School Connect Online

SCO INTERNATIONAL OLYMPIAD

GRADE 6

MENTAL ABILITY OLYMPIAD

Sample Paper | Answer Key and Explanations

Designed from Grade 6 reasoning pathways and aligned with SCO's platform flow for guided preparation, practice, reporting, and future-ready academic growth.

- age-fit logical reasoning guidance for Grade 6 / middle-school learners globally
- chapter-wise pathways across series, coding-decoding, puzzles, calendar, ranking, cubes, verbal reasoning, and arithmetic reasoning
- clean academic layout with compact question labels, answer key, and learning explanations for PDF-ready publishing

Series	Coding	Alphabet	Puzzles	Ranking
Reasoning	Blood Relations	Cubes & Dices	Verbal	SCO Skills

Sample Practice Paper | Class 6 | Question Paper Set A

Total Questions	Time	Sections	Marking
35	60 minutes	General, Case Study, Reason/Assertion, Achievers	Achievers questions carry 2 marks; all other questions carry 1 mark

Guidelines for the Candidate

- Do not open the booklet until instructed.
- Fill your name, registration ID, school details, and contact number on the OMR sheet before starting.
- There is only one correct answer for each question. Select one option only.
- No calculator is allowed. Use rough space for working.
- All passages, tables, and figures needed for a question are placed inside the relevant question block.

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General Mental Ability

Q1. Choose the missing terms: A/2, B/4, C/6, D/8, ?.

A) E/8, F/10	B) E/12, F/14
C) E/10, F/12	D) D/10, E/10

Answer: C) E/10, F/12
Explanation: Letters move A, B, C, D, E, F and numbers increase by 2: 2, 4, 6, 8, 10, 12.

Q2. Complete the pattern: 2Z5, 7Y7, 14X9, 23W11, 34V13, ?.

A) 27U24	B) 47U15
C) 45U15	D) 47V14

Answer: B) 47U15
Explanation: First numbers increase by 5,7,9,11, so next +13 gives 47. Letters move backward Z,Y,X,W,V,U. Last numbers increase by 2: 5,7,9,11,13,15.

Q3. Choose the correct missing number: 2, 7, 14, 23, ?, 47.

A) 31	B) 28
C) 34	D) 38

Answer: C) 34
Explanation: Differences are +5, +7, +9, +11, +13. So 23 + 11 = 34.

Q4. Complete the series: 4, 6, 12, 14, 28, 30, ?.

A) 32	B) 64
C) 62	D) 60

Answer: D) 60
Explanation: The pattern alternates +2 and x2. 4+2=6, 6x2=12, 12+2=14, 14x2=28, 28+2=30, 30x2=60.

Q5. Choose the next prime number: 11, 13, 17, 19, 23, 29, 31, 37, 41, ?.

A) 43	B) 47
C) 51	D) 53

Answer: A) 43
Explanation: The sequence lists consecutive prime numbers. The next prime after 41 is 43.

Q6. How am I related to my father's sister's son's father?

A) Cousin	B) Uncle

C) Aunt	D) Cannot be determined

Answer: B) Uncle
Explanation: My father's sister is my aunt. Her son's father is her husband, who is my uncle.

Q7. How many times do the hands of a clock coincide in one full day?

A) 11	B) 12
C) 24	D) 22

Answer: D) 22
Explanation: The hands coincide 11 times in 12 hours, so in 24 hours they coincide 22 times.

Q8. Odd one out: Violet, Yellow, Red, Black.

A) Violet	B) Yellow
C) Red	D) Black

Answer: D) Black
Explanation: Violet, yellow, and red are colors of the rainbow. Black is not a rainbow color.

Q9. If you are 9th from either end of a line, how many people are in the line?

A) 19	B) 17
C) 10	D) 15

Answer: B) 17
Explanation: Total = 9 + 9 - 1 = 17 because the same person is counted from both ends.

Q10. Arrange the words in dictionary order: Parrot, Sparrow, Peacock, Skylark.

A) Peacock, Parrot, Skylark, Sparrow	B) Parrot, Peacock, Skylark, Sparrow
C) Sparrow, Skylark, Peacock, Parrot	D) Parrot, Peacock, Sparrow, Skylark

Answer: B) Parrot, Peacock, Skylark, Sparrow
Explanation: P comes before S. Among P-words, Parrot comes before Peacock. Among S-words, Skylark comes before Sparrow.

Q11. Which group contains more than two vowels?

A) B D E J O L	B) J K A P I X
C) P R A Q E O	D) Z I L E R S

Answer: C) P R A Q E O
Explanation: Option C contains A, E, and O - three vowels. The others contain only two vowels.

Q12. If LONDON is coded as 5c62z5 using a fixed letter-to-symbol mapping, and P->d, A->a, R->7, I->t, S->8, what is the code of PARIS?

