

# Class 9 · Science Olympiad

|                       |                   |                    |                          |
|-----------------------|-------------------|--------------------|--------------------------|
| Total questions<br>50 | Total marks<br>60 | Time<br>60 minutes | Negative marking<br>None |
|-----------------------|-------------------|--------------------|--------------------------|

Each question has four options, of which only one is correct. Mark your answer on the answer sheet. The Achievers Section carries higher marks per question. The answer key with full solutions is at the end of this paper.

This is original practice material written to the Level 1 pattern. It is not a past paper and is not affiliated with SOF or any official olympiad body.

## Logical Reasoning

10 questions · 1 mark each · 10 marks

Q1. Arun walks 10 m north, then 4 m east, then 9 m south. Where is Arun now, relative to the starting point?

- (A) 1 m north and 5 m east                      (B) 1 m north and 4 m east  
(C) 2 m north and 4 m east                      (D) 10 m north and 4 m east

Q2. Five friends A, B, C, D and E sit in a row of five seats. A sits at the extreme left end, D sits at the extreme right end, C sits exactly in the middle and B sits between A and C. Who sits in the fourth seat from the left?

- (A) C                      (B) E                      (C) D                      (D) B

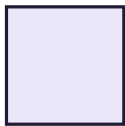
Q3. Pen : Write :: Knife : \_\_\_\_

- (A) Run                      (B) Sing                      (C) Cut                      (D) Sleep

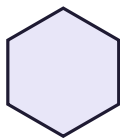
Q4. 10 : 100 :: 6 : \_\_\_\_

- (A) 49                      (B) 12                      (C) 36                      (D) 25

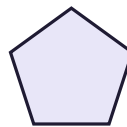
Q5. Which of these figures has exactly 5 lines of symmetry?



(A)



(B)



(C)



(D)

Q6. Kabir walks 4 m towards north, turns right and walks 3 m, then turns right again and walks 4 m. How far is Kabir from the starting point, and in which direction?

- (A) 3 m, East                      (B) 7 m, North                      (C) 3 m, West                      (D) 4 m, East

Q7. A father is 16 years older than his son. The son is 14 years old now. How old will the father be after 6 years?

- (A) 42 years                      (B) 30 years                      (C) 36 years                      (D) 37 years

Q8. In a row of 30 children, Tara is 9th from the left end. What is Tara's position from the right end?

- (A) 21th                      (B) 23th                      (C) 24th                      (D) 22th

Q9. In the first row the numbers are 6, 3 and 21. In the second row they are 8, 5 and 43. In the third row they are 9, 8 and \_\_\_\_ . The same rule applies to every row.

- (A) 77 (B) 74 (C) 75 (D) 76

Q10. If the 12th of a month is a Monday, what day of the week is the 28th of the same month?

- (A) Thursday (B) Friday (C) Wednesday (D) Tuesday

## Science

35 questions · 1 mark each · 35 marks

Q11. Which mirror is used as a rear-view mirror in vehicles?

- (A) A plane mirror (B) A cylindrical lens  
(C) A convex mirror (D) A concave mirror

Q12. How many planets are there in our solar system?

- (A) Nine (B) Seven (C) Eight (D) Ten

Q13. What is the pH value of a neutral solution?

- (A) 14 (B) 7 (C) 0 (D) 10

Q14. Which gas do plants take in during photosynthesis?

- (A) Carbon dioxide (B) Oxygen  
(C) Hydrogen (D) Nitrogen

Q15. What is the SI unit of energy?

- (A) Newton (B) Joule (C) Pascal (D) Ampere

Q16. Deficiency of which vitamin causes scurvy?

- (A) Vitamin C (B) Vitamin A (C) Vitamin B12 (D) Vitamin D

Q17. What is the chemical symbol for gold?

- (A) Go (B) Au (C) Ag (D) Gd

Q18. Which planet is nearest to the Sun?

- (A) Mercury (B) Venus (C) Mars (D) Earth

Q19. What is the function of the root hairs of a plant?

- (A) To make food (B) To hold the flower  
(C) To store sunlight (D) To absorb water and minerals

Q20. Which of these is a non-biodegradable waste?

