MAH B.P.Ed CET — Mental Ability

Sample Paper 5 *of* 8

Time Allowed: 18 Min **Total Marks:** 15 **Questions:** 15

Marking Scheme: +1 per correct answer | No negative marking | Mode: Online CBT

Instructions

- This paper contains **15 multiple-choice questions** (single correct answer each).
- Each correct answer carries **+1 mark**. There is **no negative marking**.
- Total time allotted is **18 minutes**. Manage your time carefully.
- Read each question carefully before selecting your answer.
- Question labels **(Q1, Q2, . . .)** are clickable and hyperlink to the respective detailed solution.

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

$$3, \quad 9, \quad 27, \quad 81, \quad ?$$

(A) 243

(B) 180

(C) 200

(D) 162

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

$$B, \quad C, \quad D, \quad F, \quad G, \quad H, \quad J, \quad ?$$

(A) I

(B) J

(C) K

(D) L

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

$$5, \quad 11, \quad 23, \quad 47, \quad ?$$

(A) 90

(B) 95

(C) 97

(D) 101

Q4. Complete the analogy:

Tailor : Needle :: Carpenter : ?

(A) Wood

(B) Saw

(C) Furniture

(D) Hammer

Q5. Complete the analogy:

7 : 49 :: 11 : ?

(A) 121

(B) 110

(C) 99

(D) 144

Q6. In a certain code language, **BALL** is written as **FEPP**. Using the same rule, how is **GAME** coded?

(A) JEQH

(B) LDQJ

(C) KEQI

(D) KFQJ

Q7. If **STAR** is coded as **19-20-1-18**, what is the code for **MOON**?

(A) 12-14-14-13

(B) 13-15-15-14

(C) 14-16-16-15

(D) 13-14-15-16

Q8. Find the **odd one out**:

(A) Cricket
(B) Football
(C) Hockey
(D) Swimming

Q9. Find the **odd one out**:

(A) 50
(B) 25
(C) 36
(D) 16

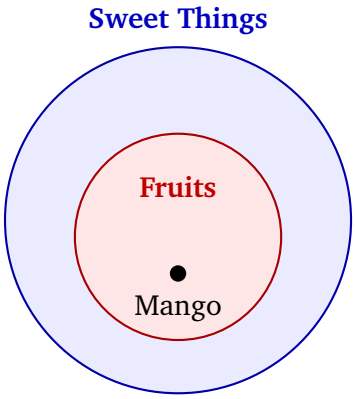
Q10. Study the statements and conclusions below and choose the correct option.

Statements:

- All fruits are sweet.
- Mango is a fruit.

Conclusions:

I. Mango is sweet.
II. All sweet things are fruits.



(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. Study the statements and conclusions below and choose the correct option.

Statements:

- All P are Q.
- All Q are R.

Conclusions:

I. All P are R.

II. Some R are P.

(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. A's father's sister's son is B. What is B's relation to A?

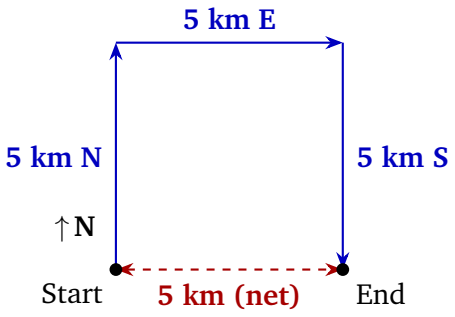
(A) Brother

(B) Cousin

(C) Uncle

(D) Nephew

Q13. Ravi walks **5 km North**, then **5 km East**, then **5 km South**. How far is he from his starting point and in which direction?



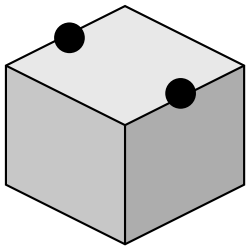
(A) 5 km East

(B) 5 km West

(C) 10 km East

(D) 5 km North

Q14. On a standard die, opposite faces always sum to **7**. If the **top face shows 2**, what number appears on the **bottom face**?



