACH

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

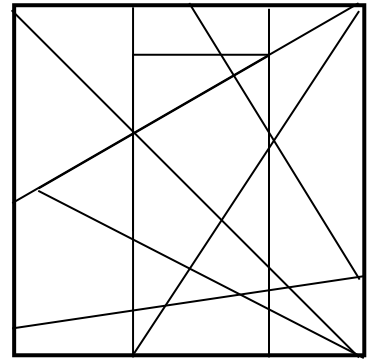
Figure (X)



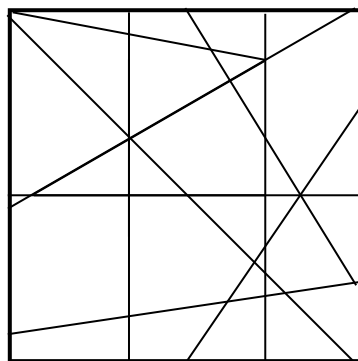
(A)



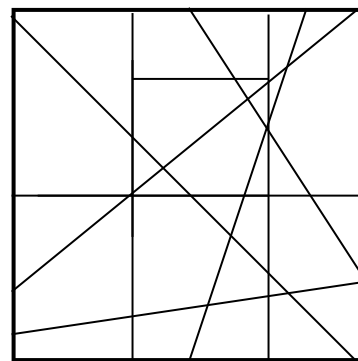
(B)



(C)



(D)



(E)

SECTION A: 2 MARKS EACH

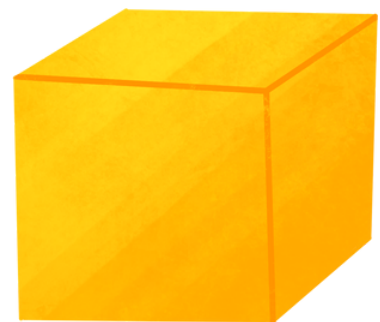
12. If the word "JACK" is coded as 25, and the word "BARK" is coded as 32, what will be the code for "JAM"?

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.

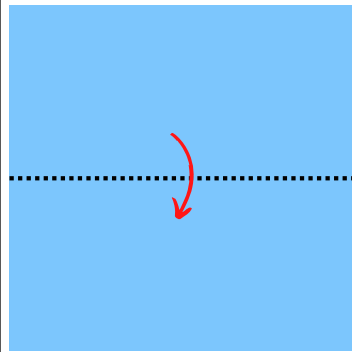
(A) 32
(B) 12
(C) 24
(D) 36
(E) 40



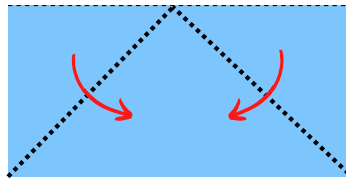
SECTION A: 2 MARKS EACH

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

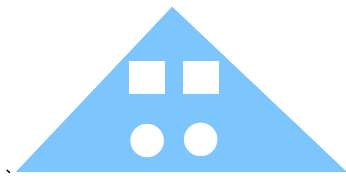
Choose the correct unfolded figure.



