

## Grade 2: NGN LOGIC OLYMPIAD 2023

Student Name: \_\_\_\_\_

Maximum Time: 75 minutes

Maximum Marks: 60

### EXAM INSTRUCTIONS

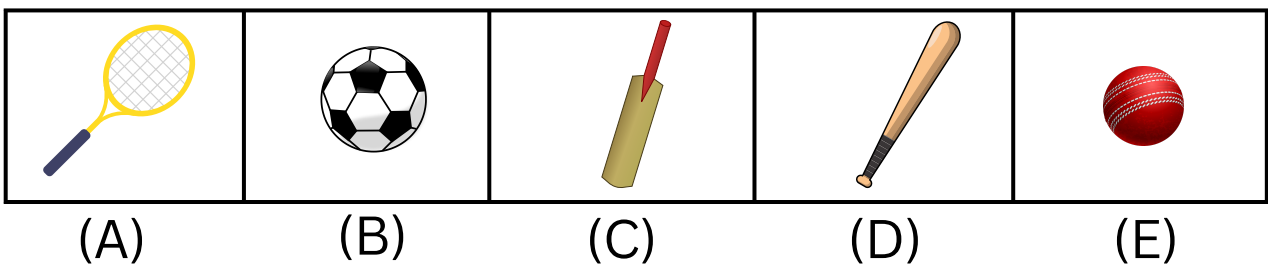
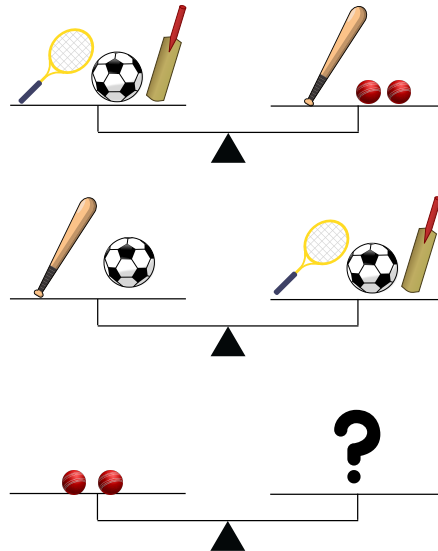
1. There are **20** questions in this paper.
  - a. **Section A (Basic Level):** 2 Marks, 10 Questions
  - b. **Section B (Moderate Level):** 3 Marks, 5 Questions
  - c. **Section C (Difficult Level):** 5 Marks, 5 Questions
2. No points will be deducted for each incorrect answer. Do not skip any questions. Use your logical reasoning skills to guess the answer.
3. 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.
4. 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.
5. Pencils, erasers, rulers, and rough paper for calculations are allowed.
6. For some questions in Sections B and C, mark your answer by filling in the bubbles. For Eg: 8.



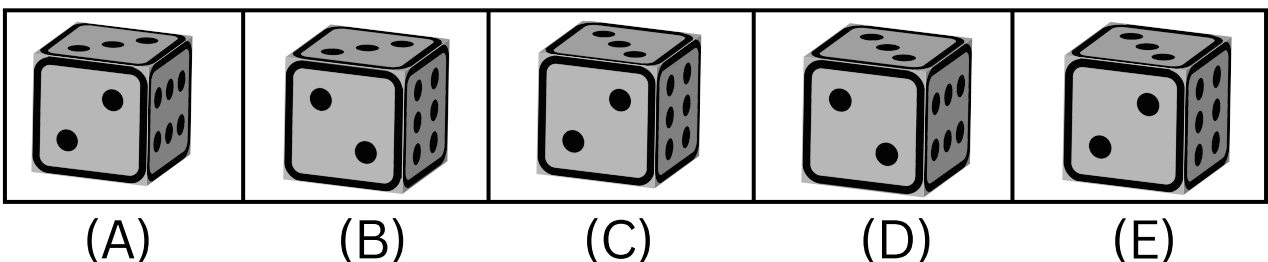
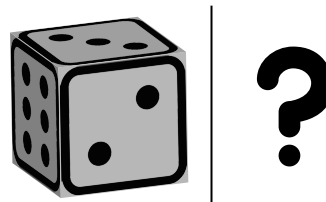
[NGNLearning.com/Logic-Olympiad](http://NGNLearning.com/Logic-Olympiad)

## SECTION A: 2 MARKS EACH

1. **Choose** from the following objects to balance the weight.

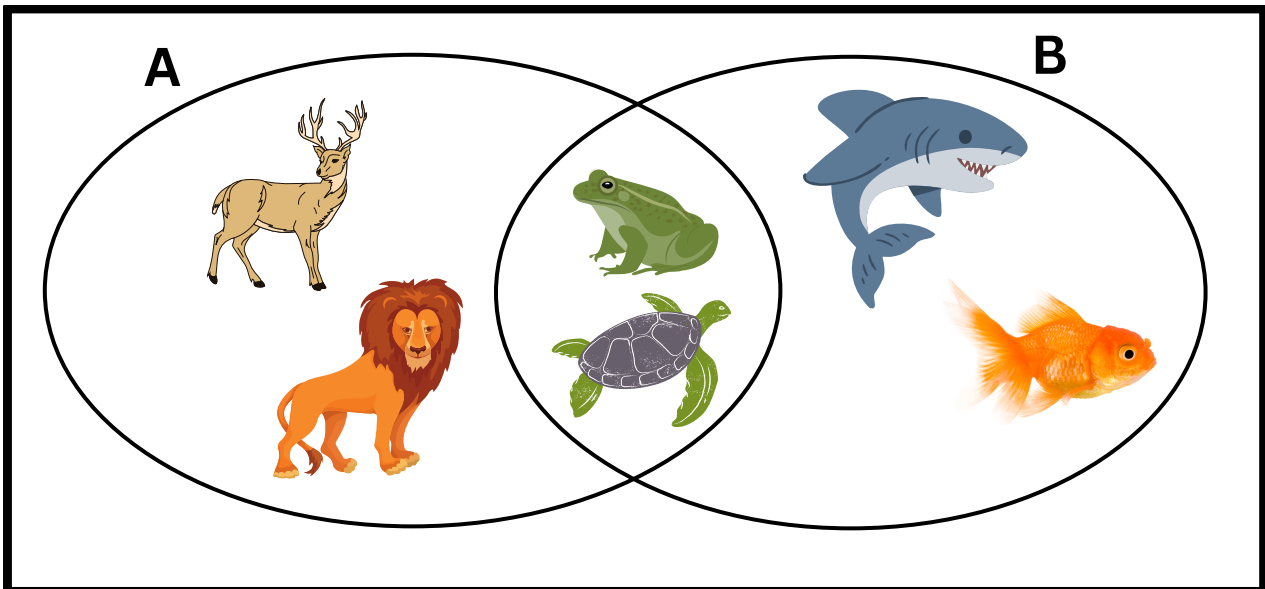


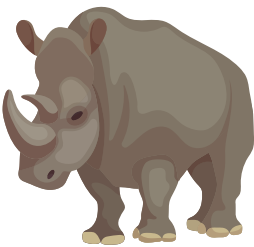
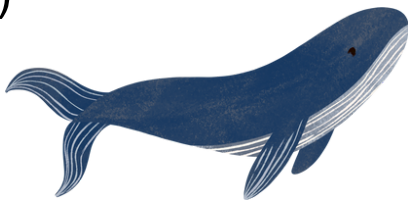
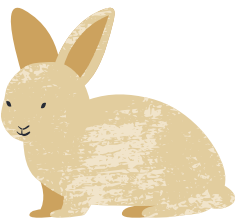

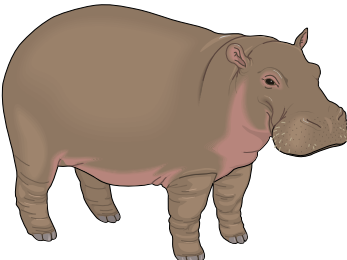
2. **Choose** the mirror image of the given figure from the options.



