

MAH B.P.Ed CET — Sample Paper

Mental Ability | Paper 10 of 10

Total Questions	15
Maximum Marks	15
Duration	18 Minutes
Marking Scheme	+1 for correct answer; No negative marking
Mode	Online CBT
Question Type	Single-correct MCQ (4 options each)

Each question has four options (A)–(D). Select the single most appropriate answer.

Instructions

1. This paper contains **15 Multiple Choice Questions (MCQs)**.
2. Each correct answer carries **+1 mark**. There is **no negative marking** for wrong answers.
3. Each question has **four** options – (A), (B), (C), (D). Select the **single best** answer.
4. Total time allotted is **18 minutes**.
5. Do not spend too much time on any single question; move on and return if time permits.
6. The detailed answer key and solutions are provided after the question paper.
7. Questions on Series, Analogy, Coding, Classification, Syllogism, Blood Relations, Direction and Figure Matrix are covered in this paper.

Section — Mental Ability (Q1 to Q15)

Q1. What is the next term in the following number series?

100, 90, 81, 73, 66, _____

- (A) 62
- (B) 61
- (C) 60
- (D) 59

Q2. What is the next term in the following letter series?

A, C, F, J, O, _____

- (A) U
- (B) T
- (C) V
- (D) W

Q3. What is the next term in the following series?

1, 1, 2, 3, 5, 8, 13, _____

- (A) 18
- (B) 19
- (C) 20
- (D) 21

Q4. Choose the word that best completes the analogy below.

Painter : Brush :: Carpenter : _____

- (A) Wood
- (B) Saw
- (C) Nail
- (D) Hammer

Q5. Choose the number that best completes the analogy below.

4 : 64 :: 3 : _____

- (A) 9
- (B) 18
- (C) 27
- (D) 36



Q6. In a certain code language, **COLD** is written as **FROG** (each letter is shifted forward by 3 positions in the alphabet). Using the same rule, how is **HAND** coded in that language?

- (A) KDQG
- (B) KCQG
- (C) LDQG
- (D) KDRG

Q7. If **MOON** = **57** using the code in which each letter is replaced by its position in the alphabet ($A = 1, B = 2, \dots, Z = 26$) and the code value is the *sum* of those position numbers, what is the code for **STAR**?

- (A) 55
- (B) 56
- (C) 57
- (D) 58

Q8. Four terms are given below. Three of them belong to a common category. Find the **odd one out**.

Copper Iron Gold Coal

- (A) Copper
- (B) Coal
- (C) Iron
- (D) Gold

Q9. Four terms are given below. Three share a common category. Find the **odd one out**.

Monday Tuesday Sunday Holiday

- (A) Monday
- (B) Sunday



- (C) Holiday
- (D) Tuesday

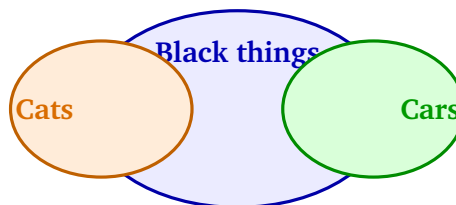
Q10. Directions (Q10–Q11): In each of the following questions, two statements are given followed by two conclusions numbered I and II. Assume the given statements to be true even if they seem to differ from commonly known facts, and decide which of the given conclusions logically follows from the statements.

Statements:

- (i) Some cats are black.
- (ii) Some black things are cars.

Conclusions:

- I. Some cats are cars.
- II. All cars are black.



- (A) Only Conclusion I follows
- (B) Only Conclusion II follows
- (C) Both Conclusions I and II follow
- (D) Neither Conclusion I nor II follows

Q11. (Refer to directions given in Q10)

Statements:

- (i) All books are knowledge.
- (ii) No knowledge is useless.



Conclusions:

- I. No book is useless.
- II. All knowledge is books.

- (A) Only Conclusion I follows
- (B) Only Conclusion II follows
- (C) Both Conclusions I and II follow
- (D) Neither Conclusion I nor II follows

Q12. X is Y's sister's husband. What is X's relation to Y?

- (A) Brother
- (B) Brother-in-law
- (C) Uncle
- (D) Cousin

Q13. Rohan starts from a point and walks **9 km towards East**. He then turns left and walks **12 km towards North**. What is the **straight-line distance** from his starting point to his current position?

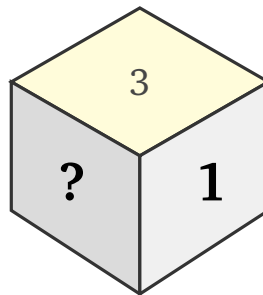


- (A) 13 km



- (B) 14 km
- (C) 15 km
- (D) 16 km

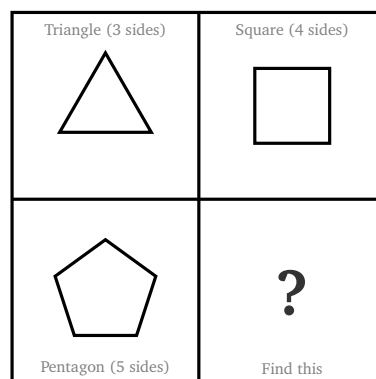
Q14. On a **standard die**, the numbers on *opposite faces* always sum to 7. If the **right face** of a standard die shows **1**, what number appears on the **left (opposite)** face?



