TALLENTEX Sample Paper – 5

Subject: Mental Ability | Total Questions: 20 | Marks: 60

Instructions

1. This paper contains **20 questions** carrying **3 marks** each.
2. Each question has **four options**; choose the most appropriate one.
3. There is **no negative marking**.
4. Write your answers in the space provided on the answer sheet.
5. Use of calculators or electronic devices is **not permitted**.

Mental Ability — Questions

Q1. What is the next number in the series?

$$2,\ 5,\ 10,\ 17,\ 26,\ ?$$

(A) 37
(B) 34
(C) 39
(D) 35

Q2. What is the next number in the series?

$$2,\ 6,\ 18,\ 54,\ ?$$

(A) 108
(B) 162
(C) 144
(D) 180

Q3. What is the next letter in the series?

$$A,\ E,\ I,\ O,\ ?$$

(A) V
(B) T
(C) U

(D) W

Q4. Choose the word that best completes the analogy.

Bread : Wheat :: Paper : ?

(A) Jute
(B) Cotton
(C) Silk
(D) Wood

Q5. Using the same rule, find the missing value.

$$3 \to 10, \qquad 5 \to 26, \qquad 4 \to \ ?$$

(A) 17
(B) 15
(C) 20
(D) 18

Q6. In a certain code, each letter is replaced by its reverse-alphabet counterpart (A $\leftrightarrow$ Z, B $\leftrightarrow$ Y, C $\leftrightarrow$ X, ...). How is **DEAR** coded?

(A) WZVI
(B) WVZI
(C) YVXI
(D) WXZI

Q7. In a certain code, **FLOW** is written as **WOLF**. Using the same rule, how is **STAR** written?

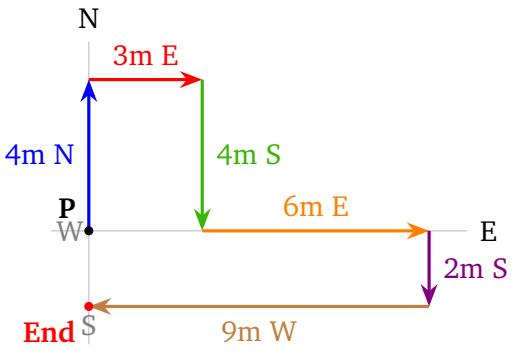
(A) TSAR
(B) ARTS
(C) RATS
(D) TARS

Q8. Mohan's mother's brother's son is Rahul. How is Rahul related to Mohan?

(A) Uncle

(B) Nephew
(C) Brother
(D) Cousin

Q9. Anil starts from point P. He walks 4 m North, then 3 m East, then 4 m South, then 6 m East, then 2 m South, and finally 9 m West. In which direction is he now from point P?



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

Q10. A person initially faces **East**. He first turns 90° anti-clockwise, then turns 180° clockwise. In which direction is he now facing?

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

Q11. Which of the following does **NOT** belong to the group?

Gold Silver Sulphur Copper

(A) Gold
(B) Silver
(C) Sulphur
(D) Copper

Q12. Which number does **NOT** belong to the group?

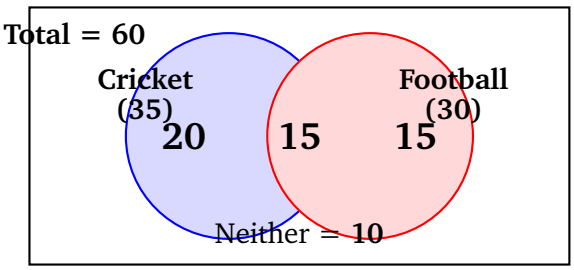
$$16, \quad 25, \quad 36, \quad 48, \quad 64$$

(A) 25
(B) 36
(C) 16
(D) 48

Q13. In a row of 30 students, Priya is 8th from the left. Sita is 5 places to the right of Priya. What is Sita's rank from the **right end** of the row?

