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Natural Sciences Olympiad
GRADE 8

DATE: 06 AUGUST 2026

TIME: 90 MINUTES

INSTRUCTIONS:

1. This booklet has 50 multiple-choice questions.
2. Each question is followed by answers marked A, B, C, and D. Only one answer is correct. Choose the correct answer and shade the corresponding circle on the answer sheet.

All working details must be done in the space provided.

Calculators are permitted.

Diagrams are not necessarily drawn to scale.

Each question carries one mark.

You have 90 minutes for the paper, which works out to an average of 1.8 minutes per question.

Read the questions carefully before answering.

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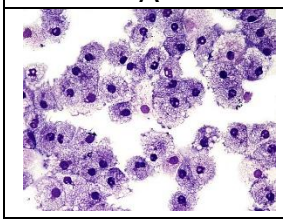
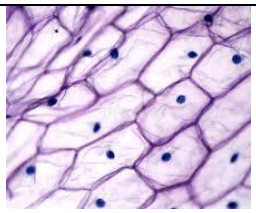
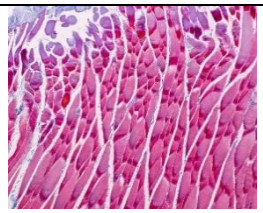
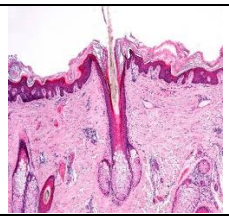
ENJOY THE OLYMPIAD.

Grade 8 NS Olympiad 2026

Various options are provided to answer the following questions. Choose the correct answer and indicate the correct answer by circling the correct letter on the answer sheet provided.E.g., 1.1.1 – A. (see guide)

1. A mystery cell is placed in a solution that inhibits the function of chloroplasts. Which of the following cells would most likely contain a chloroplast? (1)

A	B	C	D
			

2. During an investigation, a learner places a plant under a glass jar and notices water droplets forming inside. This happens because …

A the plant releases oxygen
B water evaporates from the soil
C water vapour is released from the leaves
D carbon dioxide condenses on the glass (1)

3. Identify the type of adaptation that is illustrated in the following picture: (1)

A Structural
B Behavioural
C Functional
D None of the above

4. Water hyacinth (*Eichhornia crassipes*), an aggressive aquatic weed in South Africa, originates from the Amazon Basin in South America; it was introduced to South Africa as an ornamental plant in the early 1900s (around 1908) and quickly spread in places like the Hartbeespoort dam, becoming a major invasive problem. What is the most likely impact?

A It increases oxygen levels in water
B It outcompetes native plants and reduces biodiversity
C It becomes food for most aquatic animals
D It improves water flow in rivers

(1)

5. Which statement about antibiotics is a common misconception?
A Antibiotics are effective against bacterial infections
B Antibiotics help the body fight infections
C Antibiotics can cure viral infections like colds and flu
D Antibiotics should be taken as prescribed (1)

6. Which food chain is correctly ordered?
A Grass → Cow → Lion
B Sun → Lion → Cow → Grass
C Cow → Grass → Lion
D Sun → Cow → Grass → Lion (1)

7. The documentary “Seaspiracy” has brought to light the impact overfishing has on the environment. Overfishing can result in …

A an increased fish population
B a balanced marine ecosystem
C a disruption of food webs and reduced fish stocks
D an improved coral reef growth (1)

8. Some plants close their leaves at night. This behaviour helps plants to …

A absorb more sunlight
B reduce water loss and damage
C increase respiration
D produce more chlorophyll. (1)

9. Influenza spreads mainly through …

A contaminated food
B insect bites
C air droplets from coughing and sneezing
D contact with dirty water (1)

10. During exercise, muscles require more energy. Why does heart rate increase?

A To slow down respiration
B To supply muscles with more oxygen and glucose
C To remove lactic acid from bones
D To cool the body only (1)

11. In the process of evaporation, what happens to the particles of a liquid?

A They lose energy and slow down
B They gain energy and move faster
C They stop moving
D They turn into solids (1)

12. Countries in the northern hemisphere add salt to their roads during winter. Why is the salt added?

A It increases friction only
B It raises the freezing point of water
C It lowers the freezing point of water
D It absorbs sunlight (1)

13. In a laboratory, a scientist breaks down a sample of carbon dioxide CO_2 into pure carbon and pure oxygen. Which statement correctly describes the result?