Right face shows 1 $\Rightarrow$ Left (opposite) face = ?

- (A) 2
- (B) 3
- (C) 5
- (D) 6

Q15. Study the 2×2 figure matrix given below. Identify the pattern and select the figure that should replace the question mark (?) in the bottom-right cell.



- (A) Hexagon (6 sides)
- (B) Pentagon (5 sides)
- (C) Heptagon (7 sides)
- (D) Square (4 sides)



Detailed Solutions — Mental Ability

Q1.

Solution

Series: 100, 90, 81, 73, 66, _____

The differences between consecutive terms are **decreasing by 1** each step:

Term	100	90	81	73	66	?
Difference		-10	-9	-8	-7	-6

The differences decrease by 1 at each step: -10, -9, -8, -7, -6, ... The next difference is -6, so the next term is:

$$66 - 6 = 60.$$

Answer: (C) [Go Back to Q 1](#)

Q2.

Solution

Series: A, C, F, J, O, _____

Convert letters to their alphabetical positions and find the gaps:

Letter	A	C	F	J	O	?
Position	1	3	6	10	15	
Gap		+2	+3	+4	+5	+6

The gaps increase by 1 each time (the positions are triangular numbers: 1, 3, 6, 10, 15, ...). The next gap is +6:

$$15 + 6 = 21.$$

The 21st letter of the alphabet is U.

Answer: (A) [Go Back to Q 2](#)



Q3.

Solution**Series:** 1, 1, 2, 3, 5, 8, 13, _____

This is the famous **Fibonacci sequence**: each term equals the sum of the two immediately preceding terms.

$$1 + 1 = 2, \quad 1 + 2 = 3, \quad 2 + 3 = 5, \quad 3 + 5 = 8, \quad 5 + 8 = 13, \quad 8 + 13 = \mathbf{21}.$$

The next term in the sequence is **21**.

Answer: (D) [Go Back to Q 3](#)

Q4.

Solution

The analogy pairs a **professional** with their **primary working tool**:

Painter $\xrightarrow{\text{primary tool}}$ Brush

Carpenter $\xrightarrow{\text{primary tool}}$ Saw

A painter uses a brush as the primary instrument for applying paint; a carpenter uses a *saw* as the primary tool for cutting and shaping wood. (Wood is the material, not a tool; Nail and Hammer are fastening tools, not the carpenter's primary shaping instrument.)

Answer: (B) [Go Back to Q 4](#)

Q5.

Solution

The relationship is **number : its cube** ($x : x^3$):

$$4 : 64 = 4 : 4^3 \implies 3 : 3^3 = 3 : \mathbf{27}.$$

Verify: $4^3 = 64$ ✓ and $3^3 = 27$ ✓.

Answer: (C) [Go Back to Q 5](#)



Q6.

Solution

Rule: Each letter is shifted **forward by 3 positions** in the alphabet.

Verification with COLD:

Plain letter	C	O	L	D
Position	3	15	12	4
Position + 3	6	18	15	7
Coded letter	F	R	O	G

$\Rightarrow$ COLD $\rightarrow$ FROG ✓

Applying to HAND:

Plain letter	H	A	N	D
Position	8	1	14	4
Position + 3	11	4	17	7
Coded letter	K	D	Q	G

HAND is coded as KDQG.

Answer: (A) [Go Back to Q 6](#)

Q7.

Solution

Rule: Code value = sum of alphabetical position values of all letters (A=1, B=2, ..., Z=26).

Verification with MOON:

$$M(13) + O(15) + O(15) + N(14) = 13 + 15 + 15 + 14 = 57 \checkmark$$

For STAR:

$$S(19) + T(20) + A(1) + R(18) = 19 + 20 + 1 + 18 = 58.$$

Answer: (D) [Go Back to Q 7](#)



Q8.

Solution

- **Copper** – a *metal* (transition metal, conducts electricity and heat).
- **Iron** – a *metal* (transition metal, magnetic, structural material).
- **Gold** – a *metal* (noble/precious metal, highly ductile).
- **Coal** – a *non-metal* (a carbon-based solid fossil fuel; not a metallic element).

Copper, Iron, and Gold are all **metals**; Coal is a **non-metal** and does not belong to the same category. Therefore, the odd one out is **Coal**.

Answer: (B) [Go Back to Q 8](#)

Q9.

