

TALLENTEX Mental Ability

Sample Paper – 10

Duration: 30 Minutes

Maximum Marks: 80

Instructions

- This paper contains **20** Multiple Choice Questions (Single Correct Answer) modelled on the Mental Ability (IQ) section of **TALLENTEX**.
- Each correct answer carries **+4 marks**. There is **–1 mark** for each incorrect answer. Unattempted questions carry no marks.
- Only **one** option is correct per question. Choose carefully.
- Use of mobile phones, calculators, or any electronic devices is strictly prohibited.
- Mark your answers on the OMR sheet with a black/blue ball-point pen only.

Q1. Find the missing number in the following series:

3, 8, 15, 24, 35, ?

- (A) 48
- (B) 46
- (C) 50
- (D) 44

Q2. Find the missing number in the following series:

1, 3, 7, 15, 31, ?

- (A) 57
- (B) 63
- (C) 61
- (D) 65



Q3. Find the missing letter in the following series:

A, C, F, J, O, ?

(A) S

(B) T

(C) U

(D) V

Q4. Complete the analogy:

Thermometer : Temperature :: Barometer : ?

(A) Wind

(B) Humidity

(C) Altitude

(D) Pressure

Q5. Study the relationship: $(7, 3) \rightarrow 40$; $(5, 2) \rightarrow 21$.

Using the same rule, find the value for $(6, 4)$.

(A) 20

(B) 22

(C) 24

(D) 28

Q6. In a code, each letter is shifted **2 places forward** in the alphabet

(A $\rightarrow$ C, B $\rightarrow$ D, ..., Y $\rightarrow$ A, Z $\rightarrow$ B).

How is **KING** coded?

(A) LKPI

(B) MKPI

(C) MKPH

(D) LKPH



Q7. In a code, a word is first written **backwards**, then each letter is shifted **1 place forward**

(A→B, B→C, ..., Z→A).

How is **BOOK** coded?

(A) KOPC

(B) LPPB

(C) LPPC

(D) KPPC

Q8. Mohan says, “Anita’s father is the only son of my grandfather.”

How is **Anita** related to **Mohan**?

(A) Cousin

(B) Niece

(C) Aunt

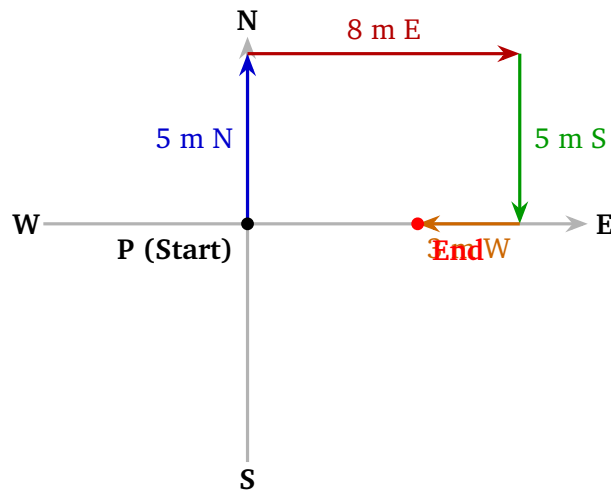
(D) Sister

Q9. Rohan starts from point **P** facing **North** and makes the following moves:

- Walks **5 m North**
- Turns right and walks **8 m East**
- Turns right and walks **5 m South**
- Turns right and walks **3 m West**

How far is Rohan from point **P**?





- (A) 5 m
- (B) 3 m
- (C) 8 m
- (D) 4 m

Q10. A person initially faces **North**. He then turns **90° clockwise**, followed by **180° clockwise**, and finally **90° anti-clockwise**. In which direction does he face at the end?

- (A) East
- (B) South
- (C) West
- (D) North

Q11. Four of the following five are alike in a certain way. Find the one that does **NOT** belong to the group.