- (A) Vegetable peel (B) Paper  
(C) Cotton cloth (D) Plastic bag

Q21. Which part of the plant carries water from the roots to the leaves?

- (A) The stomata (B) The phloem (C) The xylem (D) The cuticle

Q22. What is the basic unit of life?

- (A) The atom (B) The cell (C) The tissue (D) The organ

- Q23. What causes the change of seasons on the Earth?
- (A) The Moon blocking the Sun (B) The tilt of the Earth as it orbits the Sun  
(C) Changes in the Sun's size (D) The Earth moving closer to the Sun
- Q24. Common salt is chemically known as:
- (A) Calcium carbonate (B) Potassium nitrate  
(C) Sodium bicarbonate (D) Sodium chloride
- Q25. What is the chemical symbol for sodium?
- (A) So (B) Na (C) S (D) Sd
- Q26. Which planet is known as the Red Planet?
- (A) Jupiter (B) Venus (C) Saturn (D) Mars
- Q27. What is the SI unit of power?
- (A) Watt (B) Joule (C) Volt (D) Newton
- Q28. At what temperature does water boil at normal pressure?
- (A) 212°C (B) 0°C (C) 50°C (D) 100°C
- Q29. What is the SI unit of electric current?
- (A) Volt (B) Ohm (C) Ampere (D) Watt
- Q30. Which is the smallest particle of an element that can take part in a reaction?
- (A) Crystal (B) Cell (C) Atom (D) Molecule
- Q31. Which layer of the atmosphere protects us from harmful ultraviolet rays?
- (A) The troposphere (B) The exosphere  
(C) The magnetosphere (D) The ozone layer
- Q32. How many bones does an adult human body have?
- (A) 206 (B) 212 (C) 300 (D) 201
- Q33. Which blood group is called the universal donor?
- (A) O negative (B) A positive (C) AB positive (D) B negative
- Q34. Which part of the cell controls its activities?
- (A) The vacuole (B) The cytoplasm  
(C) The cell wall (D) The nucleus
- Q35. Through which tiny pores do leaves exchange gases?
- (A) Roots (B) Veins (C) Petals (D) Stomata
- Q36. What is the process of water changing into vapour called?
- (A) Freezing (B) Condensation (C) Melting (D) Evaporation

Q37. An eclipse of the Sun happens when:

- (A) The Earth comes between the Sun and the Moon
- (C) The Earth stops rotating

- (B) The Moon comes between the Earth and the Sun
- (D) The Sun comes between the Earth and the Moon

Q38. Which blood cells help fight infection?

- (A) Platelets
- (C) Plasma

- (B) Red blood cells
- (D) White blood cells

Q39. Loss of water vapour from the leaves of a plant is called:

- (A) Germination
- (C) Respiration

- (B) Condensation
- (D) Transpiration

Q40. Which vitamin do we get from sunlight?

- (A) Vitamin D
- (B) Vitamin C
- (C) Vitamin K
- (D) Vitamin A

Q41. Which gas do living things release during respiration?

- (A) Oxygen
- (C) Nitrogen

- (B) Carbon dioxide
- (D) Hydrogen

Q42. Green colour in leaves is due to which pigment?

- (A) Chlorophyll
- (B) Melanin
- (C) Haemoglobin
- (D) Carotene

Q43. What is the normal body temperature of a healthy human?

- (A) About 25°C
- (B) About 42°C
- (C) About 30°C
- (D) About 37°C

Q44. How long does the Earth take to complete one rotation on its axis?