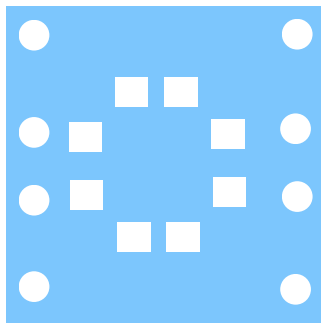
Fold 1



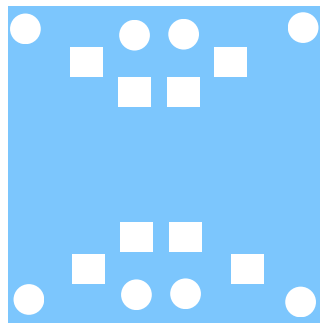
Fold 2



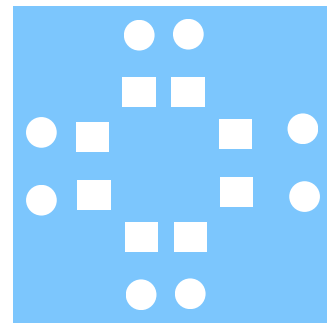
Punched



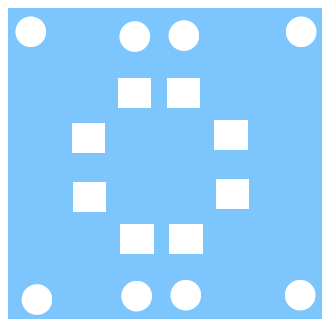
(A)



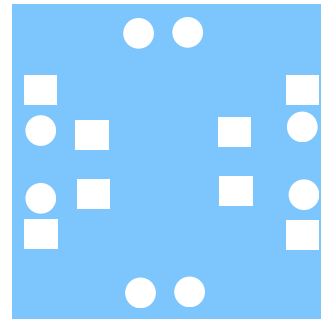
(B)



(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 A: 2 MARKS EACH

16. 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 numbers starting from 5. Find the value of "?"

Choose the correct answer.

12		
		11
?		

(A) 5

(B) 10

(C) 9

(D) 8

(E) 6

SECTION A: 2 MARKS EACH

17. The codes for the words "TILE" and "CLAW" are "UKOI" and "DNDA," respectively. What will be the code for the word "FIST"?

Choose the correct code from the options.

(A) GJUW

(B) GKVX

(C) HKUW

(D) GKUX

(E) HKVW

18. If P means multiplication, Q means addition, N means subtraction, and Y means division, what is the value of $20 \text{ P } 5 \text{ Y } 10 \text{ Q } 20 \text{ N } 10 \text{ P } 2$?

(A) 10

(B) 90

(C) 50

(D) 55

(E) 25

SECTION A: 2 MARKS EACH

19. There is a grammatical error in the given sentences. **Choose** the part of the sentences with a grammatical error from the given options.

Space travel refers to traveling beyond Earth's atmosphere and into space. It has been a major focus of scientific and technological advancement for several decades, for humans having sent spacecraft and even astronauts to the moon and beyond.

(A) Space travel refers to travelling beyond

(B) Earth's atmosphere and into space.