A The carbon and oxygen atoms will still smell and act like carbon dioxide gas.
B The chemical bonds were broken, resulting in two different elements with new properties.
C The mass of the carbon and oxygen atoms will be greater than the original gas.
D This was a physical change, so the molecules can be put back together by hand. (1)

14. Which scientist proposed the atomic model with electrons in fixed energy levels?

A Dalton
B Rutherford
C Bohr
D Thomson (1)

Study the following diagram and answer question 15 and 16 based on it.

15. What is the atomic number of oxygen?

A 8
B 16
C 24
D 18 (1)

16. How many neutrons are in an oxygen atom?

A 17
B 35
C 52
D 8 (1)

17. A learner is given four beakers. Which one contains a pure substance that cannot be separated into simpler substances by physical means (like filtering or evaporation)? (1)

A	B	C	D
Sea water	Distilled water	Tomato sauce	Bronze medallion

18. On Earth, we mostly experience solids, liquids, and gases. However, in the core of the Sun, atoms are stripped of their electrons due to extreme heat. Identify this state of matter and why it conducts electricity better than a gas:

A Solid; because the particles are packed tightly.
B Gas; because the particles move very fast.
C Plasma; because it contains free-moving charged ions and electrons.
D Liquid; because it flows to take the shape of the Sun. (1)

19. A glass filled with cold cooldrink looks like it is “sweating” on a hot day. This happens because …

A water leaks through the cup
B evaporation occurs
C water vapour in the air condenses
D ice melts inside the cup (1)

20. When designing bridges, engineers include expansion joints between sections of the road. Which of the following is the primary reason for adding these joints?

A Metal and concrete shrink when they get hot.
B Materials expand and contract as the temperature changes.
C The joints are needed to absorb vibrations from heavy traffic.
D The gaps allow rainwater to drain so it does not damage the concrete. (1)

21. Your school is celebrating "Black and White Day." You can choose to wear either a black shirt or a white shirt. Since the weather forecast predicts a very hot and sunny day, you decide to wear the white shirt.

Which of the following is the best scientific reason for your choice?

A White material absorbs more heat from the sun.
B White materials reflect most of the sunlight.
C White fabric traps more air to keep the body cool.
D White fabric increases the rate of evaporation of sweat. (1)

Use the following information to answer **question 22 and 23**.

While watching a documentary, you observe several penguins standing on a large block of ice floating in the ocean.

22. The ice block floats on the surface of the ocean because...

A air trapped inside the ice acts like a balloon to hold it up.
B it is a lighter color, and light colors stay colder than dark colors.
C it is less dense than the liquid water surrounding it.
D it is more dense than the liquid water surrounding it. (1)

23. A block of ice has a mass of 90 kg and a volume of 100 000 cm^3. To find the density in g/cm^3 you must first convert the mass to grams (90 000 g). What is the density?

A 0,9 g/cm^3
B 1,1 g/cm^3
C 9,0 g/cm^3
D 0,09 g/cm^3 (1)

24. A learner uses a syringe to model how lungs work. When they pull the plunger back, the volume inside the syringe increases. Which statement correctly explains the relationship between volume and gas pressure in this model?

A Increasing the volume gives gas particles more space, so they collide less often, which decreases the pressure.
B Increasing the volume crowds the gas particles together, so they collide more often, which increases the pressure.
C Decreasing the volume gives gas particles more space, which decreases the pressure.
D Changing the volume has no effect on pressure because the number of gas particles stays the same. (1)

25. Many metal shopping trolleys have a short metal chain that hangs from the frame and touches the ground. What is the primary purpose of this metal chain?

A To allow a build-up of static electricity to occur.
B To reduce friction so the trolley can move faster.
C To provide a path for static charge to flow into the ground.
D To act as a brake to prevent the trolley from rolling away. (1)

26. Which ONE of the following equipment can be used to identify if an object has a charge? (1)

A	B	C	D
Ammeter	Van de Graaff	Electroscope	Microscope

27. Which of the following is an input device?

A A printer
B Speaker
C Keyboard
D Monitor (computer screen) (1)

28. Which electrical effect does an electric kettle use to boil water?

A Heating effect
B Magnetic effect
C Lighting effect
D Chemical effect (1)

29. While building a simple electric circuit in class, you realize you have run out of copper connecting wire. Which of the following recycled materials could be used as an alternative to complete the circuit and allow the current to flow?