Top face $= 2$; **Bottom face** $= ?$

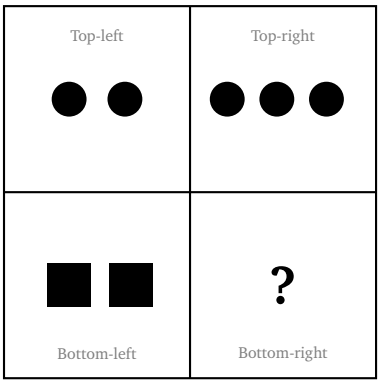
(A) 3

(B) 4

(C) 6

(D) 5

Q15. In the 2×2 figure matrix shown below, what should replace the **question mark**?



Pattern: The shape follows the row (circles in top row; squares in bottom row); the count increases by 1 from left column to right column.

(A) ■ ■ (2 filled squares)

(B) ■ ■ ■ (3 filled squares)

(C) • • • (3 filled circles)

(D) ■ (1 filled square)

DETAILED SOLUTIONS

Q1.

Solution

Series: $3,\ 9,\ 27,\ 81,\ ?$

Each term is obtained by **multiplying the previous term by 3** (successive powers of 3):

$$3^1 = 3, \quad 3^2 = 9, \quad 3^3 = 27, \quad 3^4 = 81, \quad 3^5 = \mathbf{243}$$

Equivalently: $81 \times 3 = \mathbf{243}$.

Answer: (A) Go Back to Q 1

Q2.

Solution

Series: $B,\ C,\ D,\ F,\ G,\ H,\ J,\ ?$

The series is formed by taking **consecutive consonants in groups of three**, with the vowels (A, E, I, U) skipped between groups:

Group 1	Group 2	Group 3
B, C, D	F, G, H	J, **K**, L
(skip vowel A)	(skip vowel E)	(skip vowel I)

The series has so far shown J (first letter of Group 3). The next letter in Group 3 is **K**.

Answer: (C) Go Back to Q 2

Q3.

Solution

Series: $5,\ 11,\ 23,\ 47,\ ?$

The rule is: **next term** $= 2\times$ **previous term** $+1$:

$$5 \xrightarrow{\times 2+1} 11 \xrightarrow{\times 2+1} 23 \xrightarrow{\times 2+1} 47 \xrightarrow{\times 2+1} \mathbf{95}$$

Verification: $47 \times 2 + 1 = 94 + 1 = \mathbf{95}$.

Answer: (B) Go Back to Q 3

Q4.

Solution

Analogy: Tailor : Needle :: Carpenter : ?

The relationship is *worker* : *primary hand tool used for the craft*:

- A **Tailor** uses a **Needle** to stitch garments.
- A **Carpenter** uses a **Hammer** to drive nails and assemble wooden structures.

Eliminating incorrect options:

- **Wood** — material, not a tool.
- **Saw** — a tool used for cutting, not the primary *joining* tool.
- **Furniture** — the product, not a tool.

The correct answer is **Hammer**.

Answer: (D) Go Back to Q 4

Q5.

Solution

Analogy: $7 : 49 :: 11 : ?$

The relationship is $x : x^2$ (a number and its square):

$$7^2 = 49, \qquad 11^2 = \mathbf{121}$$

Answer: (A) Go Back to Q 5

Q6.

Solution

Coding rule: Each letter is shifted **forward by 4 positions** in the alphabet.

Verification with BALL $\rightarrow$ FEPP:

$$B(2)+4=F(6), \quad A(1)+4=E(5), \quad L(12)+4=P(16), \quad L(12)+4=P(16) \quad \checkmark$$

Applying the rule to GAME:

Letter	G	A	M	E
Position	7	1	13	5
$+4$	11	5	17	9
Coded letter	K	E	Q	I

GAME is coded as **KEQI**.

Answer: (C) Go Back to Q 6

Q7.

Solution

Coding rule: Each letter is replaced by its **numerical position** in the alphabet (A=1, B=2, . . . , Z=26).

Verification with STAR $=$ 19-20-1-18:

$$S=19, \quad T=20, \quad A=1, \quad R=18 \quad \checkmark$$

Applying the rule to MOON:

$$M=13, \quad O=15, \quad O=15, \quad N=14$$

MOON is coded as **13-15-15-14**.

Answer: (B) Go Back to Q 7

Q8.