(C) It has been a major focus of scientific

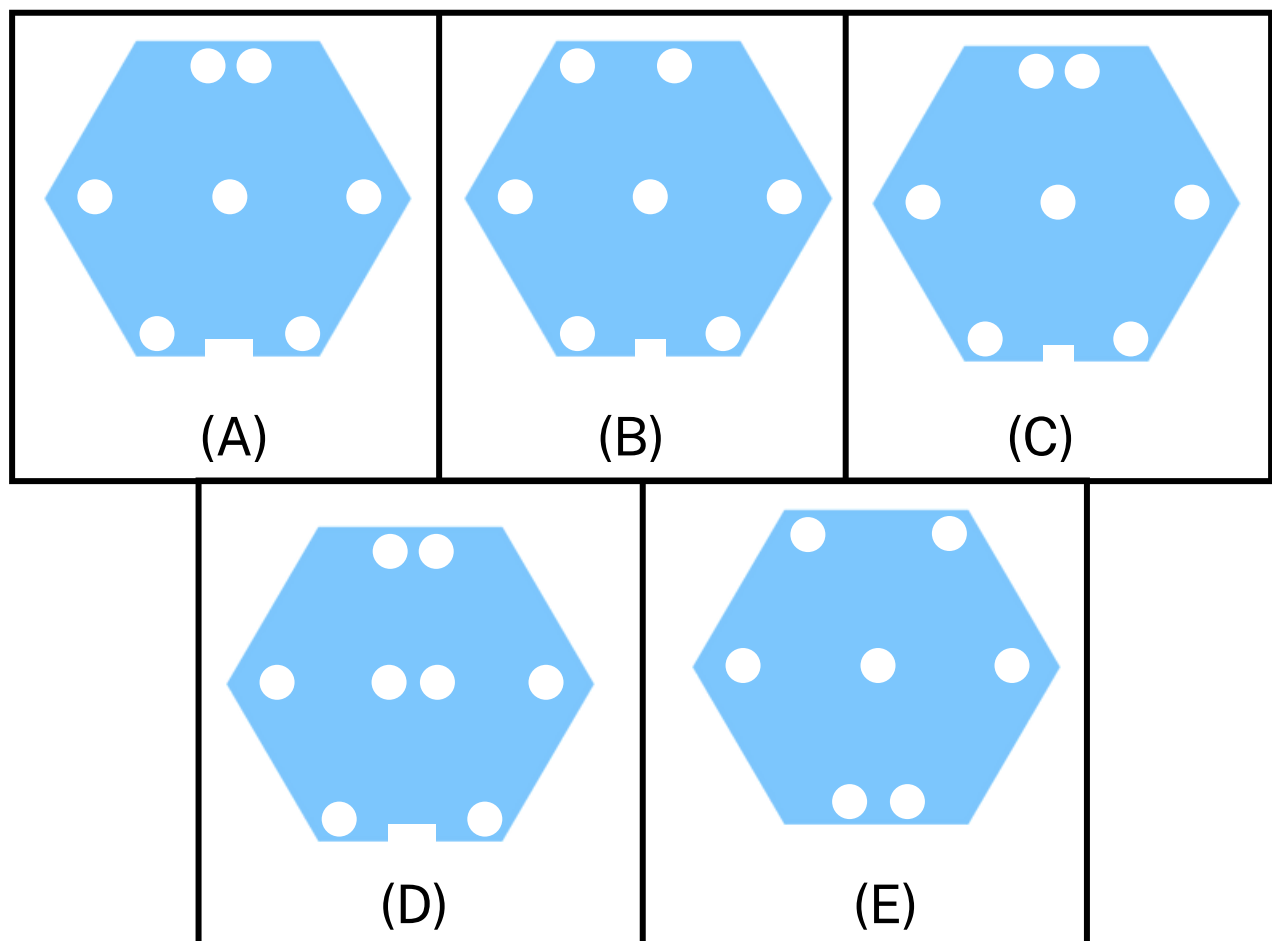
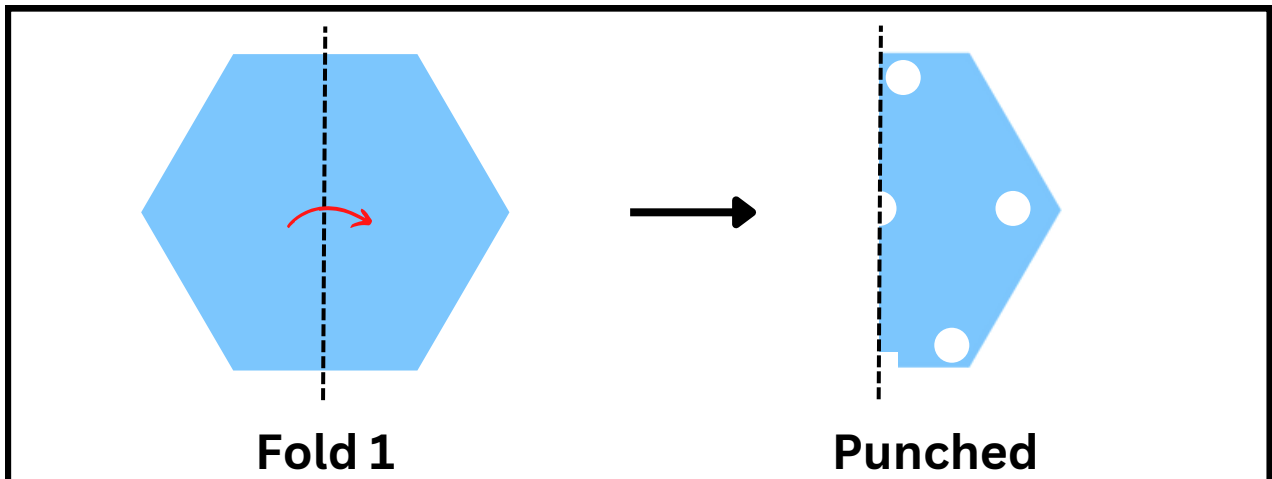
(D) and advancement for several decades,