## SECTION A: 2 MARKS EACH

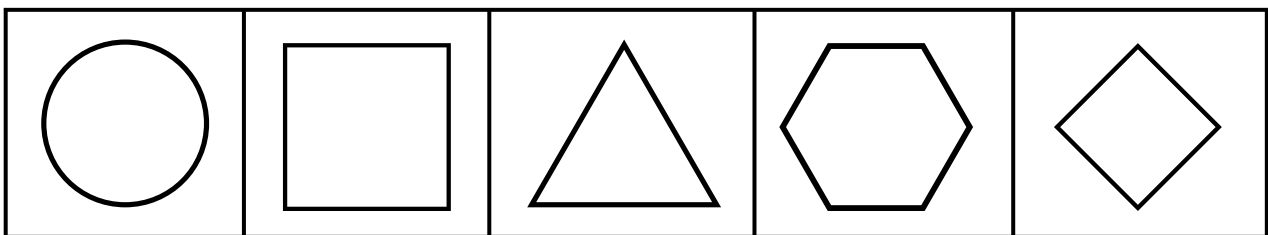
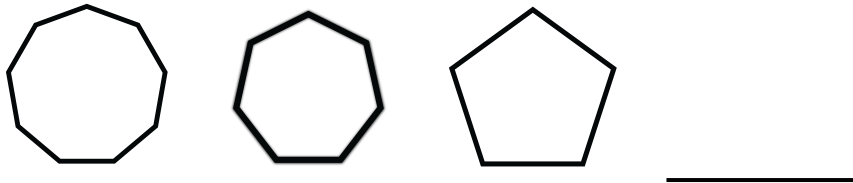
3. Observe the Venn diagram below. **Choose** the animal that will not belong to either A or B.



|  |   |
|--|---|
| (A)<br> | (B)<br> |
| (C)<br> | (D)<br> |
| (E)<br> |   |

## SECTION A: 2 MARKS EACH

4. **Choose** the pattern from the options below that will come next.



(A)

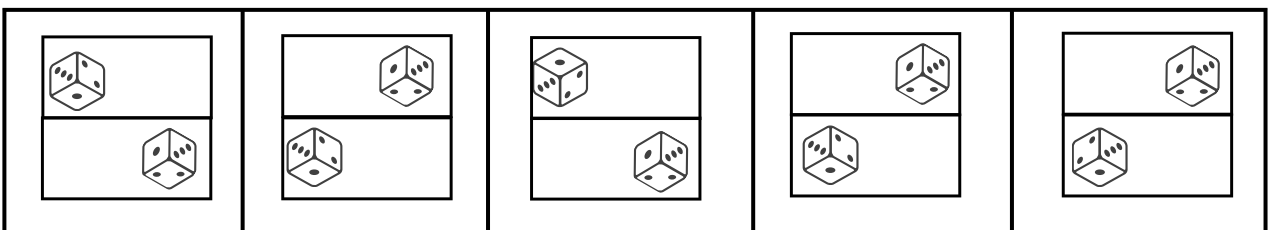
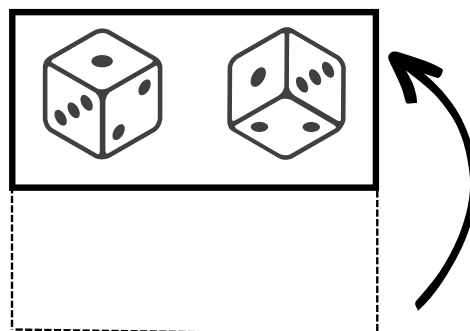
(B)

(C)

(D)

(E)

5. **Choose** a transparent sheet that will form the given image when folded as shown below.



(A)

(B)

(C)

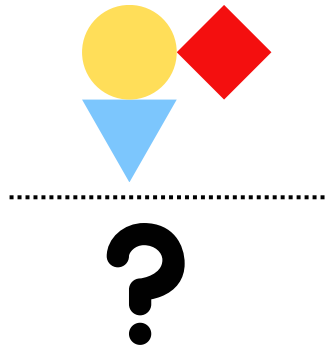
(D)

(E)



## SECTION A: 2 MARKS EACH

6. **Choose** the mirror image of the figure given below.



|     |     |     |     |     |
|-----|-----|-----|-----|-----|
|     |     |     |     |     |
| (A) | (B) | (C) | (D) | (E) |

7. If the value of the pink circle is 4, **choose** the value of circles of **yellow and blue, respectively**.

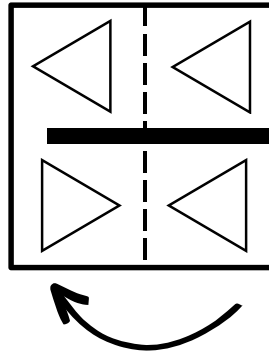
|   |       |   |   |  |
|---|-------|---|---|--|
|   |       |   |   |  |
| + |       |   |   |  |
| + |       |   |   |  |
|   | <hr/> |   |   |  |
|   | 9     | 9 | 8 |  |

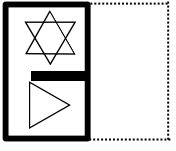
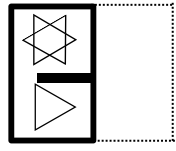
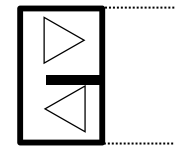
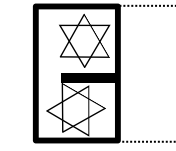
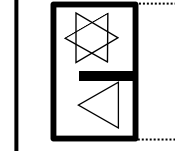
= 4

|     |     |     |     |     |
|-----|-----|-----|-----|-----|
| 2,3 | 3,4 | 5,3 | 6,2 | 3,3 |
| (A) | (B) | (C) | (D) | (E) |

## SECTION A: 2 MARKS EACH

8. **Choose** the pattern appearing when the sheet is folded at the dotted line.



|   |   |   |  |   |
|---|---|---|--|---|
|  |  |  |  |  |
| (A)   | (B)   | (C)   | (D)  | (E)   |

9. **Choose** one number similar to the given numbers from the options that would fill the blank.

**15    75    ?    60    30**

|     |     |     |     |     |
|-----|-----|-----|-----|-----|
| 35  | 40  | 50  | 55  | 45  |
| (A) | (B) | (C) | (D) | (E) |

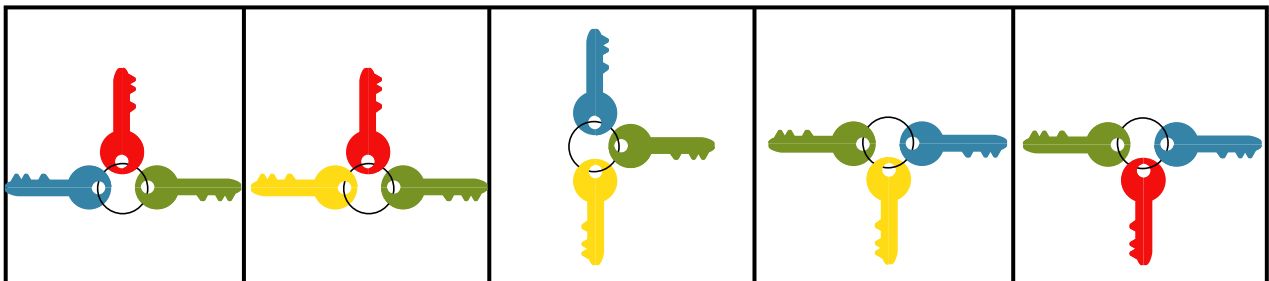
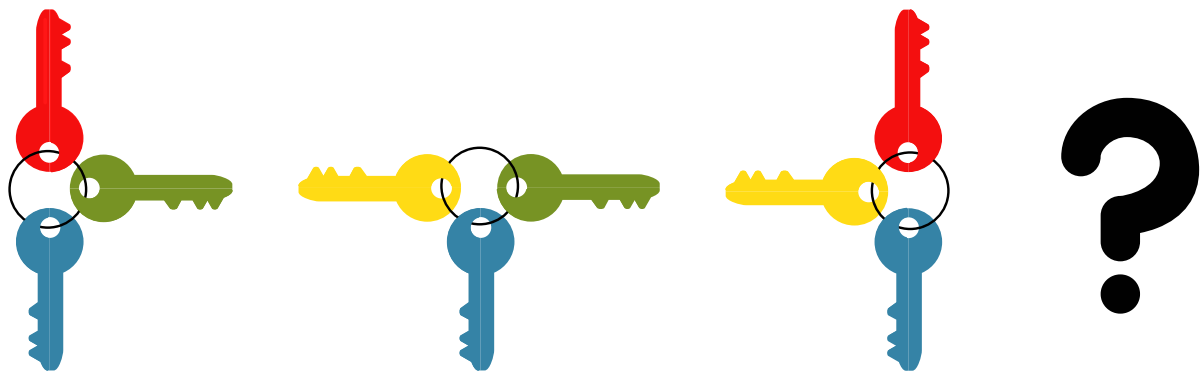
10. **Choose** the formula that is the odd one out.

|              |           |          |             |               |
|--------------|-----------|----------|-------------|---------------|
| $7 \times 6$ | $18 + 24$ | $50 - 8$ | $84 \div 2$ | $13 \times 4$ |
| (A)          | (B)       | (C)      | (D)         | (E)           |

## SECTION B: 3 MARKS EACH

11. In **2021**, many people in Tanzania did not have homes because of poverty. Akida built some houses for the poor and gave them house keys. **Choose** all the correct options to **complete the sequence**.