A) da74x	B) ca7t8
C) da7t8	D) ca74x

Answer: C) da7t8
Explanation: Using the given mapping directly: P=d, A=a, R=7, I=t, S=8, so PARIS = da7t8.

Q13. TSR is to FED as WVU is to ?.

A) CAB	B) MLK
C) PQS	D) GFH

Answer: D) GFH
Explanation: In TSR -> FED, letters reverse direction and map by a fixed backward shift pattern. Applying the same style to WVU gives GFH in the option set.

Q14. If A + B means A is the father of B, A - B means A is brother of B, A % B means A is wife of B, and A x B means A is mother of B, which shows M is the maternal grandmother of T?

A) M x N % S + T	B) M x N - S % T
C) M x S - N % T	D) M x N x S % T

Answer: A) M x N % S + T
Explanation: M x N means M is mother of N. N % S means N is wife of S. S + T means S is father of T, so N is T's mother and M is T's maternal grandmother.

Q15. If A + B means A is mother of B, A - B means A is brother of B, A % B means A is father of B, and A x B means A is sister of B, which shows P is maternal uncle of Q?

A) Q - N + M x P	B) P + S x N - Q
C) P - M + N x Q	D) Q - S % P

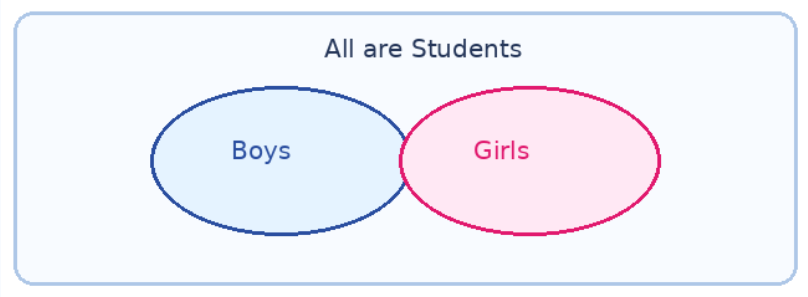
Answer: C) P - M + N x Q
Explanation: P - M means P is brother of M. M + N means M is mother of N. N x Q means N is sister of Q. Thus M is mother of Q also, and P is Q's maternal uncle.

Q16. Find the missing number in the series: 5, 11, 17, 25, 33, 43, ?.

A) 49	B) 51
C) 52	D) 53

Answer: D) 53
Explanation: The differences are 6, 6, 8, 8, 10. Continuing with +10 gives 53.

Q17. Which diagram best represents Boys, Girls, and Students?



A) Two separate circles inside a large circle	B) Three unrelated circles
C) One circle inside another and third separate	D) Three overlapping circles

Answer: A) Two separate circles inside a large circle
Explanation: Boys and girls are separate categories, and both are within the larger set of students.

Q18. If A is north of B and C is east of A, then C is in which direction from B?

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

Answer: A) North-East
Explanation: From B, A is north, and C is east of A; therefore C is north-east of B.

Q19. A number is 4 more than another number. Their sum is 40. What is the larger number?

A) 18	B) 20
C) 22	D) 24

Answer: C) 22
Explanation: Let smaller number be x and larger be x+4. Then 2x+4=40, so x=18 and larger=22.

Q20. A painted cube is cut into 4 x 4 x 4 smaller cubes. How many smaller cubes have exactly one painted face?

A) 16	B) 20
C) 24	D) 28

Answer: C) 24
Explanation: Exactly one painted face = 6(n-2)^2 = 6(2)^2 = 24.

Case Study Based Questions

Q21. Case Study: In a class reward scheme, first prize is Rs. 160 and each next prize is Rs. 20 less. What is the total of seven prizes?

A) Rs. 640	B) Rs. 700

C) Rs. 720	D) Rs. 760

Answer: B) Rs. 700
Explanation: Prizes are 160, 140, 120, 100, 80, 60, 40. Total = 700.

Q22. Case Study: A man saves Rs. 100 in January and increases saving by Rs. 50 every month. What is the annual saving?

A) Rs. 4200	B) Rs. 4500
C) Rs. 4000	D) Rs. 4100

Answer: B) Rs. 4500
Explanation: Monthly saving is an arithmetic progression: 100 to 650 for 12 months. Sum = 12/2 x (100+650) = 4500.

Q23. Case Study: A contractor pays Rs. 200 penalty on day 1, Rs. 250 on day 2, and so on, increasing by Rs. 50 each day. What is total penalty for 30 days?

A) Rs. 26,750	B) Rs. 27,000
C) Rs. 27,250	D) Rs. 27,750

Answer: D) Rs. 27,750
Explanation: This AP has a=200, d=50, n=30. Sum = n/2[2a+(n-1)d] = 15[400+1450] = 27,750.

