



PRACTICE TEST · CLASSES 3 TO 5

Science Olympiad Practice Test for Classes 3 to 5

Twenty-five questions in the three sections of the SOF Science Olympiad (ISO, called NSO until 2026): logical reasoning, science, and the achievers section. Take it here and check your answers, or print it.

Science Olympiad

Primary

01 Before you start

Time – 30 minutes, with a clock in view

Marks – 1 mark for each question in Sections 1 and 2 and 2 marks in the Achievers section: 29 marks in all

Wrong answers – no marks are taken off, so answer every question

The real paper – the SOF ISO has 35 questions for 40 marks for Classes 3 and 4, and 50 questions for 60 marks from Class 5, in 60 minutes

02 Logical reasoning

1 mark each

- 1 What comes next? A, C, E, G, ____
(A) H (B) I (C) J (D) K
- 2 Which one does not belong?
(A) Eagle (B) Sparrow (C) Parrot (D) Bat
- 3 If ROSE is written as 6821 and CHAIR as 73456, how is SEARCH written?
(A) 214673 (B) 214763 (C) 216473 (D) 124673
- 4 Seema faces north and turns left. Which way is she facing now?
(A) East (B) South (C) West (D) North
- 5 Six children sit in a row. Aman is third from the left. What is his place from the right?
(A) 3rd (B) 4th (C) 5th (D) 2nd

03 Science

1 mark each

- 6 Which part of a plant makes its food?
(A) Root (B) Leaf (C) Stem (D) Flower

- 7 Which gas do plants take in to make food?
(A) Oxygen (B) Nitrogen
(C) Carbon dioxide (D) Hydrogen
- 8 Which of these animals is a mammal?
(A) Whale (B) Shark
(C) Crocodile (D) Penguin
- 9 Water turning into ice is called:
(A) melting (B) evaporation
(C) condensation (D) freezing
- 10 Which of these gives out its own light?
(A) The Moon (B) A mirror
(C) The Sun (D) A diamond
- 11 Which organ pumps blood around the body?
(A) Lungs (B) Brain (C) Kidney (D) Heart
- 12 Which of these does a magnet attract?
(A) An iron nail (B) A plastic spoon
(C) A wooden stick (D) A rubber band
- 13 Which planet is closest to the Sun?
(A) Venus (B) Mercury (C) Earth (D) Mars
- 14 Which of these is non-living?
(A) A seed (B) A mushroom
(C) A stone (D) A snail
- 15 Which teeth are used for cutting food?
(A) Molars (B) Canines
(C) Premolars (D) Incisors
- 16 Which of these lets electricity pass through it easily?
(A) Copper wire (B) Glass
(C) Rubber (D) Dry wood

17 Where do frogs lay their eggs?

- (A) In sand
- (B) In water
- (C) In trees
- (D) In nests

18 Which vitamin does our skin make in sunlight?

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

19 The force that pulls things towards the Earth is:

- (A) friction
- (B) magnetism
- (C) a push
- (D) gravity

20 Which of these animals eats only plants?

- (A) Cow
- (B) Lion
- (C) Eagle
- (D) Frog

21 What does a thermometer measure?

- (A) Weight
- (B) Temperature
- (C) Length
- (D) Time

04 Achievers section

2 marks each

22 Why does ice float on water?

- (A) It is colder than water
- (B) It has no weight
- (C) It is less dense than water
- (D) It is lighter in colour

23 Why do we see lightning before we hear thunder?

- (A) Thunder happens later
- (B) Sound travels faster than light
- (C) Our eyes are closer to the sky
- (D) Light travels faster than sound

24 A plant kept in a dark cupboard for a week turns pale and weak. Why?

- (A) It cannot make food without sunlight
- (B) It got too much water
- (C) It has no roots
- (D) The cupboard is too warm

25 Which statement is true?

- (A) The Moon makes its own light
- (B) The Earth goes round the Sun once a year
- (C) The Sun goes round the Earth once a day
- (D) Stars are closer to us than the Moon