- (A) 365 days
- (B) 24 hours
- (C) 12 hours
- (D) 30 days

Q45. An echo is caused by:

- (A) Absorption of sound
- (C) Dispersion of sound

- (B) Refraction of sound
- (D) Reflection of sound

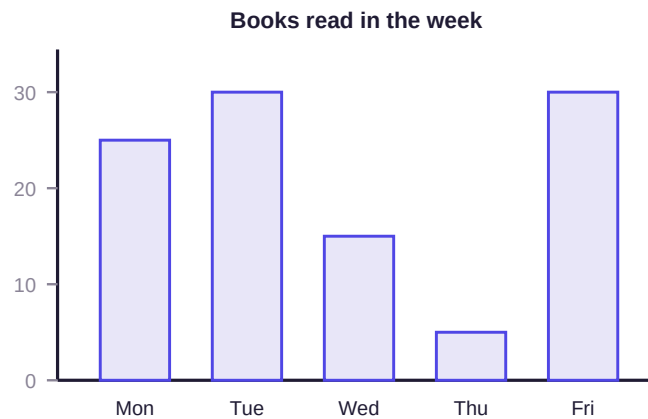
### Achievers Section

5 questions · 3 marks each · 15 marks

Q46. How many numbers between 40 and 65 leave a remainder of 6 when divided by 8?

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

Q47. The bar graph shows the number of books read by a class on each day of one week. How many books were read in the whole week?



- (A) 110                      (B) 105                      (C) 115                      (D) 100

Q48. A website address begins with https:// instead of http://. What does the extra "s" mean?

- (A) The connection is secure and encrypted                      (B) The site is in English  
(C) The site is free                      (D) The site is faster

Q49. If FISH is coded as KNXM, how is MILK coded?

- (A) WSVU                      (B) RNQP                      (C) HDGF                      (D) PQNR

Q50. 10 taps together fill a tank in 45 minutes. How long will 6 taps of the same kind take to fill it?

- (A) 45 minutes                      (B) 78 minutes                      (C) 72 minutes                      (D) 75 minutes

## Answer Key

|          |          |          |          |          |          |          |          |          |          |
|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| 1        | 2        | 3        | 4        | 5        | 6        | 7        | 8        | 9        | 10       |
| <b>B</b> | <b>B</b> | <b>C</b> | <b>C</b> | <b>C</b> | <b>A</b> | <b>C</b> | <b>D</b> | <b>C</b> | <b>C</b> |
| 11       | 12       | 13       | 14       | 15       | 16       | 17       | 18       | 19       | 20       |
| <b>C</b> | <b>C</b> | <b>B</b> | <b>A</b> | <b>B</b> | <b>A</b> | <b>B</b> | <b>A</b> | <b>D</b> | <b>D</b> |
| 21       | 22       | 23       | 24       | 25       | 26       | 27       | 28       | 29       | 30       |
| <b>C</b> | <b>B</b> | <b>B</b> | <b>D</b> | <b>B</b> | <b>D</b> | <b>A</b> | <b>D</b> | <b>C</b> | <b>C</b> |
| 31       | 32       | 33       | 34       | 35       | 36       | 37       | 38       | 39       | 40       |
| <b>D</b> | <b>A</b> | <b>A</b> | <b>D</b> | <b>D</b> | <b>D</b> | <b>B</b> | <b>D</b> | <b>D</b> | <b>A</b> |
| 41       | 42       | 43       | 44       | 45       | 46       | 47       | 48       | 49       | 50       |
| <b>B</b> | <b>A</b> | <b>D</b> | <b>B</b> | <b>D</b> | <b>C</b> | <b>B</b> | <b>A</b> | <b>B</b> | <b>D</b> |

## Solutions

Q1. (B) The 9 m south cancels part of the 10 m north, leaving  $10 - 9 = 1$  m north, and the 4 m east is unchanged. So Arun is 1 m north and 4 m east.

Q2. (B) Seat 1 = A, seat 3 = C, seat 5 = D. B must be between A and C, so B takes seat 2, and the only friend left for seat 4 is E.

Q3. (C) The second word relates to the first in the same way Cut relates to Knife.