Solution

Classification: Cricket, Football, Hockey, Swimming

- **Cricket**, **Football**, and **Hockey** are all outdoor *team sports* played on a field/pitch with a ball.
- **Swimming** is an *individual sport* performed in water — it involves no team, no field, and no ball.

Swimming does not share the defining characteristic of the other three and is the odd one out.

Answer: (D) Go Back to Q 8

Q9.

Solution

Classification: 16, 25, 36, 50

Check each number to see whether it is a perfect square:

$$16 = 4^2 \checkmark, \quad 25 = 5^2 \checkmark, \quad 36 = 6^2 \checkmark, \quad 50 = ?$$

$\sqrt{50} \approx 7.071$ is not an integer, so **50 is not a perfect square**.

All other numbers (16, 25, 36) are perfect squares; **50** is the odd one out.

Answer: (A) Go Back to Q 9

Q10.

Solution

Statements:

- All fruits are sweet. (Fruits $\subseteq$ Sweet Things)
- Mango is a fruit.

Conclusion I — Mango is sweet:
Since Mango is a fruit, and all fruits are sweet, Mango must be sweet. This follows directly by *universal instantiation*. **Valid.** ✓

Conclusion II — All sweet things are fruits:
The premise states only that all fruits are sweet, i.e. Fruits $\subseteq$ Sweet Things. It does

not state the converse. Many things (candy, honey, etc.) are sweet without being fruits. This conclusion is an *invalid converse*. **Invalid.** $\times$

Therefore, **only Conclusion I follows**.

Answer: (A) Go Back to Q 10

Q11.

Solution

Statements:

- All P are Q. $(P \subseteq Q)$
- All Q are R. $(Q \subseteq R)$

By the **transitive property**: $P \subseteq Q \subseteq R$, hence $P \subseteq R$.

Conclusion I — All P are R:
Since $P \subseteq Q$ and $Q \subseteq R$, every element of P is also in R. **Valid.** ✓

Conclusion II — Some R are P:
Because all members of P are members of R (from $P \subseteq R$), the set P forms a non-empty subset of R. Therefore "Some R are P" holds. **Valid.** ✓

Both Conclusions I and II follow.

Answer: (C) Go Back to Q 11

Q12.

Solution

Given: A's father's sister's son is B.

Tracing step by step:

Step 1: A's **father's sister** = A's **paternal aunt**.
Step 2: A's paternal aunt's **son** = A's **paternal cousin**.

B is A's **Cousin**.

Answer: (B) Go Back to Q 12

Q13.

Solution

Ravi's path: 5 km North $\rightarrow$ 5 km East $\rightarrow$ 5 km South.

Resolving into vertical (N–S) and horizontal (E–W) components:

- **N–S:** $+5$ km (N) $-$ 5 km (S) $= 0$ (net vertical displacement = 0)
- **E–W:** $+5$ km (E) (net horizontal displacement = 5 km East)

Ravi's final position is exactly **5 km East** of the starting point (the dashed line in the diagram).

Answer: (A) Go Back to Q 13

Q14.

Solution

Standard die rule: Opposite faces always sum to **7**.

The three opposite-face pairs are: $(1, 6)$, $(2, 5)$, $(3, 4)$.

If the top face shows **2**, the bottom face shows:

$$7 - 2 = \mathbf{5}$$

Answer: (D) Go Back to Q 14

Q15.

Solution

Figure Matrix Analysis:

	Left Column	Right Column
Top Row	• • (2 circles)	• • • (3 circles)
Bottom Row	■ ■ (2 squares)	**?**

Observations:

- **Shape rule (rows):** Top row uses circles (•); bottom row uses squares (■).
- **Count rule (columns):** The count increases by 1 from left to right (2 $\rightarrow$ 3).

Applying both rules to the bottom-right cell: shape = ■ (square), count = 3.

The missing cell is **3 filled squares** (■ ■ ■).

Answer: (B) Go Back to Q 15

ANSWER KEY

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

Click any answer letter to jump to its detailed solution.

Marking Scheme: Correct $= +1$ | Incorrect $= 0$ | Unattempted $= 0$

Maximum Score: 15 | **Paper:** 5 of 8 | **Subject:** Mental Ability (MAH B.P.Ed CET)