(E) for humans having sent spacecraft

SECTION A: 2 MARKS EACH

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

Choose the correct unfolded figure.





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)

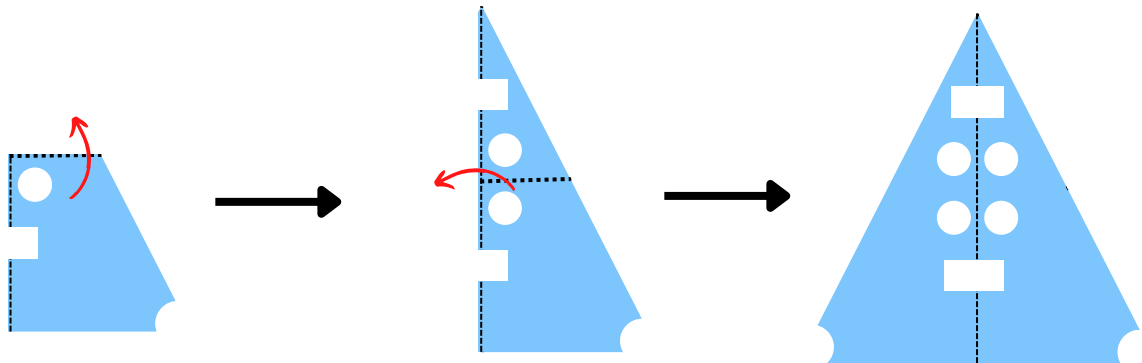
Step 2: $4 - 3 \times 6 \div 20 + 5 = 2$ converts to $4 \times 3 - 6 + 20 \div 5 = 2$

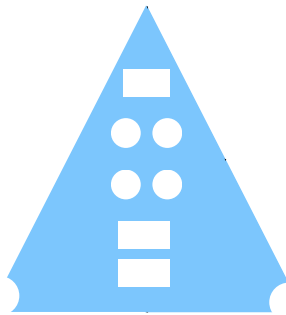
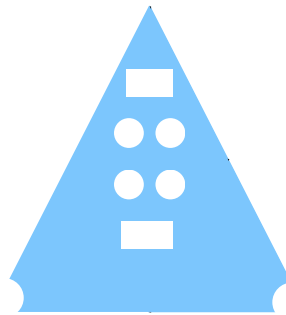
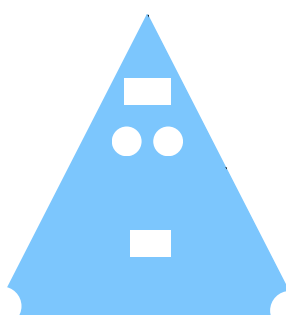
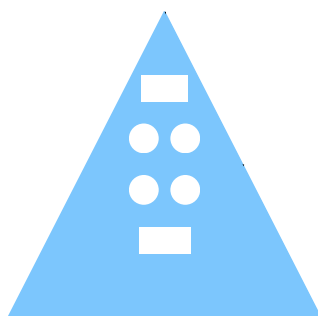
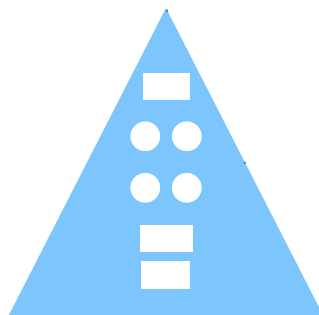
Step 3: Applying PEMDAS, we get $4 \times 3 - 6 + 20 \div 5 = 12 - 6 + 4$, which is equal to 2.