(A) 18
(B) 17
(C) 19
(D) 16

Q14. In a class of 60 students, 35 like Cricket, 30 like Football, and 15 like **both** sports. How many students like **neither** sport?

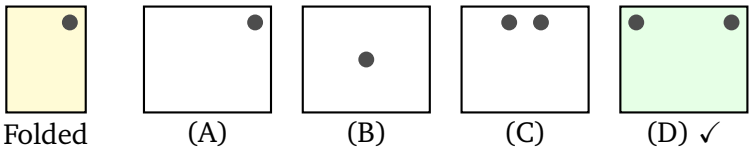


(A) 15
(B) 10
(C) 5
(D) 12

Q15. If $a \bigstar b = a^2 + b$, find the value of $4 \bigstar 3$.

(A) 17
(B) 21
(C) 19
(D) 23

Q16. A square sheet of paper is folded **once** along its vertical centre line (left half folds onto right half). A circular hole is punched at the **top-right corner** of the folded paper. When the paper is unfolded, which option shows the correct positions of the holes?



(A) Option A
(B) Option B
(C) Option C
(D) Option D

Q17. In the box below, both rows follow the same multiplication rule. Find the missing number (**?**).

6	4
8	**?**

(A) 3
(B) 6
(C) 4
(D) 2

Q18. Study the pattern in the matrix below and find the missing number (**?**).

2	3	4
3	5	7
4	7	**?**

(A) 8

(B) 10
(C) 12
(D) 9

Q19. Four friends A, B, C, and D are wearing shirts of different colours: **red, blue, green,** and **yellow**.

- B wears green.
- C and D do **not** wear yellow.
- A does **not** wear red or blue.

What colour does **A** wear?

(A) Red
(B) Blue
(C) Yellow
(D) Green

Q20. Statements:

I. No bird is a reptile.
II. All snakes are reptiles.

Conclusions:

I. No snake is a bird.
II. Some reptiles are snakes.
III. All birds are reptiles.
IV. Some birds are snakes.

Which conclusions **follow**?

(A) Only I
(B) Only II
(C) Both I and III
(D) Both I and II

Detailed Solutions

Q1.

Solution

Topic: Number Series (successive odd differences)

Write out the differences between consecutive terms:

$$2,\ 5,\ 10,\ 17,\ 26,\ \ldots$$

$$\underbrace{+3},\ \underbrace{+5},\ \underbrace{+7},\ \underbrace{+9}$$

The differences form the sequence of consecutive odd numbers: 3, 5, 7, 9, ...

The next difference is $+\mathbf{11}$, so the next term is $26 + 11 = \mathbf{37}$.

Answer: (A) Go Back to Q1

Q2.

Solution

Topic: Number Series (geometric ratio $\times 3$)

Each term is obtained by multiplying the previous term by **3**:

$$2 \xrightarrow{\times 3} 6 \xrightarrow{\times 3} 18 \xrightarrow{\times 3} 54 \xrightarrow{\times 3} \mathbf{162}$$

Therefore, the next term is $54 \times 3 = \mathbf{162}$.

Answer: (B) Go Back to Q2

Q3.

Solution

Topic: Letter Series (vowels in alphabetical order)

The series consists of the five English vowels listed in order:

$$A,\ E,\ I,\ O,\ \mathbf{U}$$

The missing letter is the fifth vowel: **U**.

Answer: (C) Go Back to Q3

Solution

Topic: Word Analogy (product – raw material)

The relationship is: *a product is made from its raw material*.

Q4.

- Bread is made from **Wheat**.
- Paper is made from **Wood** (wood pulp).

Therefore, the answer is **Wood**.

Answer: (D) Go Back to Q4

Q5.