Credit: NGN Research



(A)

(B)

(C)

(D)

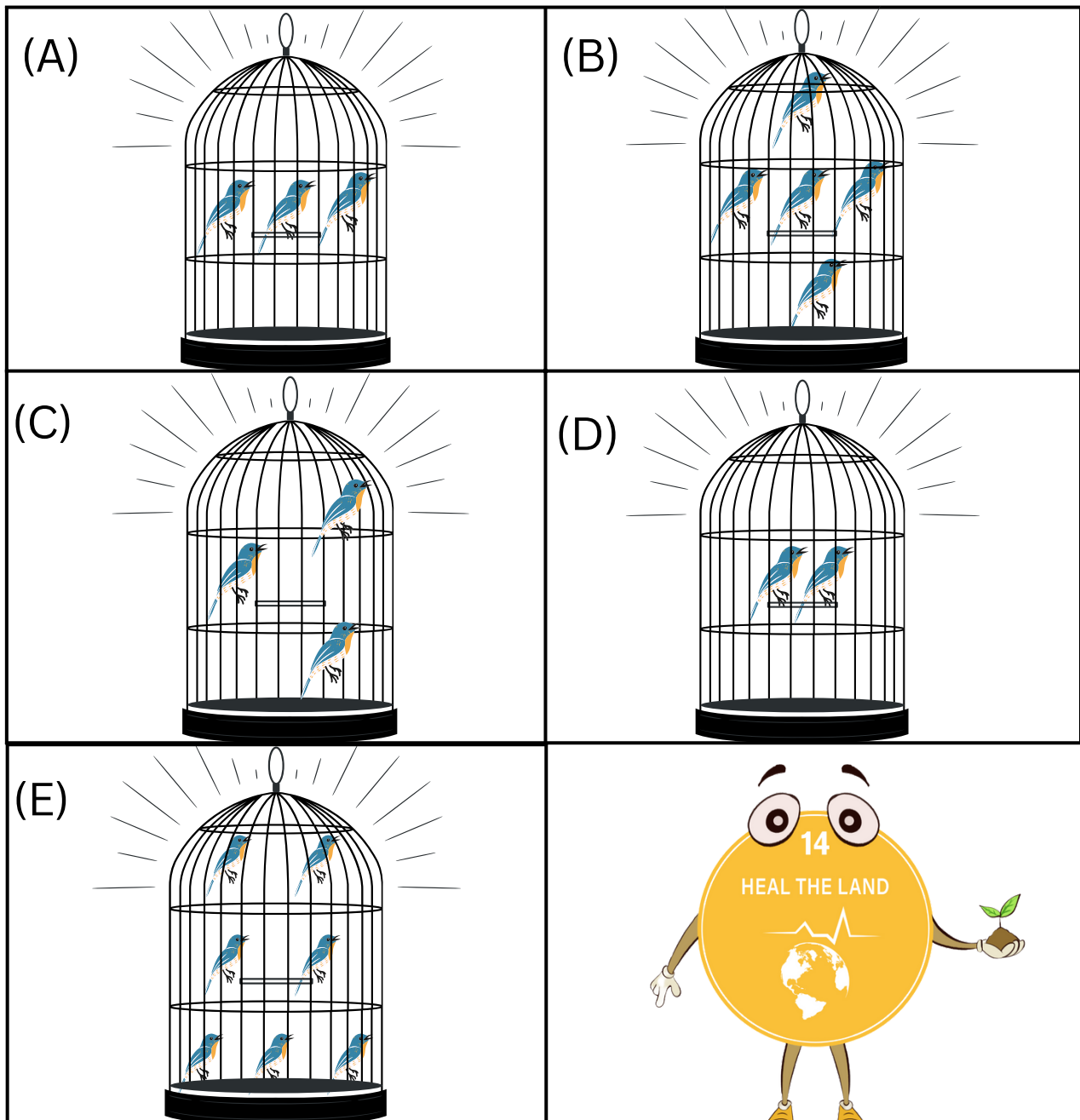
(E)



## SECTION B: 3 MARKS EACH

12. Although birds depend on trees for survival, people sometimes cut them down. Many birds lose their home when this happens. Rango takes care of some birds at his home in Jinan, China.

**Choose** the cage that is **different** from the rest.

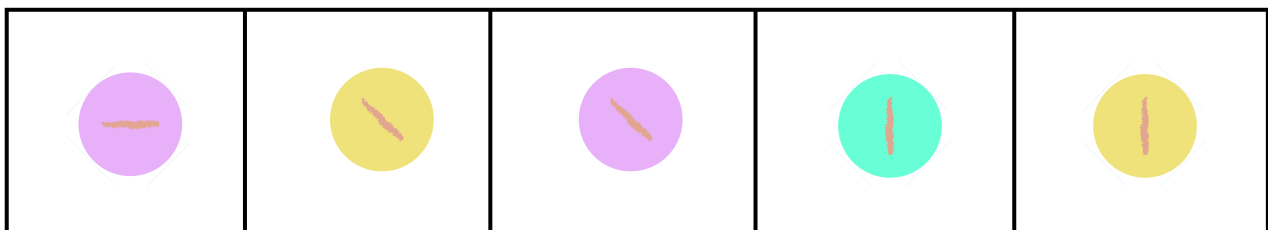
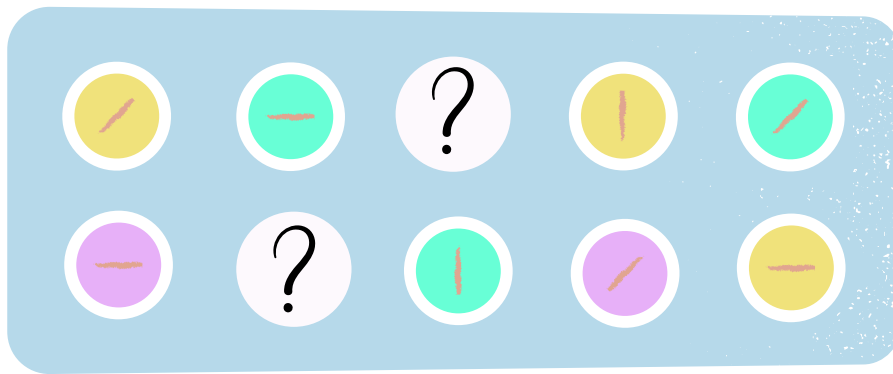


Credit: NGN Research

## SECTION B: 3 MARKS EACH

13. **2018:** Many people in Armenia needed access to good healthcare. Poverty was a major cause of this. Narek, a doctor from Armenia, helps some of his patients by giving medicines free of cost. Find the missing tablets from the given medicine. **Choose** all the correct options to **complete the sequence**.

Credit: NGN Research



(A)

(B)

(C)

(D)

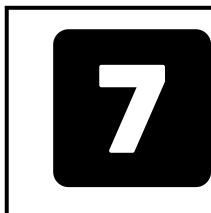
(E)



## SECTION B: 3 MARKS EACH

14. In **2021**, some children in Italy could not attend school due to the high cost of education. Therefore, Giovanna decided to teach mathematics at home for free to some children. For her students, she buys chairs with numbers on them. Find the missing numbers on the chairs. **Choose two missing numbers** on the chairs in the sequence.

Credit: NGN Research



(A)



(B)



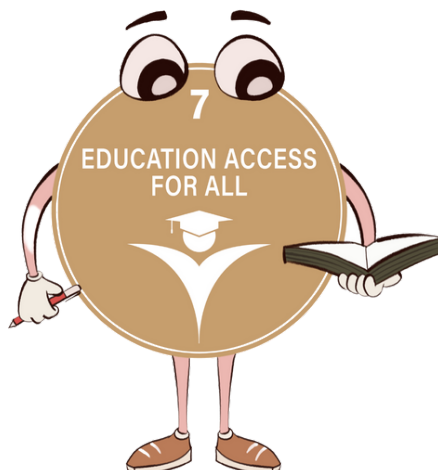
(C)



(D)



(E)



## SECTION B: 3 MARKS EACH

15. In **2022**, the Russia-Ukraine conflict affected Zinchenko and many of his friends. Zinchenko lives in Ukraine. Many of his friends were unable to attend school. Many people become poor. Some had difficulty finding food. Given below is the cause statement.