Violin, Guitar, Flute, Sitar, Veena

- (A) Violin
- (B) Guitar
- (C) Flute
- (D) Sitar



Q12. Find the item that does **NOT** belong to the group:

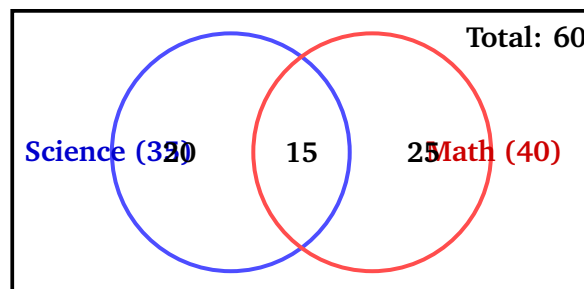
Hockey, Cricket, Basketball, Badminton, Chess

- (A) Hockey
- (B) Cricket
- (C) Basketball
- (D) Chess

Q13. In a class of **30** students, Ravi is ranked **8th from the top** and Maya is ranked **19th from the bottom**. How many students are ranked **between** Ravi and Maya?

- (A) 3
- (B) 4
- (C) 5
- (D) 2

Q14. In a group of **60** students, 35 study **Science**, 40 study **Math**, and every student studies at least one subject. Refer to the Venn diagram below. How many students study **both** subjects?



- (A) 10
- (B) 15
- (C) 20
- (D) 25

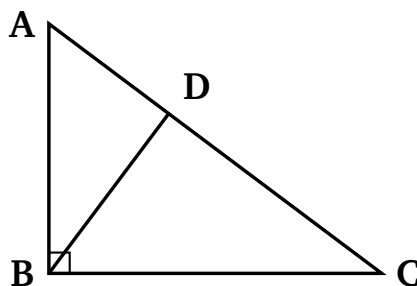
Q15. In the table below, each row satisfies **Col 1** $\times$ **Col 2** = **Col 3**. Find the missing number (?).



Col 1	Col 2	Col 3
5	7	35
6	8	48
4	?	36

- (A) 6
- (B) 8
- (C) 9
- (D) 7

Q16. How many **triangles** are there in total in the figure below?



Count all triangles, including those formed by combining sub-triangles.

- (A) 2
- (B) 4
- (C) 5
- (D) 3

Q17. Study the pattern in the table and find the number that replaces (?).

5	3	8
7	4	11
6	?	15



In each row: 3rd number = 1st number + 2nd number.

- (A) 9
- (B) 7
- (C) 11
- (D) 8

Q18. A custom operation is defined as: $a \oplus b = 3a - 2b$.

Find the value of $(4 \oplus 3) \oplus 2$.

- (A) 10
- (B) 14
- (C) 12
- (D) 16

Q19. Five students — Prem, Qadir, Ritu, Sunil, and Tara — sit in a row for a photograph.

- Sunil is at the **right end** (position 5).
- Tara is at the **left end** (position 1).
- Qadir sits **immediately to the left** of Ritu.
- Prem is **not adjacent** to Tara.
- Ritu is **not** at position 4.

Who sits at **position 2**?

- (A) Prem
- (B) Ritu
- (C) Qadir
- (D) Sunil

Q20. Statements:

I. All birds can fly.



II. Penguins are birds.

Conclusions:

I. Penguins can fly.

II. Some birds are penguins.

III. All penguins are birds.

IV. No bird is a penguin.

Which of the following is correct?

(A) Only I and III

(B) Only II

(C) Only I

(D) I, II and III all follow



Detailed Solutions**Q1.****Solution**

Concept: Number series – differences form consecutive odd numbers.

Step 1 – Find the differences:

$$8 - 3 = 5, 15 - 8 = 7, 24 - 15 = 9, 35 - 24 = 11.$$

Differences: 5, 7, 9, 11, ... (odd numbers increasing by 2 each time).

Step 2 – Find the next difference and term:

$$\text{Next difference} = 11 + 2 = 13. \text{ Missing term} = 35 + 13 = 48.$$

Why other options are wrong:

(B) 46: $35 + 11 = 46$ – reuses the previous difference instead of advancing it.

(C) 50: $35 + 15 = 50$ – skips a step in the difference pattern.

