

MAH B.P.Ed CET — Mental Ability

Sample Paper 4 of 8

Time: 18 Minutes • **Maximum Marks:** 15 • **Total Questions:** 15
Mode: Online CBT • **Marking:** +1 (Correct), 0 (Incorrect / Unattempted)

Instructions

1. This paper contains **15 Multiple Choice Questions (MCQs)**.
2. Each question carries **1 mark**. Total marks: **15**.
3. **No negative marking**. Incorrect and unattempted answers carry **zero** marks.
4. Each question has **4 options**; choose the single best answer.
5. This is an **Online Computer-Based Test (CBT)**.
6. Topics covered: Number Series, Letter Series, Analogy, Coding–Decoding, Classification, Syllogism, Blood Relations, Direction Sense, Dice & Cubes, Figure Matrix.

SECTION: MENTAL ABILITY | Questions 1–15

1. What is the next term in the following series?

2, 4, 8, 16, 32, _____

- (A) 48 (B) 56 (C) 60 (D) 64

2. What is the next term in the following letter series?

A, D, G, J, M, _____

- (A) N (B) P (C) Q (D) R

3. What is the next term in the following series?

2, 6, 12, 20, 30, _____



- (A) 42 (B) 40 (C) 38 (D) 36

4. Complete the analogy:

Cup : Saucer :: Lock : _____

- (A) Door (B) Handle (C) Key (D) Chain

5. Complete the number analogy:

2 : 8 :: 3 : _____

- (A) 9 (B) 12 (C) 18 (D) 27

6. In a certain code language, **DOG** is written as **WLT**. Using the same coding rule, how is **CAT** coded?

- (A) ZXG (B) XZG (C) YZH (D) WYG

7. If **APPLE** is coded as **1-16-16-12-5** (using the positional value of each letter, where A = 1, B = 2, ..., Z = 26), what is the code for **TREE**?

- (A) 20-18-5-5 (B) 19-17-4-4 (C) 21-19-6-6 (D) 20-18-4-5

8. Find the **odd one out**:

- (A) Table (B) Chair (C) Pen (D) Sofa

9. Find the **odd one out**:

2, 3, 5, 9

- (A) 2 (B) 3 (C) 5 (D) 9

10. Statements:

I. All men are mortal.

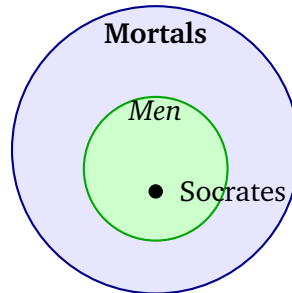


II. Socrates is a man.

Conclusions:

I. Socrates is mortal.

II. Some mortals are men.



(A) Only Conclusion I follows

(B) Only Conclusion II follows

(C) Both Conclusions I and II follow

(D) Neither follows

11. Statements:

I. Some books are novels.

II. All novels are fiction.

Conclusions:

I. Some books are fiction.

II. All books are fiction.

(A) Only Conclusion I follows

(B) Only Conclusion II follows

(C) Both Conclusions I and II follow

(D) Neither follows

12. Pointing to a man in a photograph, a woman says, “His mother is the only daughter of my mother.” What is the woman’s relation to the man in the photograph?

(A) Aunt

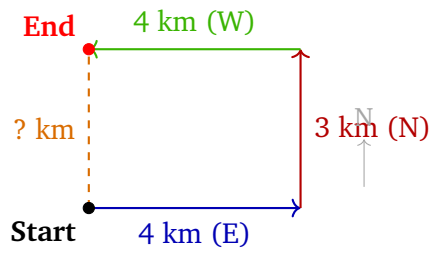
(B) Sister

(C) Mother

(D) Grand-mother

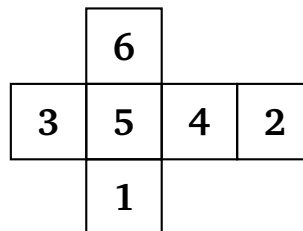
13. Anita walks 4 km East, then 3 km North, then 4 km West. How far is she from her starting point?





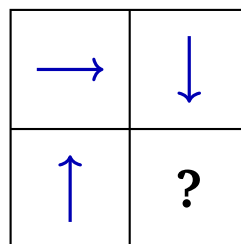
- (A) 7 km (B) 5 km (C) 4 km (D) 3 km

14. The figure below shows the unfolded net of a die. When the net is folded into a cube, which face will be **opposite to face 5**?



- (A) 6 (B) 4 (C) 2 (D) 1

15. Identify the pattern in the 2×2 matrix below and find the missing figure in place of “?”.



- (A) ↑ (B) → (C) ↓ (D) ←



Detailed Solutions

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1.

Solution

Topic: Number Series (Powers of 2)

Each term is obtained by **multiplying the previous term by 2** (geometric series, common ratio $r = 2$):

$$2, \quad 4, \quad 8, \quad 16, \quad 32, \quad 64$$

$$32 \times 2 = 64$$

The pattern is $2^1, 2^2, 2^3, 2^4, 2^5, 2^6 = 64$.