Solution

Check each term for the property of being a **named day of the week**:

- **Monday** – a specific named day of the week ✓
- **Tuesday** – a specific named day of the week ✓
- **Sunday** – a specific named day of the week ✓
- **Holiday** – NOT a specific named day of the week; it is a general concept describing a type of day (e.g., a festival day, a public holiday), not one of the seven named days

Monday, Tuesday, and Sunday are all **named days of the week**; Holiday is a general descriptive term. Therefore, the odd one out is **Holiday**.

Answer: (C) [Go Back to Q 9](#)



Q10.

Solution**Given statements (assumed true):**

- (i) Some cats are black. $\Rightarrow \text{Cats} \cap \text{Black-things} \neq \emptyset$ (partial overlap only).
- (ii) Some black things are cars. $\Rightarrow \text{Black-things} \cap \text{Cars} \neq \emptyset$ (partial overlap only).

Conclusion I: “Some cats are cars.” – FALSE (does not necessarily follow).

The statements create two separate partial overlaps (Cats with Black-things, and Black-things with Cars). The portions of Cats and Cars that overlap with Black-things need not coincide. As the Venn diagram shows, it is entirely possible for Cats and Cars to be completely disjoint. No definite link between Cats and Cars can be established from two particular (“some”) premises alone.

Conclusion II: “All cars are black.” – FALSE.

Statement (ii) says only *some* black things are cars. This equally implies only *some* cars may be black (or even none need be, beyond the overlap stated). Concluding that *all* cars are black is an illicit strengthening of the premise.

 $\therefore$ Neither Conclusion I nor II follows.**Answer: (D)** [Go Back to Q 10](#)

Q11.

Solution**Given statements (assumed true):**

- (i) All books are knowledge. $\Rightarrow \text{Books} \subseteq \text{Knowledge}$.
- (ii) No knowledge is useless. $\Rightarrow \text{Knowledge} \cap \text{Useless} = \emptyset$.

Conclusion I: “No book is useless.” – TRUE.

Since $\text{Books} \subseteq \text{Knowledge}$ and $\text{Knowledge} \cap \text{Useless} = \emptyset$, by transitivity we get $\text{Books} \cap \text{Useless} = \emptyset$, i.e., no book is useless. This is a valid syllogistic inference (Celarent form with universal premises).

Conclusion II: “All knowledge is books.” – FALSE.

Statement (i) says “All books are knowledge” but does not say “Only books are knowledge”. Concluding the converse – that all knowledge must be books – is an illicit conversion and is logically invalid. There can be knowledge that is not a book.



∴ Only Conclusion I follows.

Answer: (A) [Go Back to Q 11](#)

Q12.

Solution

Breaking down the relation step by step:

Y's sister's husband = Y's **Brother-in-law**

X is married to Y's sister. By definition, the husband of one's sister is one's **brother-in-law** (Jijaji). Therefore, X is Y's **brother-in-law**.

Answer: (B) [Go Back to Q 12](#)

Q13.

Solution

Rohan's path forms a **right triangle**:

- Horizontal leg (East) = 9 km
- Vertical leg (North) = 12 km
- The right angle is at the turning point (where he changes direction from East to North)

By the **Pythagorean theorem**, the straight-line distance d from Start to End is:

$$d = \sqrt{9^2 + 12^2} = \sqrt{81 + 144} = \sqrt{225} = 15 \text{ km.}$$

Tip: (9, 12, 15) is a Pythagorean triple – it is simply $3 \times (3, 4, 5)$.

Answer: (C) [Go Back to Q 13](#)



Q14.

Solution

On a **standard die**, opposite faces always sum to 7:

$$1 \leftrightarrow 6, \quad 2 \leftrightarrow 5, \quad 3 \leftrightarrow 4.$$

If the **right face** shows 1, the opposite (left) face is:

$$\text{Left face} = 7 - 1 = 6.$$

Answer: (D) [Go Back to Q 14](#)

Q15.

Solution

Pattern: Reading left-to-right across the matrix, the number of sides of each polygon increases by 1 at every step:

Position	Shape	Sides
Top-left	Equilateral Triangle	3
Top-right	Square	4
Bottom-left	Regular Pentagon	5
Bottom-right	?	6

Each step adds one side: $3 \rightarrow 4 \rightarrow 5 \rightarrow 6$. The missing figure is a polygon with 6 sides: a **Regular Hexagon**.

Answer: (A) [Go Back to Q 15](#)



Answer Key — Mental Ability Sample Paper 10

MAH B.P.Ed CET — Mental Ability — Sample Paper 10

15 Questions | +1 per correct answer | No negative marking

Q.No.	Answer	Q.No.	Answer	Q.No.	Answer	Q.No.	Answer	Q.No.	Answer
1	C	2	A	3	D	4	B	5	C
6	A	7	D	8	B	9	C	10	D
11	A	12	B	13	C	14	D	15	A

Option	Count
(A)	4
(B)	3
(C)	4
(D)	4
Total	15

Click on any answer letter in the table above to jump to the detailed solution.

*For the question, click the **QN** label in the Solutions section.*