(D) 44: $35 + 9 = 44$ – applies an earlier difference in the pattern.

Answer: (A) [Go Back to Q1](#)

Q2.**Solution**

Concept: Number series – each term = previous term $\times 2 + 1$.

Step 1 – Verify the rule:

$$1 \times 2 + 1 = 3. 3 \times 2 + 1 = 7. 7 \times 2 + 1 = 15. 15 \times 2 + 1 = 31. \checkmark$$

Step 2 – Find the next term:

$$31 \times 2 + 1 = 62 + 1 = 63.$$

Why other options are wrong:

(A) 57: no derivable pattern gives 57 from 31 using this rule.

(C) 61: $31 \times 2 - 1 = 61$ – wrong sign (subtracts 1 instead of adding).

(D) 65: $31 \times 2 + 3 = 65$ – adds 3 instead of 1.

Answer: (B) [Go Back to Q2](#)



Q3.

Solution

Concept: Letter series – cumulative (triangular number) differences.

Step 1 – Convert letters to positions:

A = 1, C = 3, F = 6, J = 10, O = 15.

Step 2 – Identify the differences:

$3 - 1 = 2$, $6 - 3 = 3$, $10 - 6 = 4$, $15 - 10 = 5$. Differences increase by 1 each time.

Step 3 – Find the next term:

Next difference = $5 + 1 = 6$. Position = $15 + 6 = 21 \Rightarrow \mathbf{U}$ (the 21st letter).

Why other options are wrong:

(A) S: position 19 ($15 + 4$) – applies difference 4 again.

(B) T: position 20 ($15 + 5$) – applies difference 5 again.

(D) V: position 22 ($15 + 7$) – advances the difference by 2 instead of 1.

Answer: (C) [Go Back to Q3](#)

Q4.

Solution

Concept: Word analogy – instrument measures a specific physical quantity.

Step 1 – Identify the relationship:

A **Thermometer** is an instrument used to measure **Temperature**.

Step 2 – Apply to Barometer:

A **Barometer** is an instrument used to measure atmospheric **Pressure**.

Why other options are wrong:

(A) Wind: wind speed is measured by an anemometer, not a barometer.

(B) Humidity: humidity is measured by a hygrometer.

(C) Altitude: altitude is measured by an altimeter.

Answer: (D) [Go Back to Q4](#)

Q5.

Solution

Concept: Number analogy – rule: $(a, b) \rightarrow a^2 - b^2$.

Step 1 – Verify with given pairs:

$(7, 3): 7^2 - 3^2 = 49 - 9 = 40. \checkmark$

$(5, 2): 5^2 - 2^2 = 25 - 4 = 21. \checkmark$

Step 2 – Apply to (6, 4):

$6^2 - 4^2 = 36 - 16 = 20.$



Why other options are wrong:

(B) 22: no consistent derivation from the verified rule.

(C) 24: $6^2 - (6 - \frac{1}{2})^2$ type error – not the rule applied here.

(D) 28: $6^2 - 2^2 = 32?$ – uses wrong second operand.

Answer: (A) [Go Back to Q5](#)

Q6.

Solution

Concept: Coding-Decoding – each letter shifted 2 places forward.

Step 1 – Apply the shift to each letter of KING:

K (position 11) $+2 = 13 = \text{M}$.

I (position 9) $+2 = 11 = \text{K}$.

N (position 14) $+2 = 16 = \text{P}$.

G (position 7) $+2 = 9 = \text{I}$.

Code = MKPI.

Why other options are wrong:

(A) LKPI: shifts K by only $+1$ to get L (not M) – error in first letter.

(C) MKPH: shifts G by $+1$ to get H instead of I – error in last letter.

(D) LKPH: two errors – first letter K shifted $+1$, last letter G shifted $+1$.

Answer: (B) [Go Back to Q6](#)

Q7.

Solution

Concept: Coding-Decoding – two-step rule: reverse the word, then shift each letter $+1$.

Step 1 – Reverse BOOK:

B, O, O, K $\xrightarrow{\text{reverse}}$ K, O, O, B.