Solution

Topic: Number Analogy (rule: $n^2 + 1$)

Identify the rule from the given pairs:

$$3 \to 3^2 + 1 = 9 + 1 = 10 \checkmark$$
$$5 \to 5^2 + 1 = 25 + 1 = 26 \checkmark$$

Applying the same rule for $n = 4$:

$$4 \to 4^2 + 1 = 16 + 1 = \mathbf{17}$$

Answer: (A) Go Back to Q5

Solution

Topic: Coding-Decoding (reverse-alphabet substitution)

In reverse-alphabet coding, each letter at position p maps to position $27 - p$ (i.e. A↔Z, B↔Y, C↔X, ...):

Q6.

Letter	Position	Coded position ($27 - p$)	Code
D	4	23	W
E	5	22	V
A	1	26	Z
R	18	9	I

Therefore, **DEAR** is coded as **WVZI**.

Answer: (B) Go Back to Q6

Q7.

Solution

Topic: Coding-Decoding (word reversal)

The coding rule is simply to **reverse** the letters of the word:

$$\text{FLOW} \rightarrow \text{WOLF}$$

Applying the same rule to **STAR**:

$$S\text{-}T\text{-}A\text{-}R \xrightarrow{\text{reverse}} R\text{-}A\text{-}T\text{-}S = \textbf{RATS}$$

Answer: (C) Go Back to Q7

Solution

Topic: Blood Relations

Q8. Trace the relationship step by step:

- Mohan's **mother's brother** = Mohan's **maternal uncle**.
- Maternal uncle's **son** = Mohan's **cousin**.

Therefore, Rahul is Mohan's **Cousin**.

Answer: (D) Go Back to Q8

Solution

Topic: Direction Sense (6-step path)

Q9. Track Anil's coordinates starting from P = (0, 0):

Step	Direction	Distance	Position
Start	–	–	(0, 0)
1	North	4 m	(0, 4)
2	East	3 m	(3, 4)
3	South	4 m	(3, 0)
4	East	6 m	(9, 0)
5	South	2 m	(9, -2)
6	West	9 m	(0, -2)

Final position: $(0, -2)$. Start: $(0, 0)$.

The x-coordinates are equal (both 0), and the final y-coordinate (-2) is *less than* the start (0), so Anil is directly **South** of P.

Answer: (A) Go Back to Q9

Solution

Topic: Direction Sense (turns)

Follow the turns in sequence:

Q10. (a) Initial facing: **East**.
(b) Turn 90° **anti-clockwise**: East $\rightarrow$ **North**.
(c) Turn 180° **clockwise**: North $\rightarrow$ **South**.

Final direction: **South**.

Answer: (B) Go Back to Q10

Solution

Topic: Classification (odd one out – non-metal)

Classify each element:

Q11.
- **Gold** – metal ✓
- **Silver** – metal ✓
- **Sulphur** – *non-metal* $\times$
- **Copper** – metal ✓

Gold, Silver, and Copper are all **metals**. **Sulphur** is a **non-metal** and does not belong to the group.

Answer: (C) Go Back to Q11

Solution

Topic: Classification (not a perfect square)

Check each number:

Q12.
- $16 = 4^2$ ✓
- $25 = 5^2$ ✓
- $36 = 6^2$ ✓
- 48: $\sqrt{48} \approx 6.93$ – *not* a perfect square $\times$
- $64 = 8^2$ ✓

48 is the only number that is **not** a perfect square.

Answer: (D) Go Back to Q12

Solution

Topic: Ranking

Q13. (a) Priya's position from the left = **8**.

(b) Sita is 5 places to the *right* of Priya, so Sita's position from the left = $8 + 5 =$ **13**.

(c) Rank from the right = Total students − Position from left $+1 = 30 - 13 + 1 =$ **18**.

Sita's rank from the right end is **18**.