Answers and explanations

- 1 **B** Skip one letter each time: A (b) C (d) E (f) G (h) I.
- 2 **D** A bat is a mammal. The eagle, sparrow and parrot are birds.
- 3 **A** From the two words: S = 2, E = 1, A = 4, R = 6, C = 7 and H = 3.
- 4 **C** A left turn from north faces west.
- 5 **B** Place from the right = $6 - 3 + 1 = 4$ th.
- 6 **B** Leaves make food by photosynthesis, using sunlight, water and carbon dioxide.
- 7 **C** Plants take in carbon dioxide from the air and give out oxygen.
- 8 **A** Whales breathe air and feed their young on milk. A shark is a fish, a crocodile a reptile and a penguin a bird.
- 9 **D** A liquid turning into a solid is freezing.
- 10 **C** The Sun makes its own light. The Moon, mirrors and diamonds only reflect light.
- 11 **D** The heart is a muscle that pumps blood all around the body.
- 12 **A** Magnets attract iron and steel, not plastic, wood or rubber.
- 13 **B** The order from the Sun is Mercury, Venus, Earth, Mars.
- 14 **C** A stone does not grow, eat or reproduce. A seed is alive, waiting to grow.
- 15 **D** Incisors, at the front, cut. Canines tear, and premolars and molars grind.
- 16 **A** Metals such as copper are good conductors. Glass, rubber and dry wood are insulators.
- 17 **B** Frogs lay their eggs in water, where the tadpoles hatch and grow.
- 18 **C** Sunlight on the skin helps the body make vitamin D, which keeps bones strong.
- 19 **D** Gravity pulls everything towards the Earth; that is why things fall.
- 20 **A** A cow is a herbivore. Lions and eagles eat meat, and frogs eat insects.
- 21 **B** A thermometer measures how hot or cold something is.
- 22 **C** Water expands when it freezes, so ice is less dense than water and floats.
- 23 **D** Both happen together, but light reaches us almost at once while sound takes about 3 seconds to travel 1 km.
- 24 **A** Plants need sunlight to make food and to stay green.
- 25 **B** The Earth goes round the Sun once a year and spins once a day; the Moon only reflects sunlight.

How to use this test

- 1 Learn science words with a picture: draw the plant, the eye or the circuit.
- 2 Ask why for every answer: Olympiad questions test reasons, not just facts.
- 3 Practise the logical reasoning section too: it is worth easy marks.

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PRACTICE TEST · CLASSES 6 TO 8

Science Olympiad Practice Test for Classes 6 to 8

Twenty-five questions in the three sections of the SOF Science Olympiad (ISO, called NSO until 2026), at Class 6 to 8 level: logical reasoning, physics, chemistry and biology, and the achievers section.

Science Olympiad

01 Before you start

Time – 30 minutes, with a clock in view

Marks – 1 mark for each question in Sections 1 and 2 and 3 marks in the Achievers section: 33 marks in all

Wrong answers – no marks are taken off, so answer every question

The real paper – the SOF ISO for Classes 5 to 12 has 50 questions for 60 marks in 60 minutes

02 Logical reasoning

1 mark each

- 1 Find the next number: 1, 1, 2, 3, 5, 8, ____
(A) 11 (B) 12 (C) 15 (D) 13
- 2 Find the odd one out.
(A) Mercury (B) Moon (C) Venus (D) Mars
- 3 If BRAIN is written as CSBJO, how is HEART written?
(A) IFBSU (B) GDZQS (C) IFBTU (D) HFBSU
- 4 A cube painted red on every face is cut into 27 equal small cubes. How many small cubes have exactly two red faces?
(A) 8 (B) 6 (C) 12 (D) 1
- 5 All metals conduct electricity. Copper is a metal. So:
(A) all conductors are metals
(B) copper is magnetic
(C) nothing can be concluded
(D) copper conducts electricity

03 Science

1 mark each

- 6 Which part of a cell controls its activities?
(A) Cell wall (B) Nucleus
(C) Cytoplasm (D) Vacuole