A A strip of aluminum from a soda can.
B The plastic outer layer of a chip packet.
C A plastic water bottle.
D A piece of rolled-up newspaper. (1)

30. Municipal engineers design street lighting systems using parallel circuits rather than series circuits. What is the most important advantage of using a parallel circuit for street lights?

A A parallel circuit increases the total resistance, which saves electricity.
B If one light bulb burns out, the rest of the street lights will remain on.
C In a parallel circuit, the current is divided, making the bulbs shine dimmer.
D If one light bulb burns out, all the other lights in the circuit will also go off. (1)

31. During the "Reversing Arrow" experiment, the arrows appear to flip direction when water is poured into the glass.

Draw two arrows on a piece of paper	Place the piece of paper behind a glass	Add water to the glass until the water level is in between the arrows	Observe

https://www.chegg.com/homework-help/questions-and-answers/shown-snapshots-called-reversing-arrow-illusion--steps-1-4-1-draw-two-left-pointingarrows-q26876181

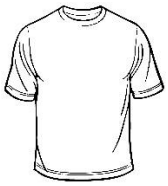
What is the scientific explanation for this focal reversal?

A The water acts as a mirror, reflecting the light backward.
B The cylindrical glass of water acts as a convex lens, converging light rays to a focal point before they reach the eye.
C The water absorbs the light, creating a shadow in the shape of an arrow.
D The glass increases the speed of light, causing the image to distort. (1)

32. A rainbow is a beautiful natural phenomenon that occurs when sunlight shines through raindrops in the atmosphere. Which of the following best describes the scientific process that creates the colours of a rainbow?

A The raindrops act as mirrors that reflect the white light without changing it.
B Sunlight is absorbed by the water droplets and then turned into heat energy.
C The raindrops act like tiny prisms, refracting and dispersing white light into its component colours.
D The colours are caused by pollution in the air that stains the water droplets. (1)

33. In a completely dark room with no windows, a learner places a diamond, a mirror, a glow-stick (activated), and a white shirt. Which object will be visible to the learner? (1)

A	B	C	D
			

34. You walk from a bright, sunny playground into a dark classroom. Your iris reacts immediately. Identify the reaction of the iris and its effect on the pupil:

A The iris shrinks the pupil to protect the retina.
B The iris makes the pupil wider (dilates) to allow more light to enter.
C The iris changes the shape of the lens to focus better.
D The iris becomes transparent to let light pass through the sclera. (1)

35. Short-sightedness (myopia) occurs when light rays focus in front of the retina instead of directly on it. How does a concave lens in a pair of glasses correct this vision problem?

A It converges (brings together) the light rays so they hit the lens earlier.
B It diverges (spreads out) the light rays before they enter the eye so the focal point moves back onto the retina.
C It increases the intensity of the light so the image appears brighter.
D It acts as a plane mirror to reflect the image more clearly. (1)

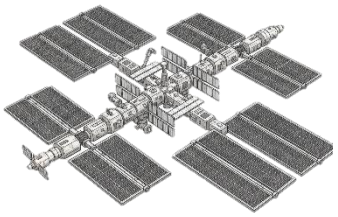
36. If a star located 10 light-years away from Earth suddenly explodes (goes Supernova) today, when will astronomers on Earth see the light from the explosion?

A Instantly, because light has no mass.
B In 10 minutes, because space is a vacuum.
C In 10 years, because the light must travel the distance at a finite speed.
D Never, because the light-year is a unit of time, not distance. (1)

37. To study the chemical composition of a star billions of kilometres away, which attachment for a telescope would be most useful?

A A high-powered magnifying lens to see the surface.
B A spectroscope to analyze the light spectrum emitted by the star.
C A periscope to look around cosmic dust clouds.
D A microscope to look at the star's atoms. (1)

38. Astronauts in the International Space Station (ISS) experience "weightlessness" because:

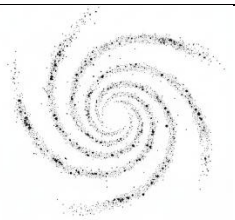
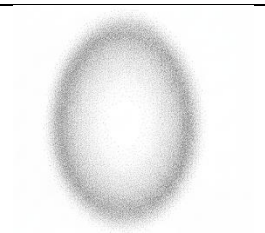