Answer: (A) Go Back to Q13

Solution

Topic: Venn Diagram (set union and complement)

Use the inclusion-exclusion principle:

$$n(\text{Cricket} \cup \text{Football}) = n(\text{Cricket}) + n(\text{Football}) - n(\text{Both})$$

$$= 35 + 30 - 15 = \mathbf{50}$$

Students liking **neither** sport:

$$60 - 50 = \mathbf{10}$$

Verification of regions:

Q14.
- Cricket only: $35 - 15 = 20$
- Football only: $30 - 15 = 15$
- Both: 15
- Neither: 10
- Total: $20 + 15 + 15 + 10 = 60$ ✓

Answer: (B) Go Back to Q14

Solution

Topic: Mathematical Operations (custom operator)

The operator is defined as $a \bigstar b = a^2 + b$.

$$4 \bigstar 3 = 4^2 + 3 = 16 + 3 = \mathbf{19}$$

Verification with other values:

Q15.

- $3 \bigstar 4 = 9 + 4 = 13$
- $2 \bigstar 5 = 4 + 5 = 9$

The answer is **19.**

Answer: (C) Go Back to Q15

Solution

Topic: Paper Folding

When the square sheet is folded along its **vertical centre line** (left half onto right), a hole punched at the top-right corner of the *folded* paper passes through **two layers**.

After unfolding:

Q16.

- The original hole remains at the **top-right** corner.
- Its mirror image appears at the **top-left** corner (reflected across the fold line).

Therefore, the unfolded sheet shows **two symmetric holes** – one at the top-left and one at the top-right. This matches **Option D**.

Answer: (D) Go Back to Q16

Solution

Topic: Missing Number in Box Grid (row multiplication rule)

Both rows must yield the same **product**:

Q17.

- Row 1: $6 \times 4 = \mathbf{24}$
- Row 2: $8 \times ? = 24 \implies ? = \dfrac{24}{8} = \mathbf{3}$

The missing number is **3.**

Answer: (A) Go Back to Q17

Solution

Topic: Pattern Matrix (3×3)

The rule is: element at row r, column c equals $(r \times c) + 1$.

Q18.

	Col 1	Col 2	Col 3
Row 1	$1 \times 1 + 1 = 2$	$1 \times 2 + 1 = 3$	$1 \times 3 + 1 = 4$
Row 2	$2 \times 1 + 1 = 3$	$2 \times 2 + 1 = 5$	$2 \times 3 + 1 = 7$
Row 3	$3 \times 1 + 1 = 4$	$3 \times 2 + 1 = 7$	$3 \times 3 + 1 = \mathbf{10}$

The missing number (Row 3, Col 3) is $3 \times 3 + 1 = \mathbf{10}$.

Answer: (B) Go Back to Q18

Solution

Topic: Logical Puzzle (deduction)

Start with the given clues:

Q19.

(a) B wears **green** $\Rightarrow$ Green is taken by B.

(b) C and D do **not** wear yellow $\Rightarrow$ Yellow must be worn by A or B. Since B wears green, **A wears yellow**.

(c) A does not wear red or blue – consistent, since A wears yellow ✓.

Remaining colours for C and D are **red** and **blue** (in some order).

Therefore, **A wears Yellow**.

Answer: (C) Go Back to Q19

Solution

Topic: Syllogism

Statements:

Q20.

I. No bird is a reptile.

II. All snakes are reptiles.

Analysis of each conclusion:

- **Conclusion I – No snake is a bird:** All snakes are reptiles (II) + No bird is a reptile (I) $\Rightarrow$ No snake can be a bird. **Follows.** ✓
- **Conclusion II – Some reptiles are snakes:** "All snakes are reptiles" logically implies "Some reptiles are snakes" (conversion of universal affirmative). **Follows.** ✓
- **Conclusion III – All birds are reptiles:** Directly contradicts Statement I ("No bird is a reptile"). **Does not follow.** $\times$
- **Conclusion IV – Some birds are snakes:** Contradicts both statements. **Does not follow.** $\times$

Both Conclusion I and Conclusion II follow.

Answer: (D) Go Back to Q20

Answer Key

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