- 7 The chemical formula of common salt is:
(A) NaCl (B) KCl (C) Na₂CO₃ (D) NaOH
- 8 The SI unit of force is the:
(A) joule (B) watt (C) newton (D) pascal
- 9 Which of these is a chemical change?
(A) Melting ice (B) Dissolving sugar
(C) Breaking glass (D) Rusting iron
- 10 A neutral solution has a pH of:
(A) 7 (B) 0 (C) 10 (D) 14
- 11 Which blood cells fight infection?
(A) Red blood cells (B) White blood cells
(C) Platelets (D) Plasma
- 12 Sound cannot travel through:
(A) water (B) steel
(C) a vacuum (D) air
- 13 Which gas is given out during photosynthesis?
(A) Carbon dioxide (B) Nitrogen
(C) Methane (D) Oxygen
- 14 Which of these uses a concave mirror?
(A) A shaving mirror (B) A car's rear-view mirror
(C) A periscope (D) A dressing-table mirror
- 15 Which of these is a fossil fuel?
(A) Wood (B) Coal
(C) Biogas (D) Hydrogen
- 16 Which disease is caused by a virus?
(A) Typhoid (B) Cholera
(C) Chickenpox (D) Malaria

17 An object moves at 20 m/s. How far does it travel in 15 seconds?

- (A) 35 m (B) 150 m (C) 0.75 m (D) 300 m

18 Which part of the eye controls how much light enters it?

- (A) Iris (B) Retina (C) Lens (D) Cornea

19 Which of these is a mixture?

- (A) Water (B) Air (C) Salt (D) Oxygen

20 Liquid water slowly turning into vapour below its boiling point is called:

- (A) condensation (B) sublimation
(C) evaporation (D) boiling

21 Which organ makes insulin?

- (A) Liver (B) Stomach
(C) Kidney (D) Pancreas

04 Achievers section

3 marks each

22 Two identical bulbs are joined in series to a cell. If one bulb fuses, the other bulb:

- (A) goes off (B) glows brighter
(C) glows the same (D) glows dimmer

23 A ball is thrown straight up. At its highest point, its speed is:

- (A) the greatest (B) zero
(C) the same as at the start (D) half the starting speed

24 Why are the handles of cooking pans often made of plastic or wood?

- (A) They are cheaper
(B) They are good conductors of heat
(C) They are poor conductors of heat
(D) They are magnetic

25 When a candle burns, the change is:

- (A) only physical
(B) only chemical
(C) neither physical nor chemical
(D) both physical and chemical

Answers and explanations

- 1 **D** Each number is the sum of the two before it: $5 + 8 = 13$.
- 2 **B** Mercury, Venus and Mars are planets; the Moon is a satellite of the Earth.
- 3 **A** Each letter moves one step forward: $H \rightarrow I$, $E \rightarrow F$, $A \rightarrow B$, $R \rightarrow S$, $T \rightarrow U$.
- 4 **C** They are the middle cubes of the 12 edges. (8 corner cubes have three red faces.)
- 5 **D** Copper belongs to the group of metals, and every metal conducts electricity.
- 6 **B** The nucleus holds the genetic material and controls the cell.
- 7 **A** Common salt is sodium chloride. Na_2CO_3 is washing soda and NaOH is caustic soda.
- 8 **C** Force is measured in newtons. The joule is energy, the watt power and the pascal pressure.
- 9 **D** Rust is a new substance (iron oxide). The others change only the form or state.
- 10 **A** pH 7 is neutral; below 7 is acidic and above 7 is basic.
- 11 **B** White blood cells fight germs. Red cells carry oxygen and platelets help blood clot.
- 12 **C** Sound needs a medium to travel through, so it cannot cross a vacuum.
- 13 **D** Plants take in carbon dioxide and give out oxygen.
- 14 **A** A concave mirror gives a large image when you are close to it. Rear-view mirrors are convex; the others are plane mirrors.
- 15 **B** Coal formed over millions of years from buried plants.
- 16 **C** Typhoid and cholera are caused by bacteria, malaria by a protozoan, and chickenpox by a virus.
- 17 **D** Distance = speed $\times$ time = $20 \times 15 = 300$ m.
- 18 **A** The iris changes the size of the pupil.
- 19 **B** Air is a mixture of gases. Water and salt are compounds; oxygen is an element.
- 20 **C** Evaporation happens at the surface at any temperature; boiling happens throughout the liquid at the boiling point.
- 21 **D** The pancreas makes insulin, which controls the sugar in the blood.
- 22 **A** In series there is only one path for the current, so a broken bulb breaks the whole circuit.
- 23 **B** Gravity slows the ball until it stops for an instant at the top, then it falls.
- 24 **C** Plastic and wood are poor conductors of heat, so the handle stays cool enough to hold.
- 25 **D** The wax melts (a physical change) and the wax vapour burns to new substances (a chemical change).