(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.

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

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

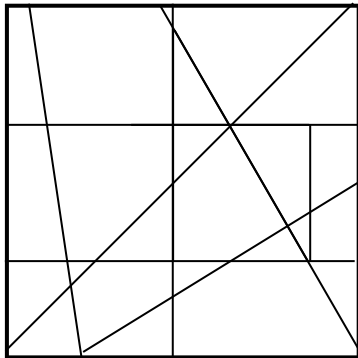
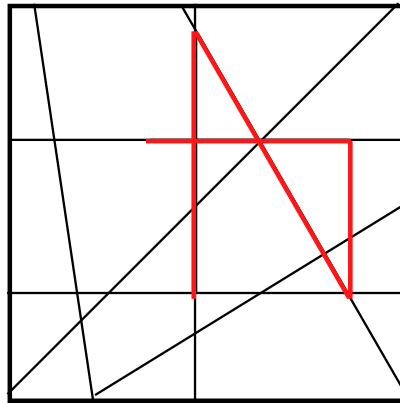
Step 2: The sum of the missing numbers in the third row will be $8 + 14 = 22$.

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

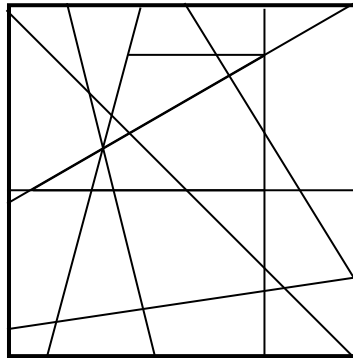
SECTION A: ANSWER KEY

11. (A)

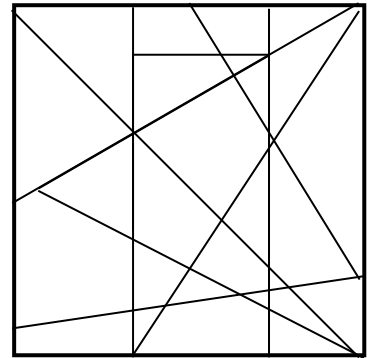
Step 1: We can see a rotated Figure (X) in Option A, as shown here.



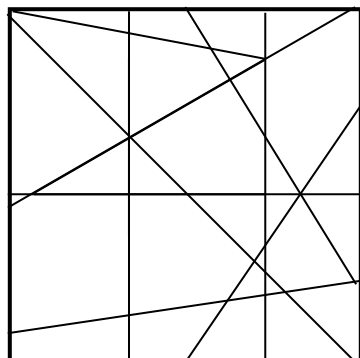
(A)



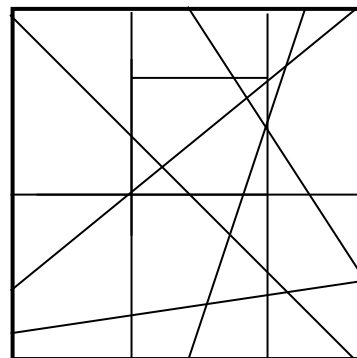
(B)



(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.

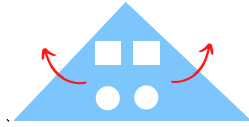
Step 4: The total will be $8 + 24 = 32$.