A There is no gravitational pull in space.
B The Earth's gravity at that height is zero.
C They are in a constant state of free-fall while orbiting Earth.
D Their mass decreases to zero once they leave the atmosphere. (1)

39. Solar flares are sudden eruptions of intense energy. Where does it originate from?

A Earth's magnetic core.
B Moon's volcanic plains.
C Sun's atmosphere.
D Asteroid belt between Mars and Jupiter. (1)

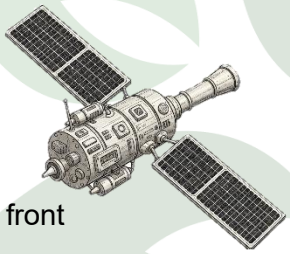
40. Which ONE of the following galaxies represents an elliptical galaxy? (1)

A	B	C	D
			

41. Which ONE of the following is the correct description for a meteorite:

A A streak of light caused by a rock burning up in the atmosphere.
B A fragment of rocky debris that survives the trip through the atmosphere and hits the ground.
C A ball of ice and dust with a glowing tail orbiting the Sun.
D A piece of a star that has broken off. (1)

42. The Pandora Space Mission uses a small satellite telescope to study stars and the planets orbiting them (exoplanets). What is the primary scientific goal of the Pandora telescope?



A To land on the surface of Mars and search for liquid water.
B To observe how the light from a star changes as a planet passes in front of it, helping scientists analyze the planet's atmosphere.
C To act as a mirror that reflects sunlight back to Earth to provide solar energy at night.
D To travel to the edge of the Milky Way galaxy and take photos of the "black hole" at the center. (1)

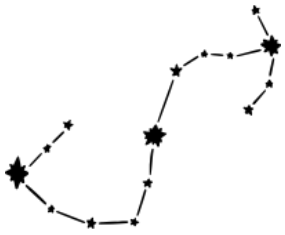
43. In many traditional African cultures, the appearance and position of the Milky Way and certain stars were historically used for:

A Seasonal changes and navigation.
B Predicting volcanic activity.
C Predicting the future
D Controlling the direction of ocean currents. (1)

44. Which of the following objects is located at the greatest distance from Earth?

A The Moon
B The Sun
C Neptune
D Proxima Centauri (1)

45. Identify the following constellation:



A Andromeda
B Scorpio
C Sirius
D Orion (1)

46. In ancient times, before clocks or modern calendars existed, why did civilizations like the Egyptians and Babylonians study the positions of the stars so closely?

A To predict the best time for farmers to plant and harvest their crops.
B To find out if there was life on other planets.
C To calculate how fast the Earth was spinning.
D To keep the night sky bright so they could see better. (1)

47. Light travels at a speed of approximately 300 000 km/s. If it takes light 10 minutes (600 seconds) to reach a certain point, how far has it traveled?

A 180 million km
B 300 million km
C 600 million km
D 60 million km (1)

48. In 2019, NASA astronauts Christina Koch and Jessica Meir made history by performing the first all-female spacewalk outside the International Space Station (ISS).

Which of the following best describes why spacewalks (Extravehicular Activities) are necessary for the mission of the ISS?

A To collect oxygen from the vacuum of space to bring back inside the station.
B To perform essential repairs and upgrades to the station's exterior systems, such as solar power controllers.
C To exercise their muscles because there is no gravity inside the station.
D To get a closer look at distant stars without the interference of the station's window. (1)

49. There are millions of pieces of "space junk" (orbital debris) circling Earth at speeds of up to 28,000 km/h. Even a tiny fleck of paint traveling at this speed can hit a satellite with the force of a bowling ball!

Which of the following describes the Kessler Syndrome, a major concern for scientists studying space debris?

A A rare disease that astronauts catch from being in space for too long.
B A chain reaction where collisions between objects create more debris, leading to even more collisions until space becomes unusable.
C The process where space junk falls into the atmosphere and creates "shooting stars."
D A special magnetic shield used to protect the International Space Station (ISS) from rocks. (1)

50. A textbook contains a list of facts about planets. Which of the following is an incorrect scientific statement that should be edited?

A Planets follow elliptical orbits around a central star.
B Jupiter is a "Gas Giant" and lacks a solid, walkable surface.
C Venus is bright in the night sky because it produces its own light through nuclear fusion.
D Mars appears red because of the iron oxide (rust) on its surface. (1)

TOTAL MARKS = 50