**Choose** all the effect statements from the options shown below.

**Cause:**

A conflict started in Ukraine.

**Effect:**

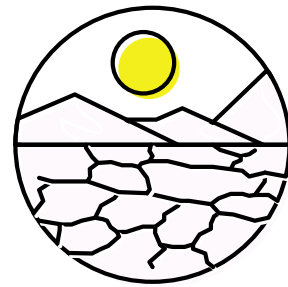
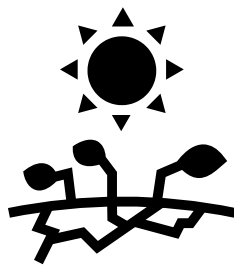
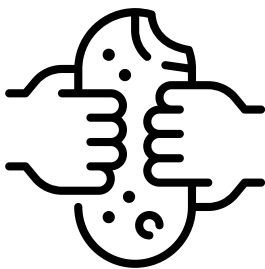
|  |
|--|
| (A) Zinchenko stopped going to school. |
| (B) People in Ukraine faced hunger.    |
| (C) Lakes in Ukraine got dirty.        |
| (D) Children became poor.              |
| (E) Zinchenko did well in school.      |

Credit: NGN Research

## SECTION C: 5 MARKS EACH

16-17. **2019:** Due to water shortages, it was hard for many people in Zimbabwe to get enough water. It became difficult for people to grow food when there was not enough water. Because of Zimbabwe's hot weather, most rivers and lakes evaporate quickly. Poor people were affected the most. Some people started to grow crops that could handle the hot weather. The UN helped many people in Zimbabwe by giving them food, water, and money. Even in harsh conditions, many farmers in Zimbabwe worked hard to grow lots of food.

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





## SECTION C: 5 MARKS EACH

16. What were the effects of a water shortage/drought in Zimbabwe?

**Choose** the correct option(s).

**Hint:** Take a look at the images given.

(A) It made people leave their homes.

(B) It caused an increased population.

(C) It caused a food shortage.

(D) It increased fishing and hunting.



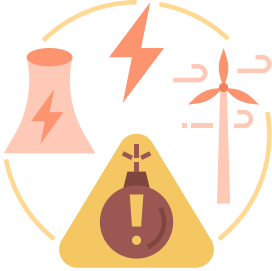
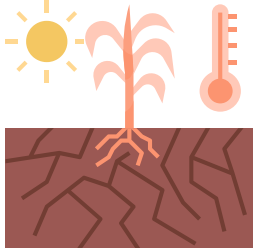

(E) It caused the failure of crops.

## SECTION C: 5 MARKS EACH

17. Which figure(s) represents the causes of water shortage/drought in Zimbabwe?

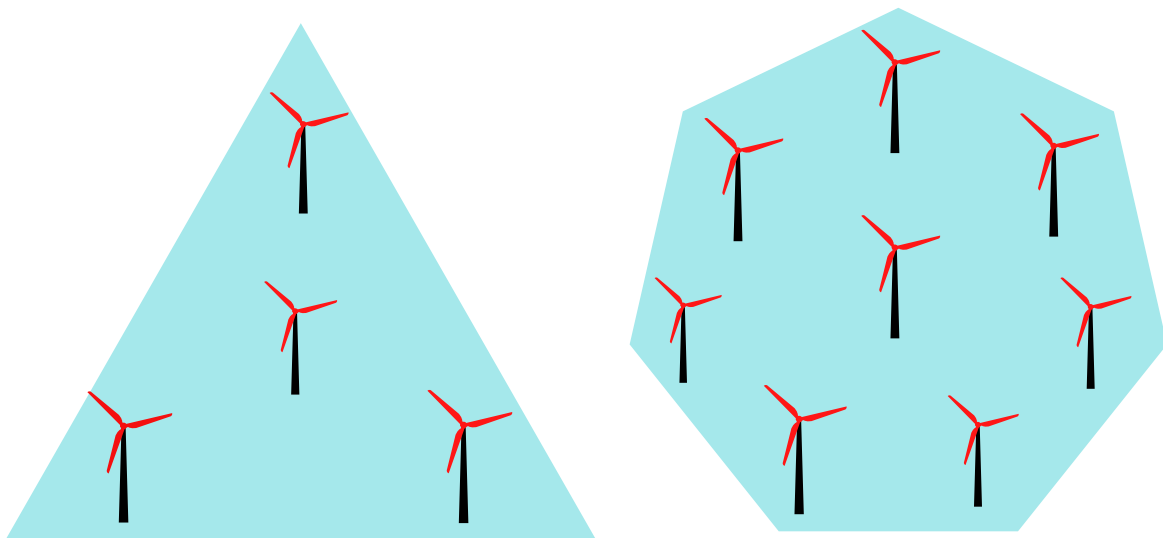
**Choose** the correct option(s).

**Hint:** Take a look at the images given.

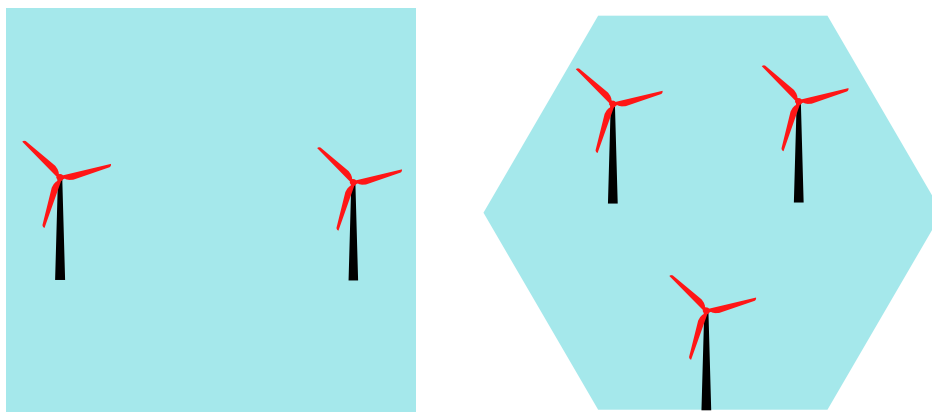
|   |   |
|---|---|
|  <p><b>Food shortage</b><br/>(A)</p>     |  <p><b>Pollution</b><br/>(B)</p>      |
|  <p><b>Energy shortage</b><br/>(C)</p> |  <p><b>Extreme heat</b><br/>(D)</p> |
|  <p><b>Conflict</b><br/>(E)</p>        |   |

## SECTION C: 5 MARKS EACH

18-20. **2022:** Many windmills were built in Harare, Zimbabwe, to make electricity. Windmills do not cause pollution. Abuya is visiting windmill farms A and B near her village (for research, country). She learns that both farms follow a similar pattern.



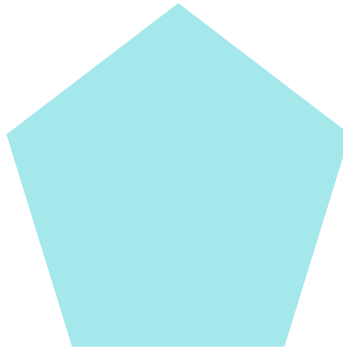
Windmill Farm A



Windmill Farm B

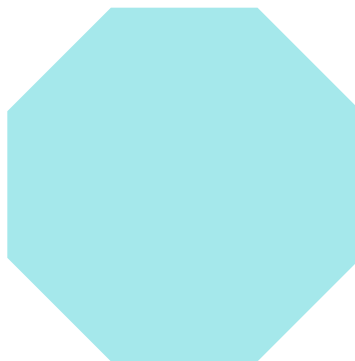
## SECTION C: 5 MARKS EACH

18. Take a close look at Windmill Farm A. Here is the shape of the windmill farm, as shown below. What is the number of windmills that will be in the given shape? **Choose** the correct number.