Step 2 – Shift each letter $+1$:

K (11) $+1 = 12 = \text{L}$.

O (15) $+1 = 16 = \text{P}$.

O (15) $+1 = 16 = \text{P}$.

B (2) $+1 = 3 = \text{C}$.

Code = LPPC.

Why other options are wrong:

(A) KOPC: does not apply the reversal correctly and omits the shift for the first letter.

(B) LPPB: the last letter B is not shifted to C – omits shift on the final character.



(D) KPPC: the first letter K is not shifted to L – omits shift on the first character.

Answer: (C) [Go Back to Q7](#)

Q8.

Solution

Concept: Blood Relations – tracing the family chain step by step.

Step 1 – Parse the statement:

“Anita’s father is the only son of my (Mohan’s) grandfather.”

⇒ Mohan’s grandfather has only one son = Mohan’s father.

⇒ Anita’s father = Mohan’s father.

Step 2 – Determine the relationship:

Anita and Mohan share the same father ⇒ Anita is Mohan’s **Sister**.

Why other options are wrong:

(A) Cousin: cousins have different parents who are siblings – but here the fathers are the same person.

(B) Niece: niece is the daughter of one’s sibling – Anita shares Mohan’s father, not Mohan’s sibling’s.

(C) Aunt: aunt is the sister of a parent – requires a generational gap that does not exist here.

Answer: (D) [Go Back to Q8](#)

Q9.

Solution

Concept: Direction Sense – tracking position after a rectangular path.

Step 1 – Trace each move from P = (0, 0):

Walk 5 m North: reach (0, 5).

Turn right (now facing East), walk 8 m: reach (8, 5).

Turn right (now facing South), walk 5 m: reach (8, 0).

Turn right (now facing West), walk 3 m: reach (5, 0).

Step 2 – Calculate the distance from P:

End point = (5, 0). P = (0, 0).

Distance = $\sqrt{(5-0)^2 + (0-0)^2} = \sqrt{25} = 5$ m due East.

Why other options are wrong:

(B) 3 m: this is the westward distance walked in the last step, not the net displacement.

(C) 8 m: this is the eastward distance walked in step 2, not the net displacement.

(D) 4 m: no basis in the calculation; likely an arithmetic error.



Answer: (A) [Go Back to Q9](#)

Q10.

Solution

Concept: Direction Sense – tracking facing direction through successive turns.

Step 1 – Apply each turn in order:

Initial facing: **North** (0°).

Turn 90° clockwise: North $\xrightarrow{+90^\circ \text{CW}}$ **East** (90°).

Turn 180° clockwise: East $\xrightarrow{+180^\circ \text{CW}}$ **West** (270°).

Turn 90° anti-clockwise: West $\xrightarrow{-90^\circ}$ **South** (180°).

Final direction: South.

Why other options are wrong:

(A) East: result after only the first turn; the subsequent turns change the direction further.

(C) West: result after the first two turns; the final anti-clockwise turn is not applied.

(D) North: the starting direction; no turns have been applied.

Answer: (B) [Go Back to Q10](#)

Q11.

Solution

Concept: Classification – Odd One Out (string instruments vs. wind instrument).

Step 1 – Classify each instrument:

Violin – string instrument (sound from vibrating strings with a bow).

Guitar – string instrument (sound from plucked or strummed strings).

Sitar – string instrument (plucked strings).

Veena – string instrument (plucked strings).

Flute – wind instrument (sound from a vibrating column of air).

Step 2 – Identify the odd one:

All others produce sound via vibrating strings. Flute produces sound via air flow through a tube.

Why other options are wrong:

(A) Violin, (B) Guitar, (D) Sitar: all are string instruments – they belong to the same category.

Answer: (C) [Go Back to Q11](#)



Q12.

Solution

Concept: Classification – Odd One Out (physical outdoor sports vs. board game).

Step 1 – Classify each item:

Hockey – physical outdoor sport (field/ice).

Cricket – physical outdoor sport (bat and ball).

Basketball – physical indoor/outdoor sport.

Badminton – physical racket sport.