Answer: (D)

2.

Solution

Topic: Letter Series (+3 skip)

Each letter advances by **3 positions** in the English alphabet:

$$A(1), \quad D(4), \quad G(7), \quad J(10), \quad M(13), \quad P(16)$$

$$13 + 3 = 16 \implies 16\text{th letter} = P$$

Answer: (B)

3.

Solution

Topic: Number Series ($n \times (n + 1)$)

The n -th term of the series is $n(n + 1)$:



n	$n(n + 1)$	Term
1	1×2	2
2	2×3	6
3	3×4	12
4	4×5	20
5	5×6	30
6	6×7	42

The next term ($n = 6$): $6 \times 7 = 42$.

Answer: (A)

4.

Solution

Topic: Analogy (Functional Pair / Complement)

A **Cup** rests on a **Saucer** — they form a natural functional pair where one complements the other. Similarly, a **Lock** is operated by a **Key** — the key is the direct functional complement of the lock.

- **Door:** a lock is mounted on a door, but the door is not the complement of the lock.
- **Handle:** a door handle is a separate mechanism.
- **Key:** the direct complement — a lock is meaningless without its key. ✓
- **Chain:** an additional security device, not the primary paired complement.

Answer: (C)

5.

Solution

Topic: Number Analogy (Cube)

The relationship is $x : x^3$ (a number is paired with its cube):

$$2 : 2^3 = 2 : 8 \implies 3 : 3^3 = 3 : 27$$

Checking options: $3^2 = 9$, $3 \times 4 = 12$, $3 \times 6 = 18$, $3^3 = 27$ ✓



Answer: (D)

6.

Solution

Topic: Coding–Decoding (Mirror Alphabet)

Each letter is replaced by its **mirror image** in the alphabet ($A \leftrightarrow Z$, $B \leftrightarrow Y$, $C \leftrightarrow X$, ...).
The rule: if a letter is at position p , its code is at position $27 - p$.

Letter	Code	Letter	Code	Letter	Code
A (1)	Z (26)	D (4)	W (23)	G (7)	T (20)
B (2)	Y (25)	E (5)	V (22)	O (15)	L (12)
C (3)	X (24)	F (6)	U (21)	T (20)	G (7)

Verification with DOG:

$$D(4) \rightarrow W(23), \quad O(15) \rightarrow L(12), \quad G(7) \rightarrow T(20) \Rightarrow \text{WLT} \checkmark$$

Coding CAT:

$$C(3) \rightarrow X(24), \quad A(1) \rightarrow Z(26), \quad T(20) \rightarrow G(7) \Rightarrow \text{XZG}$$

Answer: (B)

7.

Solution

Topic: Coding–Decoding (Positional Value)

Each letter is replaced by its **position number** in the English alphabet ($A = 1$, $B = 2$, ..., $Z = 26$).

Verification with APPLE:

$$A = 1, \quad P = 16, \quad P = 16, \quad L = 12, \quad E = 5 \Rightarrow 1-16-16-12-5 \checkmark$$

Coding TREE:

$$T = 20, \quad R = 18, \quad E = 5, \quad E = 5 \Rightarrow 20-18-5-5$$



Answer: (A)

8.

Solution

Topic: Classification (Odd One Out)

- **Table** — a piece of *furniture* ✓
- **Chair** — a piece of *furniture* ✓
- **Sofa** — a piece of *furniture* ✓
- **Pen** — a *writing instrument*; belongs to an entirely different category

Table, Chair, and Sofa all belong to the *furniture* category. **Pen** is the odd one out as it is a writing instrument, not furniture.

Answer: (C)

9.

Solution

Topic: Classification (Odd One Out — Prime vs. Composite)

- **2** — *prime* (divisors: 1 and 2 only)
- **3** — *prime* (divisors: 1 and 3 only)
- **5** — *prime* (divisors: 1 and 5 only)
- **9** — *composite* ($9 = 3 \times 3$; divisors: 1, 3, 9)

The numbers 2, 3, and 5 are all prime. **9 is composite** (not prime) and is therefore the odd one out.

Answer: (D)



10.

Solution**Topic: Syllogism (Universal deduction + existential)****Statements:** (1) All men are mortal. (2) Socrates is a man.**Conclusion I — “Socrates is mortal”:** From Statement (1), every man is mortal. Statement (2) tells us Socrates is a man. By direct deduction (Universal Instantiation), Socrates must be mortal. **Follows.** ✓**Conclusion II — “Some mortals are men”:** Statement (1) places the entire set of men inside mortals ($\text{Men} \subseteq \text{Mortals}$). Since men exist (Socrates is one), at least some mortals are men. **Follows.** ✓

The Venn diagram shows “Men” entirely inside “Mortals”, and Socrates as a point inside “Men”, confirming both conclusions.

Both Conclusion I and Conclusion II follow.**Answer: (C)**

11.