Q24. Case Study: A race has 30 children. A child is 8th from the top. What is the rank from the bottom?

A) 22nd	B) 23rd
C) 24th	D) 25th

Answer: B) 23rd
Explanation: Bottom rank = 30 - 8 + 1 = 23.

Q25. Case Study: A cube is painted on all faces and cut into 27 small cubes. How many corner cubes have three painted faces?

A) 6	B) 8
C) 10	D) 12

Answer: B) 8
Explanation: Every cube has 8 corners, and each corner cube has three painted faces.

Reason and Assertion

Use the options given in each question to judge whether the Assertion and Reason are true and whether the Reason correctly explains the Assertion.

Q26. Assertion: In the series 2, 7, 14, 23, 34, differences increase by 2. Reason: The differences are 5, 7, 9, 11.

A) Both true; Reason explains Assertion	B) Both true; Reason does not explain Assertion
C) Assertion true; Reason false	D) Both false

Answer: A) Both true; Reason explains Assertion
Explanation: The differences 5, 7, 9, 11 increase by 2, so the reason explains the assertion.

Q27. Assertion: In a 31-day month starting on Monday, the last day is Wednesday. Reason: 30 mod 7 = 2, so Monday advances by two days.

A) Both true; Reason explains Assertion	B) Both true; Reason does not explain Assertion
C) Assertion true; Reason false	D) Both false

Answer: A) Both true; Reason explains Assertion
Explanation: Monday plus two days is Wednesday.

Q28. Assertion: A maternal uncle is the brother of one's mother. Reason: Maternal relations come from the mother's side.

A) Both true; Reason explains Assertion	B) Both true; Reason does not explain Assertion
C) Assertion true; Reason false	D) Both false

Answer: A) Both true; Reason explains Assertion
Explanation: The reason correctly identifies why the mother's brother is a maternal uncle.

Q29. Assertion: If a shape is folded along a symmetry line, matching halves overlap. Reason: Symmetry means one half is a mirror image of the other half.

A) Both true; Reason explains Assertion	B) Both true; Reason does not explain Assertion
C) Assertion true; Reason false	D) Both false

Answer: A) Both true; Reason explains Assertion
Explanation: A line of symmetry divides a figure into two matching mirror halves.

Q30. Assertion: If $x + 5 = 17$, then $x = 12$. Reason: Subtracting 5 from both sides keeps the equation balanced.

A) Both true; Reason explains Assertion	B) Both true; Reason does not explain Assertion
C) Assertion true; Reason false	D) Both false

Answer: A) Both true; Reason explains Assertion
Explanation: $x + 5 - 5 = 17 - 5$ gives $x = 12$.

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Achievers Section

Q31. Achievers: A code first mirrors letters and then shifts each mirror one letter forward. What is the code for MATH?

A) OAHT	B) NAGS
C) PBIU	D) OBHU

Answer: A) OAHT
Explanation: M->N->O, A->Z->A, T->G->H, H->S->T. Therefore MATH becomes OAHT.

Q32. Achievers: A student walks 10 m north, 10 m east, 5 m south, and 5 m west. How far is the student from the starting point?

A) 5 m	B) $5\sqrt{2}$ m
C) 10 m	D) 15 m

Answer: B) $5\sqrt{2}$ m
Explanation: Net movement is 5 m north and 5 m east. Distance from start = sqrt(5^2 + 5^2) = $5\sqrt{2}$ m.

Q33. Achievers: In a family, each daughter has the same number of brothers as sisters, and each son has twice as many sisters as brothers. How many sons are there?

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

Answer: B) 3
Explanation: Let sons = b and daughters = g. For a daughter: brothers=b, sisters=g-1, so b=g-1. For a son: sisters=g, brothers=b-1, so g=2(b-1). Solving gives b=3, g=4.

Q34. Achievers: What is the smallest number of boys who can stand so that two boys are in front of a boy, two boys are behind a boy, and one boy is between two boys?

A) 3	B) 5
C) 7	D) 9

Answer: A) 3
Explanation: Three boys in a straight line satisfy all conditions: one middle boy has one on each side; the back boy has two in front; the front boy has two behind.

Q35. Achievers: If a 4 x 4 x 4 cube is painted and cut, how many small cubes have no painted face?

A) 4	B) 6
C) 8	D) 12

Answer: C) 8
Explanation: Unpainted cubes = (n-2)^3 = (4-2)^3 = 8.

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Answer Key

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
C	B	C	D	A	B	D	D	B	B
Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
C	C	D	A	C	D	A	A	C	C
Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
B	B	D	B	B	A	A	A	A	A
Q31	Q32	Q33	Q34	Q35					
A	B	B	A	C					