Chess – board/strategy game requiring no physical movement.

Step 2 – Identify the odd one:

All others require athletic physical activity. Chess is a purely intellectual board game.

Why other options are wrong:

(A) Hockey, (B) Cricket, (C) Basketball: all are physical sports – they belong to the same category.

Answer: (D) [Go Back to Q12](#)

Q13.

Solution

Concept: Ranking – converting “from bottom” rank to “from top” rank.

Step 1 – Convert Maya’s rank to “from top”:

Rank from top = (Total students) – (rank from bottom) + 1 = $30 - 19 + 1 = 12$.

So Maya is **12th from the top**.

Step 2 – Count students strictly between ranks 8 and 12:

Positions between 8th and 12th (exclusive of both endpoints): 9th, 10th, 11th.

Number of students = $12 - 8 - 1 = 3$.

Why other options are wrong:

(B) 4: includes one of the two endpoints (Ravi or Maya) in the count.

(C) 5: $12 - 8 + 1 = 5$ – uses inclusive counting of both endpoints.

(D) 2: $12 - 8 - 2 = 2$ – subtracts 2 instead of 1; off by one.

Answer: (A) [Go Back to Q13](#)



Q14.

Solution**Concept:** Venn Diagram – Inclusion-Exclusion principle for two sets.**Step 1 – Apply the formula:**

$$|S \cup M| = |S| + |M| - |S \cap M|.$$

Since every student studies at least one subject: $|S \cup M| = 60$.**Step 2 – Solve for the intersection:**

$$60 = 35 + 40 - |S \cap M|$$

$$|S \cap M| = 75 - 60 = 15.$$

Verify: Science only = $35 - 15 = 20$. Math only = $40 - 15 = 25$. Total = $20 + 15 + 25 = 60$. ✓**Why other options are wrong:**(A) 10: gives total = $20 + 10 + 30 = 60$? $35 - 10 = 25$ Science only, $40 - 10 = 30$ Math only, total = $65 \neq 60$.(C) 20: $35 - 20 = 15$ Science only, $40 - 20 = 20$ Math only, total = $55 \neq 60$.(D) 25: $35 - 25 = 10$ Science only, $40 - 25 = 15$ Math only, total = $50 \neq 60$.**Answer: (B)** [Go Back to Q14](#)

Q15.

Solution**Concept:** Missing number – each row satisfies $\text{Col 1} \times \text{Col 2} = \text{Col 3}$.**Step 1 – Verify the rule with Rows 1 and 2:**

Row 1: $5 \times 7 = 35$. ✓

Row 2: $6 \times 8 = 48$. ✓

Step 2 – Apply to Row 3:

$$4 \times ? = 36 \Rightarrow ? = 36 \div 4 = 9.$$

Why other options are wrong:

(A) 6: $4 \times 6 = 24 \neq 36$.

(B) 8: $4 \times 8 = 32 \neq 36$.

(D) 7: $4 \times 7 = 28 \neq 36$.

Answer: (C) [Go Back to Q15](#)

Q16.

Solution

Concept: Counting Triangles – enumerate all sub-triangles including composites.

Step 1 – Identify the sub-regions:

The figure shows right triangle ABC with the altitude BD drawn from vertex B to a point D on the hypotenuse AC.

This divides the figure into two smaller triangles: $\triangle ABD$ and $\triangle BDC$.

Step 2 – Count all triangles:

Small triangles: $\triangle ABD$ (1) and $\triangle BDC$ (2).

Composite triangle: $\triangle ABC = \triangle ABD + \triangle BDC$ (3).

Total = 3.

Why other options are wrong:

(A) 2: counts only the two small triangles, ignoring the large composite $\triangle ABC$.

(B) 4: overcounts by treating non-existent sub-regions as separate triangles.

(C) 5: overcounts significantly – the figure has only 4 line segments creating exactly 3 triangles.

Answer: (D) [Go Back to Q16](#)

Q17.

Solution

Concept: Pattern Matrix – 3rd number = 1st number + 2nd number (row-wise addition).