How to use this test

- 1 For every wrong answer, find the chapter in your science book and read it again.
- 2 Learn units and formulas: speed, force, pressure, density.
- 3 Achievers questions mix two ideas: say what each one tells you before you answer.

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PRACTICE GUIDE · CLASSES 3 TO 8

Logical Reasoning for Olympiads: Rules and Practice

The logical reasoning section opens the SOF Maths and Science Olympiad papers, and school never teaches it. Here are the rules for each question type, then 15 practice questions with answers.

Maths Olympiad

Science Olympiad

Study skills

01 Number and letter series

Check the gaps – 3, 7, 11, 15 goes up by 4 each time

Look for multiplying – 2, 6, 18, 54 is $\times 3$ each time

Squares and cubes – 1, 4, 9, 16 are squares; 1, 8, 27, 64 are cubes

Gaps that grow – 2, 6, 12, 20 has gaps 4, 6, 8: the next gap is 10

Two series in one – 1, 10, 2, 20, 3, 30 alternates two patterns

Letters – number them A = 1 to Z = 26 and work with the numbers

Opposite letters – A and Z, B and Y: each pair adds up to 27

02 Coding and decoding

Shift codes – CAT → DBU moves every letter one step forward

Reverse codes – the word is written backwards, then the rule is applied

Number codes – letters become their positions: BAD → 2 1 4

Matching codes – find a letter that appears in two coded words to fix its code

Test your rule – check it on every letter you are given before answering

03 Directions

Draw it – sketch a compass with north at the top and east on the right

Turns – facing north, a right turn faces east and a left turn faces west

Two right turns – face the opposite way

Shadows – in the morning the Sun is in the east, so shadows fall to the west

Straight-line distance – if the walk makes a right angle, use Pythagoras: 3, 4, 5

04 Ranking and order

From the other end – position = total – position from this end + 1

Total in a row – position from the left + position from the right – 1

Comparisons – write the names in a line, tallest to shortest, as you read

05 Relations

Family tree – draw it: a line down for children, = for a married couple

Grandfather's only son – is the father

Mother's only son – is the speaker himself, if the speaker is a boy

Mother's brother – is the maternal uncle

06 Analogies and odd one out

Find the link first – worker and tool, animal and home, young one, opposite, part and whole

Odd one out – test groups such as fruit or vegetable, prime or not, bird or mammal

Check every option – the link must work for all the others, not just two

07 Clocks and calendars

Angle between the hands – $|30H - 5.5M|$ degrees at H hours and M minutes

Hands together – 11 times in 12 hours

Mirror image of a clock – 11:60 minus the time shown: 2:30 looks like 9:30

Odd days – an ordinary year moves the weekday on by 1, a leap year by 2

Leap years – divisible by 4; century years only if divisible by 400

08 Counting figures

Squares in an $n \times n$ grid – $1^2 + 2^2 + \dots + n^2$: 14 in a 3×3 grid

Triangles – count the small ones, then those made of two, three and more parts

Painted cube cut into $n \times n \times n$ – 8 cubes have three painted faces, $12(n - 2)$ have two, $6(n - 2)^2$ have one and $(n - 2)^3$ have none