0 1 2 3 4 5 6 7 8 9

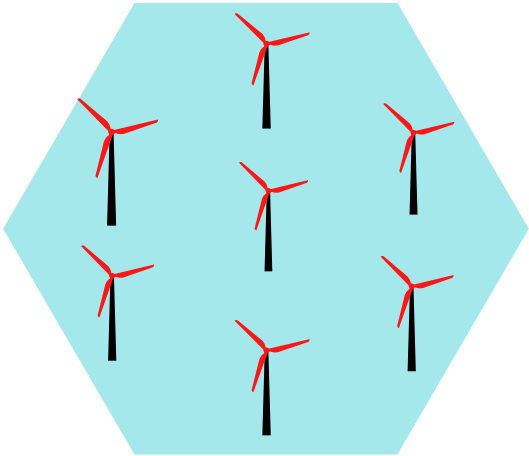
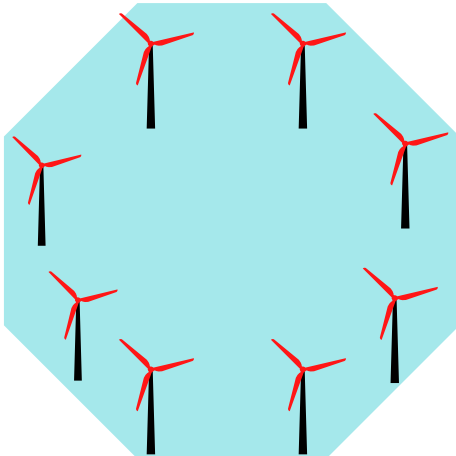
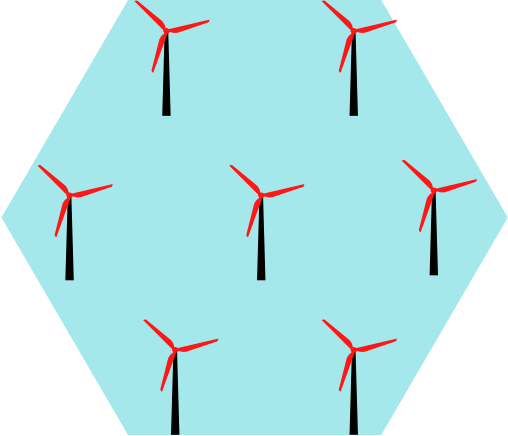
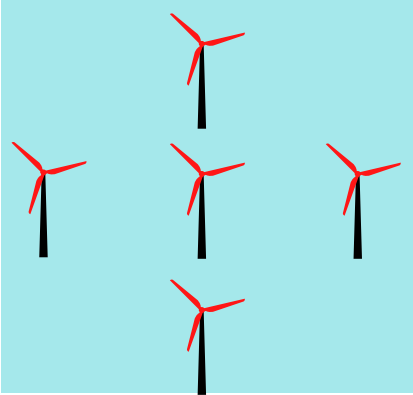
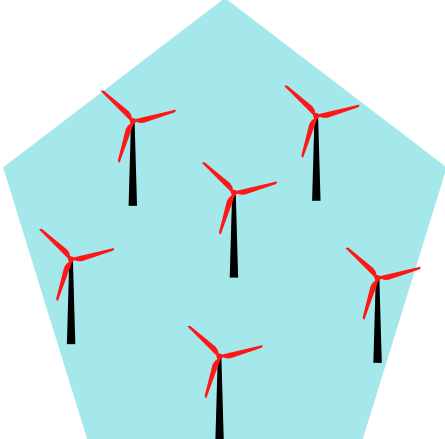
19. Find the number of windmills in the given area if it is from Windmill Farm B. **Choose** the correct number.



0 1 2 3 4 5 6 7 8 9

## SECTION C: 5 MARKS EACH

20. **Choose** all the farms from the options that **do not** belong to Windmill Farm A.

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



# ANSWER KEY

**Preparatory Classes Available**

**Step-Wise Solution Available**

**[NGNLearning.com/Logic-Olympiad](https://NGNLearning.com/Logic-Olympiad)**

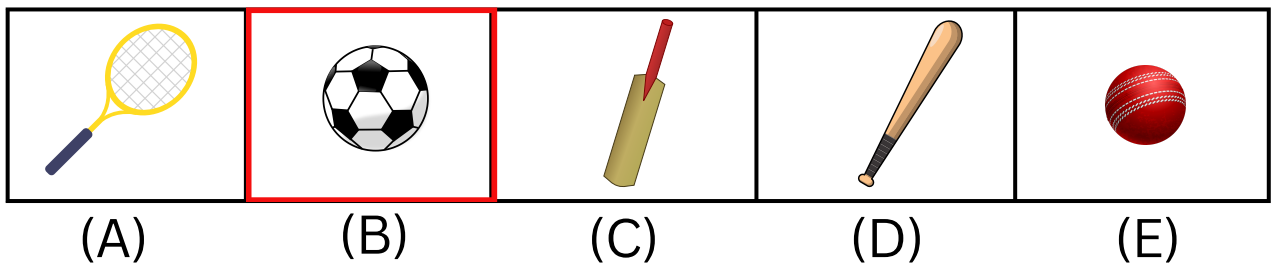
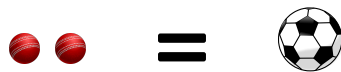
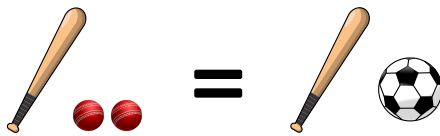
## SECTION A: ANSWER KEY

1. (B)

Step 1:

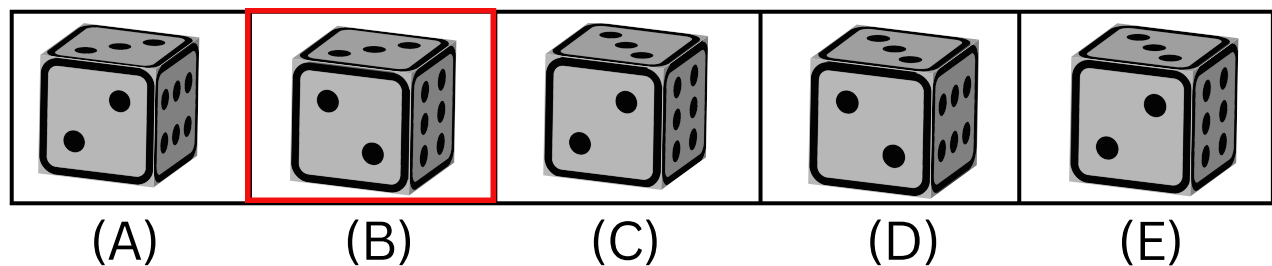
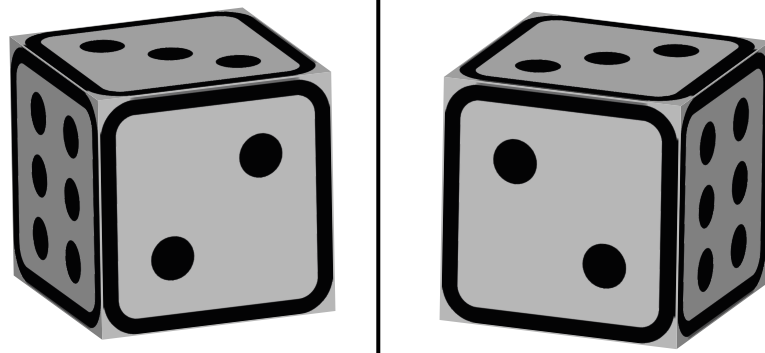


Step 2:



2. (B)

Step 1:



## SECTION A: ANSWER KEY

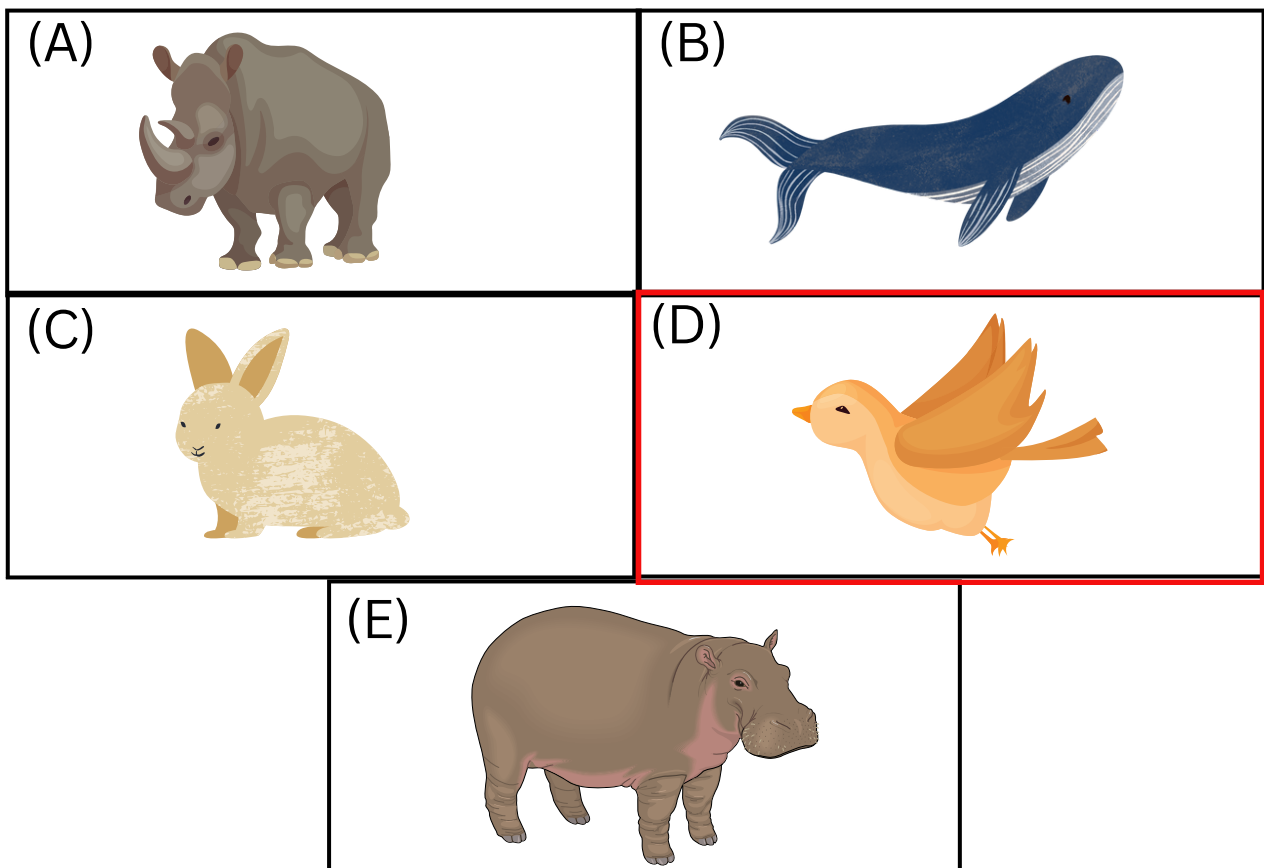
3. (D)

**Step 1:** Circle A contains animals that travel on the land.

**Step 2:** Circle B contains animals that travel in the water.

**Step 3:** The common area between Circle A and Circle B contains animals that can live on water and land.

**Step 4:** Bird will be the correct answer because it travels mainly through air.





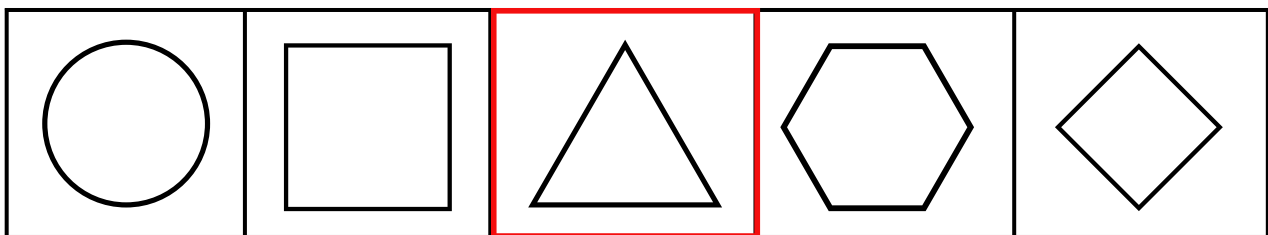
## SECTION A: ANSWER KEY

4. (C)

**Step 1:** The number of sides decreases; odd numbers.

**Step 2:** 3 comes after 9, 7, and 5.

**Step 3:** Therefore, the triangle comes next



(A)

(B)

(C)

(D)

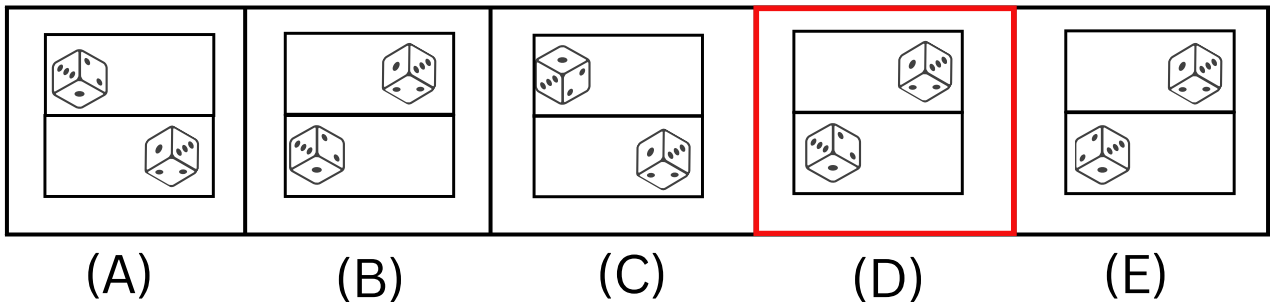
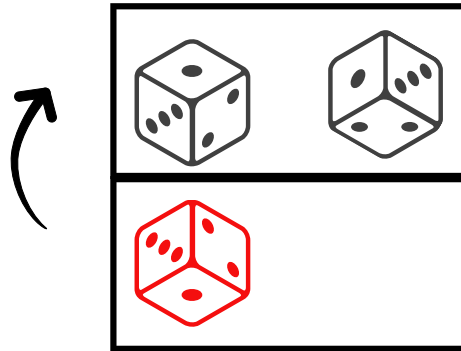
(E)

## SECTION A: ANSWER KEY

5. (D)

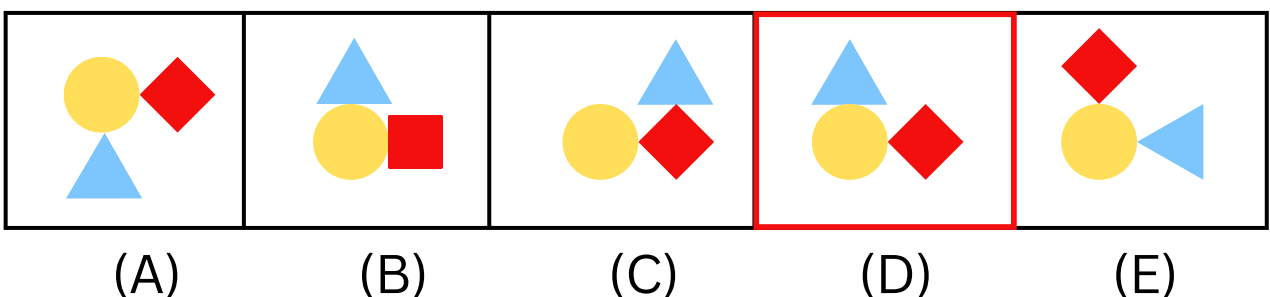
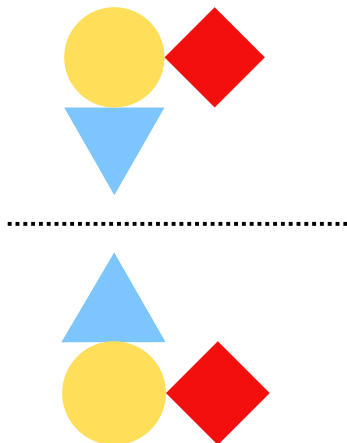
**Step 1:** The dice at the bottom flip vertically, and the dice at the top remain unchanged

**Step 2:**



6. (D)

**Step 1:**



## SECTION A: ANSWER KEY

7. (A)

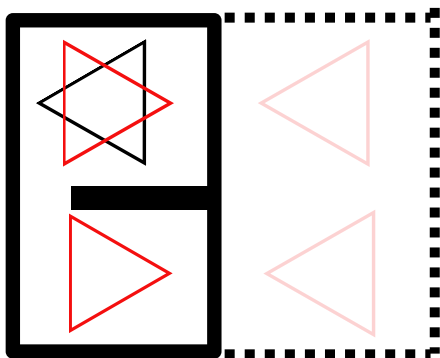
**Step 1:** Yellow + Yellow + 4 = 8. Yellow = 2.