- Q4. (C) The second number is the first multiplied by itself:  $10 \times 10 = 100$ , so  $6 \times 6 = 36$ .
- Q5. (C) Counting lines of symmetry: square has 4, regular hexagon has 6, regular pentagon has 5, rectangle has 2. The answer is figure (C).
- Q6. (A) The two 4 m walks (north, then south) cancel out, leaving only the 3 m walked towards the east. So the answer is 3 m, East.
- Q7. (C) The father is  $14 + 16 = 30$  now, so after 6 years he will be  $30 + 6 = 36$  years.
- Q8. (D) Position from the right = total - position from the left + 1 =  $30 - 9 + 1 = 22$ th.
- Q9. (C) The rule is: multiply the two numbers, then add 3. Check: 6, 3 gives 21 and 8, 5 gives 43; so 9, 8 gives 75.
- Q10. (C) 16 days later is 2 week(s) and 2 day(s), so the day moves 2 place(s) on from Monday to Wednesday.
- Q11. (C) A convex mirror gives a wider field of view, so it is used as a rear-view mirror.
- Q12. (C) There are eight planets, from Mercury to Neptune.
- Q13. (B) Pure water is neutral with a pH of 7.
- Q14. (A) Plants take in carbon dioxide and release oxygen during photosynthesis.
- Q15. (B) Energy and work are measured in joules (J).
- Q16. (A) Scurvy is caused by a lack of vitamin C, found in citrus fruits and amla.
- Q17. (B) Gold has the symbol Au, from the Latin aurum.
- Q18. (A) Mercury is the closest planet to the Sun.
- Q19. (D) Root hairs greatly increase the surface for absorbing water and minerals. The answer is To absorb water and minerals.
- Q20. (D) Plastic does not rot away naturally, so it is non-biodegradable. The answer is Plastic bag.
- Q21. (C) Xylem tissue carries water upwards; phloem carries food. The answer is The xylem.
- Q22. (B) Every living thing is made of cells, the basic unit of life. The answer is The cell.
- Q23. (B) The Earth's axis is tilted, so different parts get more direct sunlight at different times of the year. The answer is The tilt of the Earth as it orbits the Sun.
- Q24. (D) Common salt is sodium chloride, NaCl.
- Q25. (B) Sodium has the symbol Na, from the Latin natrium.
- Q26. (D) Mars looks red because of the iron oxide dust on its surface.
- Q27. (A) Power is the rate of doing work, measured in watts.
- Q28. (D) Water boils at  $100^{\circ}\text{C}$  at normal atmospheric pressure.
- Q29. (C) Electric current is measured in amperes (A).
- Q30. (C) An atom is the smallest particle of an element that takes part in a chemical change.
- Q31. (D) The ozone layer absorbs most of the Sun's harmful ultraviolet radiation.
- Q32. (A) An adult skeleton has 206 bones; a baby is born with about 300, which later fuse.
- Q33. (A) O negative blood can be given to almost anyone, so it is the universal donor.
- Q34. (D) The nucleus is the control centre of the cell.
- Q35. (D) Stomata are small openings on the leaf surface for gas exchange.
- Q36. (D) Evaporation is liquid water turning into vapour; condensation is the reverse.
- Q37. (B) In a solar eclipse the Moon passes between the Earth and the Sun and blocks its light. The answer is The Moon comes between the Earth and the Sun.
- Q38. (D) White blood cells defend the body against germs.
- Q39. (D) Transpiration is the loss of water vapour through the stomata.
- Q40. (A) Our skin makes vitamin D when sunlight falls on it; it helps build strong bones.
- Q41. (B) Respiration uses oxygen and releases carbon dioxide.
- Q42. (A) Chlorophyll gives leaves their green colour and traps sunlight for photosynthesis.

Q43. (D) Normal human body temperature is about  $37^{\circ}\text{C}$  ( $98.6^{\circ}\text{F}$ ).

Q44. (B) One rotation takes about 24 hours and gives us day and night.

Q45. (D) Sound bouncing back off a surface produces an echo. The answer is Reflection of sound.

Q46. (C) The numbers are 46, 54, 62 — 3 of them.

Q47. (B)  $25 + 30 + 15 + 5 + 30 = 105$  books.

Q48. (A) The "s" stands for secure: the data sent to the site is encrypted. The answer is The connection is secure and encrypted.

Q49. (B) Every letter moves 5 place(s) forward, so MILK becomes RNQP.

Q50. (D) One tap alone would take  $10 \times 45 = 450$  minutes. With 6 taps the time is  $450 / 6 = 75$  minutes.

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