Mirror images – left and right swap; water images :: top and bottom swap

09 Practice questions

1 mark each

- 1 Find the next number: 5, 11, 23, 47, ____
(A) 94 (B) 93 (C) 96 (D) 95
- 2 Find the next pair: AZ, BY, CX, ____
(A) DW (B) DV (C) EW (D) DX
- 3 If PEN is written as QFO, how is INK written?
(A) HMJ (B) JOL (C) JOK (D) KPM
- 4 Ravi faces south and turns right twice. Which way is he facing now?
(A) South (B) East (C) North (D) West
- 5 In a row of 25 children, Tina is 9th from the left. What is her position from the right?
(A) 16th (B) 18th (C) 15th (D) 17th
- 6 Kabir is 7th from the left and 12th from the right in a row. How many children are in the row?
(A) 18 (B) 19 (C) 17 (D) 20
- 7 Pointing to a girl, Arjun says, 'She is the daughter of my mother's only son.' How is the girl related to Arjun?
(A) Sister (B) Daughter
(C) Niece (D) Cousin
- 8 Book is to library as painting is to ____
(A) artist (B) brush (C) gallery (D) frame
- 9 Find the odd one out.
(A) 3 (B) 5 (C) 11 (D) 9
- 10 What is the angle between the hands of a clock at 4:00?
(A) 120° (B) 90° (C) 100° (D) 150°
- 11 A clock seen in a mirror shows 2:30. What is the real time?
(A) 10:30 (B) 9:30 (C) 8:30 (D) 2:30
- 12 3 March is a Friday. What day is 24 March of the same year?
(A) Thursday (B) Saturday
(C) Friday (D) Sunday
- 13 How many squares of any size are there in a 3×3 grid?
(A) 9 (B) 12 (C) 13 (D) 14
- 14 A $4 \times 4 \times 4$ cube painted on every face is cut into 64 small cubes. How many small cubes have no painted face?
(A) 8 (B) 16 (C) 24 (D) 4
- 15 Some cats are black. All black things are shiny. Which must be true?
(A) All cats are shiny.
(B) Some cats are shiny.
(C) No cat is shiny.
(D) All shiny things are cats.

Answers and explanations

- | | | | | | |
|---|---|---|----|---|--|
| 1 | D | Each term is double the one before, plus 1: $47 \times 2 + 1 = 95$. | 8 | C | Books are kept in a library; paintings are kept in a gallery. |
| 2 | A | The first letter goes forward from A and the second goes back from Z. | 9 | D | 3, 5 and 11 are prime numbers; $9 = 3 \times 3$. |
| 3 | B | Every letter moves one step forward: I $\rightarrow$ J, N $\rightarrow$ O, K $\rightarrow$ L. | 10 | A | Each hour mark is 30° apart: $4 \times 30^\circ = 120^\circ$. |
| 4 | C | South, turn right: west. Turn right again: north. | 11 | B | Subtract from 11:60: $11:60 - 2:30 = 9:30$. |
| 5 | D | $25 - 9 + 1 = 17$. | 12 | C | $24 - 3 = 21$ days, exactly 3 weeks, so it is also a Friday. |
| 6 | A | $7 + 12 - 1 = 18$: Kabir is counted twice otherwise. | 13 | D | 9 small squares, 4 squares of 2×2 and 1 of 3×3 : 14. |
| 7 | B | His mother's only son is Arjun himself, so the girl is his daughter. | 14 | A | The unpainted cubes form the inner $2 \times 2 \times 2$ block: 8. |
| | | | 15 | B | The black cats are black things, so they are shiny. Nothing is known about the other cats. |

How to use this guide

- 1 Always draw: a compass for directions, a line for ranks, a tree for relations.
- 2 Write the alphabet with its numbers (A = 1 to Z = 26) at the top of your rough sheet.
- 3 Do ten reasoning questions a day for a month before the Olympiad.

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