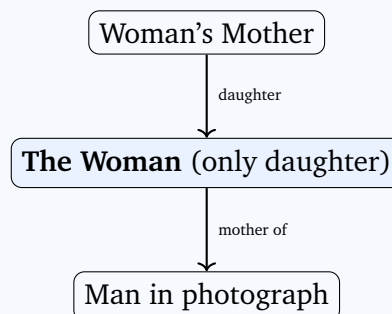
Solution**Topic: Syllogism (Some–All)****Statements:** (1) Some books are novels. (2) All novels are fiction.**Conclusion I — “Some books are fiction”:** By Statement (1), there exist books that are novels. By Statement (2), every novel is fiction. Therefore those books that are novels are also fiction — *some books are fiction*. **Follows.** ✓**Conclusion II — “All books are fiction”:** Statement (1) says only *some* books are novels; the remaining books may or may not be fiction. There is no information to conclude that *all* books are fiction. **Does not follow.** ×**Only Conclusion I follows.****Answer: (A)**

12.

Solution**Topic: Blood Relations**

The woman states: *"His mother is the only daughter of my mother."*

- "The only daughter of my mother" = the woman **herself** (she is her own mother's only daughter).
- Therefore: the man's mother = the woman.
- The woman is the man's **Mother**.



Answer: (C)

13.

Solution**Topic: Direction Sense**

Anita's journey step by step:

- 4 km East:** moves 4 km east of the starting point.
- 3 km North:** now 4 km east and 3 km north of start.
- 4 km West:** moves 4 km west, *exactly cancelling* the 4 km eastward displacement.

Net displacement:

$$\text{East-West : } 4\text{ E} - 4\text{ W} = 0 \quad \text{North-South : } 3\text{ N}$$

$$\text{Distance from start} = \sqrt{0^2 + 3^2} = \sqrt{9} = 3\text{ km}$$

Anita ends up **3 km due North** of her starting point, directly above it on the map.

Answer: (D)



14.

Solution**Topic: Dice and Cubes (Net Folding)**

The given cross-shaped net has the horizontal row (left to right): 3 – 5 – 4 – 2, with face 6 above face 5 and face 1 below face 5.

Folding analysis (taking face 5 as the front):

- Face 6 (above 5) folds up $\Rightarrow$ *top* face.
- Face 1 (below 5) folds down $\Rightarrow$ *bottom* face. (6 $\leftrightarrow$ 1 are opposite)
- Face 3 (left of 5) folds left $\Rightarrow$ *left* face.
- Face 4 (right of 5) folds right $\Rightarrow$ *right* face. (3 $\leftrightarrow$ 4 are opposite)
- Face 2 (far-right end, attached to face 4's free edge) wraps around to become the *back* face $\Rightarrow$ **opposite to face 5**. (5 $\leftrightarrow$ 2 are opposite) ✓

All three pairs sum to 7 (standard die property): $5 + 2 = 7$, $6 + 1 = 7$, $3 + 4 = 7$.

Face 2 is opposite to face 5.

Answer: (C)

15.

Solution**Topic: Figure Matrix (Arrow Rotation — 90° Clockwise)**

The 2×2 matrix cells are:

$\rightarrow$ (top-left)	$\downarrow$ (top-right)
$\uparrow$ (bottom-left)	? (bottom-right)

Pattern (row-wise): The right-cell arrow is the left-cell arrow rotated 90° clockwise:

- **Row 1:** $\rightarrow$ rotated 90CW $= \downarrow$ (top-right $= \downarrow$) ✓
- **Row 2:** $\uparrow$ rotated 90CW $= \rightarrow$ (bottom-right $= \rightarrow$)

Cross-check (column-wise): $\rightarrow$ rotated 90CCW $= \uparrow$ (top-left $\rightarrow$ bottom-left) ✓
 $\downarrow$ rotated 90CCW $= \rightarrow$ (top-right $\rightarrow$ bottom-right) ✓

The missing figure is $\rightarrow$ (right arrow).

Answer: (B)



Answer Key

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Answer Summary Table

Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	D	2	B	3	A	4	C	5	D
6	B	7	A	8	C	9	D	10	C
11	A	12	C	13	D	14	C	15	B

Quick Answer Grid (click a question number to jump to its solution)

Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	D	2	B	3	A	4	C	5	D
6	B	7	A	8	C	9	D	10	C
11	A	12	C	13	D	14	C	15	B

Option Distribution

A correct: 3 (Q3, Q7, Q11)

B correct: 3 (Q2, Q6, Q15)

C correct: 5 (Q4, Q8, Q10, Q12, Q14)

D correct: 4 (Q1, Q5, Q9, Q13)

Topic Coverage

Number Series: Q1, Q3

Letter Series: Q2

Analogy: Q4, Q5

Coding–Decoding: Q6, Q7

Classification: Q8, Q9

Syllogism: Q10, Q11

Blood Relations: Q12

Direction Sense: Q13

Dice & Cubes: Q14

Figure Matrix: Q15

Exam Details

Marks: +1 / 0

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