Step 1 – Verify the rule with Rows 1 and 2:

Row 1: $5 + 3 = 8$. ✓

Row 2: $7 + 4 = 11$. ✓

Step 2 – Apply to Row 3:

$6 + ? = 15 \Rightarrow ? = 15 - 6 = 9$.

Why other options are wrong:

(B) 7: $6 + 7 = 13 \neq 15$.

(C) 11: $6 + 11 = 17 \neq 15$.

(D) 8: $6 + 8 = 14 \neq 15$.

Answer: (A) [Go Back to Q17](#)



Q18.

Solution

Concept: Mathematical Operations – nested custom operator, evaluated inside-out.

Step 1 – Evaluate the inner expression $4 \oplus 3$:

$$a \oplus b = 3a - 2b \Rightarrow 4 \oplus 3 = 3(4) - 2(3) = 12 - 6 = 6.$$

Step 2 – Use the result in the outer expression $6 \oplus 2$:

$$6 \oplus 2 = 3(6) - 2(2) = 18 - 4 = 14.$$

Why other options are wrong:

(A) 10: error in the outer step – computes $6 \oplus 2 = 6 + 2(2) = 10$ (wrong sign/formula).

(C) 12: stops at the inner result $4 \oplus 3 = 6$ and then incorrectly doubles – does not apply the outer operator correctly.

(D) 16: computes the outer step as $3(6) - 2(1) = 16$ – uses 1 instead of 2 for the second operand.

Answer: (B) [Go Back to Q18](#)

Q19.

Solution

Concept: Logical Puzzle – linear seating arrangement by elimination.

Step 1 – Place fixed members:

Tara = position 1 (left end). Sunil = position 5 (right end).

Remaining positions 2, 3, 4 for Prem, Qadir, Ritu.

Step 2 – Apply the Qadir-Ritu adjacency clue:

Qadir sits immediately to the left of Ritu $\Rightarrow$ QR pair occupies consecutive positions.

Possible placements: (2,3) or (3,4).

Step 3 – Apply the Ritu $\neq$ 4 clue:

If QR at (3,4): Ritu = 4 – violates the constraint. Eliminated.

Therefore: Qadir = 2, Ritu = 3. Remaining: Prem = 4.

Step 4 – Verify Prem not adjacent to Tara:

Prem at position 4 is not adjacent to Tara at position 1. $\checkmark$

Final order: Tara(1), **Qadir(2)**, Ritu(3), Prem(4), Sunil(5).

Position 2 = Qadir.

Why other options are wrong:

(A) Prem: Prem is at position 4.

(B) Ritu: Ritu is at position 3.

(D) Sunil: Sunil is at position 5 (right end).



Answer: (C) [Go Back to Q19](#)

Q20.

Solution

Concept: Syllogism – All + All $\Rightarrow$ All; converse of universal affirmative.

Statements:

I. All birds can fly. (All B $\Rightarrow$ F)

II. Penguins are birds. (All P $\subseteq$ B)

Check Conclusion I: “Penguins can fly.”

All P are B (Statement II) and All B can fly (Statement I) $\Rightarrow$ All P can fly. **Follows.**

Check Conclusion II: “Some birds are penguins.”

Statement II says All P $\subseteq$ B. By particular conversion: if All P are B, then Some B are P. **Follows.**

Check Conclusion III: “All penguins are birds.”

This is a direct restatement of Statement II. **Follows.**

Check Conclusion IV: “No bird is a penguin.”

This contradicts Statement II (penguins are birds). **Does NOT follow.**

Answer: Conclusions I, II, and III all follow.

Why other options are wrong:

(A) Only I and III: misses Conclusion II which validly follows by conversion.

(B) Only II: Conclusions I and III also follow from the statements.

(C) Only I: Conclusions II and III are equally valid.

Answer: (D) [Go Back to Q20](#)



Answer Key

Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	A	2	B	3	C	4	D	5	A
6	B	7	C	8	D	9	A	10	B
11	C	12	D	13	A	14	B	15	C
16	D	17	A	18	B	19	C	20	D