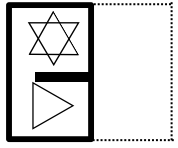
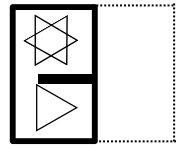
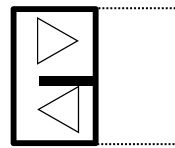
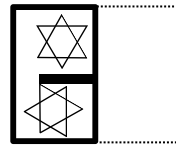
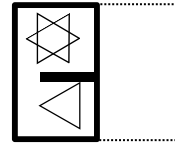
**Step 2:** 4 + 2 + Blue = 9. Blue = 3.

|     |     |     |     |     |
|-----|-----|-----|-----|-----|
| 2,3 | 3,4 | 5,3 | 6,2 | 3,3 |
| (A) | (B) | (C) | (D) | (E) |

8. (B)

**Step 1:** The figures on the right are flipped and imposed on the left.



|   |   |   |  |   |
|---|---|---|--|---|
|  |  |  |  |  |
| (A)   | (B)   | (C)   | (D)  | (E)   |

## SECTION A: ANSWER KEY

9. (E)

**Step 1:** 30, 60, 75, and 15 are all multiples of 15.

**Step 2:** 45 is the only multiple of 15 in the given options.

|     |     |     |     |     |
|-----|-----|-----|-----|-----|
| 35  | 40  | 50  | 55  | 45  |
| (A) | (B) | (C) | (D) | (E) |

---

10. (E)

**Step 1:**

$$7 \times 6 = 42$$

$$18 + 24 = 42$$

$$50 - 8 = 42$$

$$84 \div 2 = 42$$

$$13 \times 4 = 52$$

**Step 2:**

52 is the odd one out.

|              |           |          |             |               |
|--------------|-----------|----------|-------------|---------------|
| $7 \times 6$ | $18 + 24$ | $50 - 8$ | $84 \div 2$ | $13 \times 4$ |
| (A)          | (B)       | (C)      | (D)         | (E)           |

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## SECTION B: ANSWER KEY

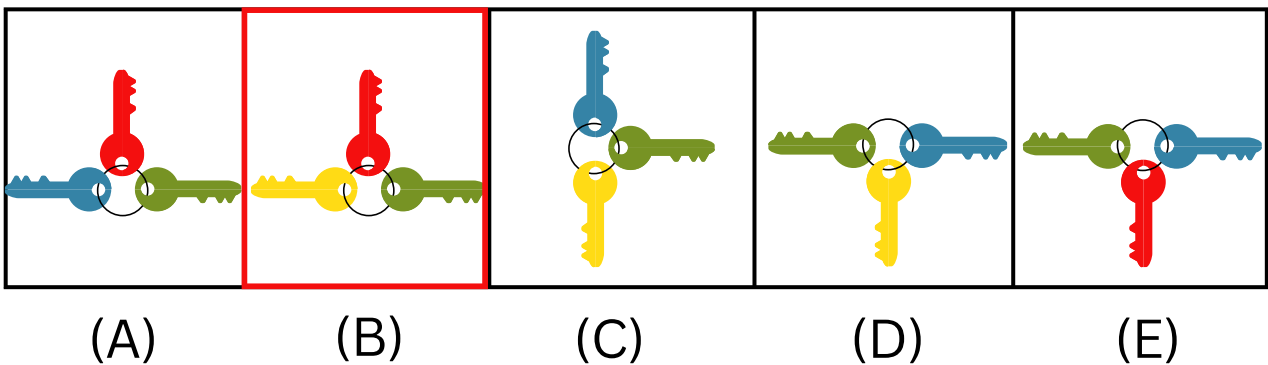
11. (B)

**Step 1:** Red key is always at the top.

**Step 2:** The blue key is always at the bottom.

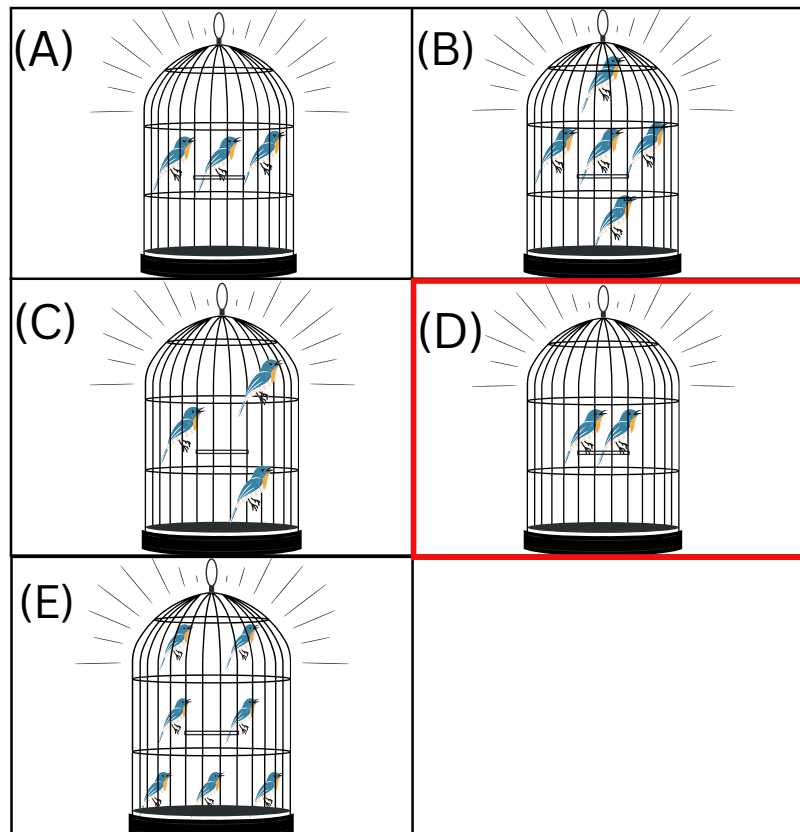
**Step 3:** Yellow key is always left.

**Step 4:** Red key is always right.



12.(D)

**Step 1:** All cages except (D) have an even number of birds.

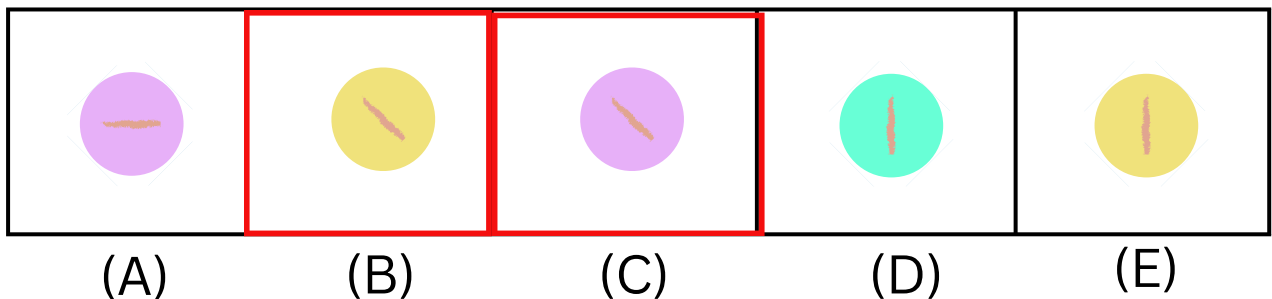
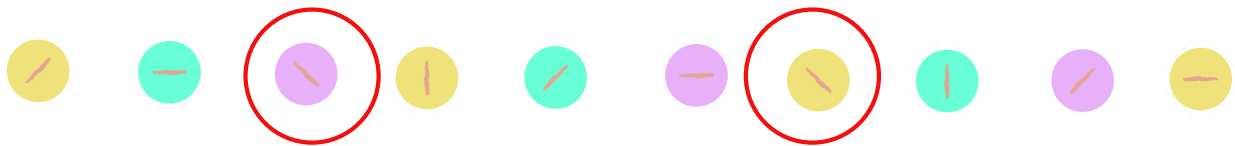


## SECTION B: ANSWER KEY

13. (B),(C)

**Step 1:** Yellow, green, and purple repeat themselves in that order.

**Step 2:** It turns 45 degrees to the right with every step.



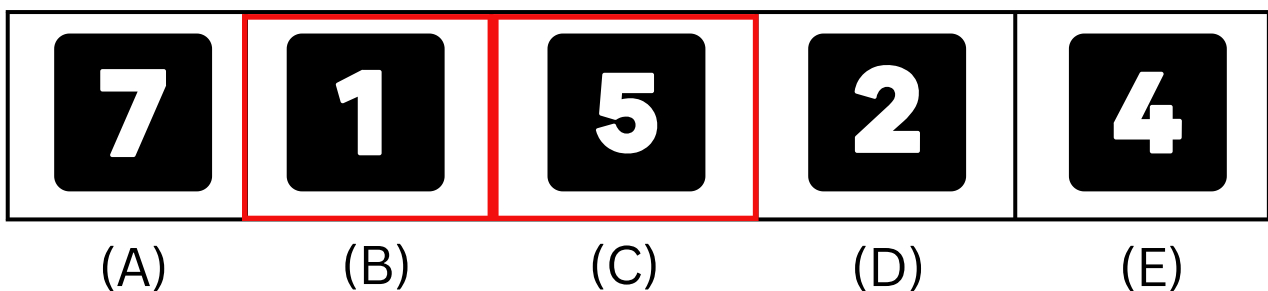
14. (B),(C)

**Step 1:**  $17 - 4 = 13$

$$13 - 4 = 9$$

$$9 - 4 = 5$$

$$5 - 4 = 1$$



## SECTION B: ANSWER KEY

15. (A),(B),(D)

**Step 1:** Upon reading the paragraph in the question, the effects of conflicts included: not going to school, hunger, and poverty.

(A) Zinchenko stopped going to school.

(B) People in Ukraine faced hunger.

(C) Lakes in Ukraine got dirty.

(D) Children became poor.

(E) Zinchenko did well in school.

## SECTION C: ANSWER KEY

16. (C),(E)

**Step 1:** Upon reading the paragraph in the question, the effects of water scarcity in Zimbabwe included: hunger, poverty, crop failures, and others.

(A) It made people leave their homes.




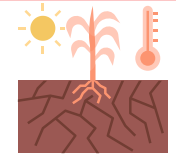

(B) It caused an increased population.

(C) It caused a food shortage.

(D) It increased fishing and hunting.

(E) It caused the failure of crops.

17. (D)

|   |   |
|---|---|
|  <p><b>Food shortage</b><br/>(A)</p>   |  <p><b>Pollution</b><br/>(B)</p>    |
|  <p><b>Energy shortage</b><br/>(C)</p> |  <p><b>Extreme heat</b><br/>(D)</p> |
|  <p><b>Conflict</b><br/>(E)</p>        |   |



## SECTION C: ANSWER KEY

18-20.

**Step 1:** In state A, the number of windmills is equal to  $1 +$  the number of sides of the farm, and all the windmills except the centermost one occupy the corner position.

**Step 2:** In state B, the number of farms is equal to half the number of sides of the farm, and the windmills are near the alternate sides of the farm.

18. 6

**Step 1:** the number of windmills =  $1 +$  number of sides of farm =  $1 + 5 = 6$ .

0
1
2
3
4
5
6
7
8
9

---

19. 4

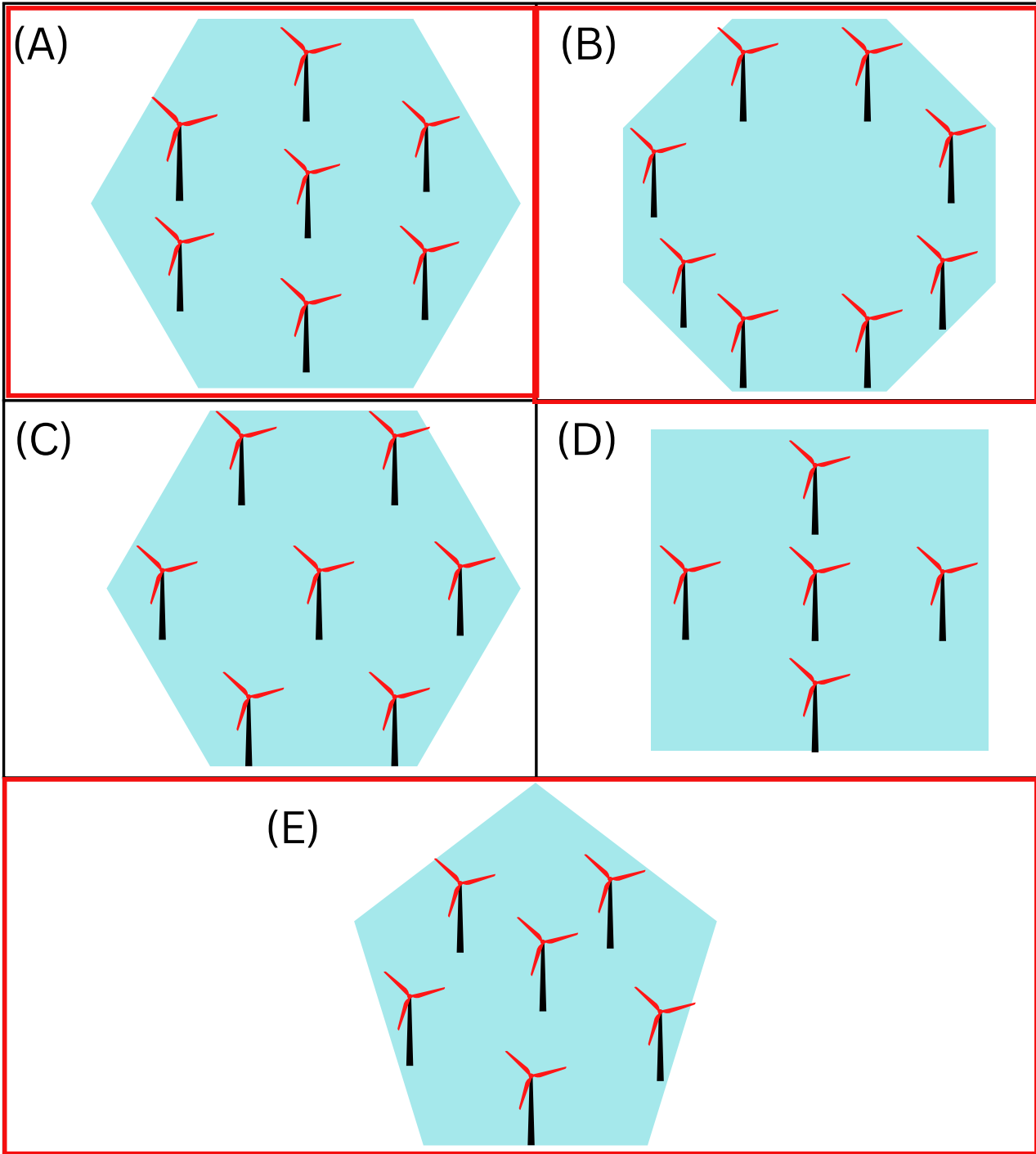
**Step 1:** the number of windmills = half of the number of sides of the farm =  $\frac{1}{2} \times 8 = 4$ .

0
1
2
3
4
5
6
7
8
9

## SECTION C: ANSWER KEY

20. (A), (B)

**Step 1:** In (A) and (B), the windmills are near the sides of the farm, not the corner.



## NGN LOGIC OLYMPIAD: OMR SHEET

1. ☐ A ☐ B ☐ C ☐ D ☐ E
2. ☐ A ☐ B ☐ C ☐ D ☐ E
3. ☐ A ☐ B ☐ C ☐ D ☐ E
4. ☐ A ☐ B ☐ C ☐ D ☐ E
5. ☐ A ☐ B ☐ C ☐ D ☐ E
6. ☐ A ☐ B ☐ C ☐ D ☐ E
7. ☐ A ☐ B ☐ C ☐ D ☐ E
8. ☐ A ☐ B ☐ C ☐ D ☐ E
9. ☐ A ☐ B ☐ C ☐ D ☐ E
10. ☐ A ☐ B ☐ C ☐ D ☐ E
11. ☐ A ☐ B ☐ C ☐ D ☐ E
12. ☐ A ☐ B ☐ C ☐ D ☐ E
13. ☐ A ☐ B ☐ C ☐ D ☐ E
14. ☐ A ☐ B ☐ C ☐ D ☐ E
15. ☐ A ☐ B ☐ C ☐ D ☐ E

# NGN LOGIC OLYMPIAD: OMR SHEET

16. (A) (B) (C) (D) (E)

17. (A) (B) (C) (D) (E)

18. 

|     |     |     |     |     |     |     |     |     |     |   |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|
| (0) | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | O |
| (0) | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | T |
| (0) | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | H |

19. 

|     |     |     |     |     |     |     |     |     |     |   |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|
| (0) | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | O |
| (0) | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | T |
| (0) | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | H |

20. (A) (B) (C) (D) (E)