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

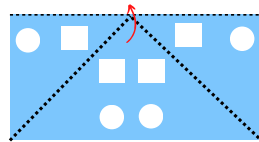
SECTION A: ANSWER KEY

14. (C)

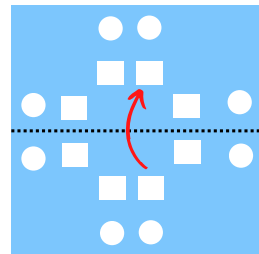
Step 1:

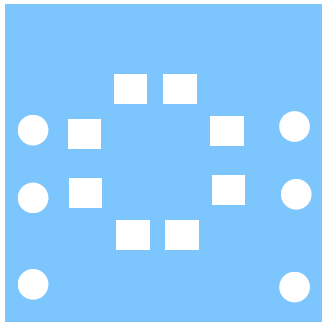
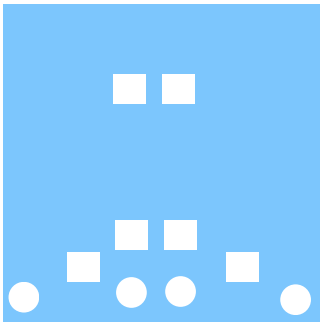
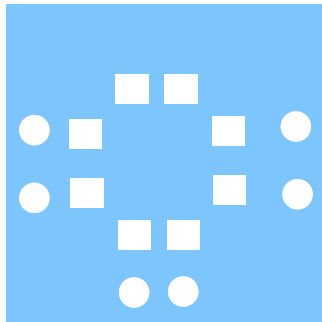
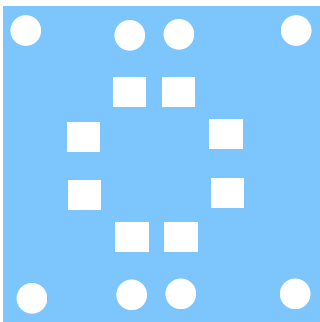
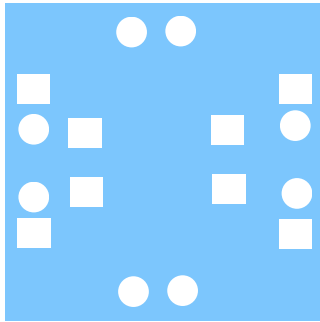


Step 2:



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 A: ANSWER KEY

16. (D)

Step 1: The numbers we can use are 5, 6, 7, 8, 9, 10, 11, 12, and 13.

Step 2: The sum of the numbers in each column and row is 27.

Step 3: After completing the grid, we get the missing number as 8.

(A) 5
(B) 10
(C) 9
(D) 8
(E) 6

SECTION A: ANSWER KEY

17. (B)

Step 1: For the word "TILE," the first letter after T is U, the second letter after I is K, the third letter after L is O, and the fourth letter after E is I; Hence, the code for "TILE" is "UKOI."

Step 2: Similarly, the code for the word "CLAW" is "DNDA."

Step 3: Using the same coding, the code for the word "FIST" will be "GKVX."

(A) GJUW
(B) GKVX
(C) HKUW
(D) GKUX
(E) HKVW

SECTION A: ANSWER KEY

18. (A)

Step 1: The correct expression will be:

$$20 \times 5 \div 10 + 20 - 10 \times 2.$$

Step 2: Using PEMDAS, we get

$$\underline{20 \times 5} \div 10 + 20 - \underline{10 \times 2} = 100 \div 10 + 20 - 20 =$$

$$\underline{100 \div 10} + 20 - 20 = 10 + 20 - 20 = 10.$$

(A) 10
(B) 90
(C) 50
(D) 55
(E) 25

SECTION A: ANSWER KEY

19. (E)

Step 1: The grammatically correct paragraph will be "Space travel refers to traveling beyond Earth's atmosphere and into space. It has been a major focus of scientific and technological advancement for several decades, **with** humans having sent spacecraft and even astronauts to the moon and beyond."

Step 2: The word for does not make sense here.

(A) Space travel refers to travelling beyond
(B) Earth's atmosphere and into space.
(C) It has been a major focus of scientific
(D) and advancement for several decades,
(E) for humans having sent spacecraft

SECTION A: ANSWER KEY

20. (C)

Step 1:

