Instructions

Read each question carefully and answer in the space provided. This worksheet will help you recap important science concepts. Try to answer from memory first, and then use your notes if you get stuck. Good luck!

Chapter 5: Properties of Matter

5A: Properties of Evaporation

1. What is the definition of evaporation?
2. List two factors that can increase the speed (rate) of evaporation.
3. True or False: A liquid must be hot for evaporation to occur.
4. Why does spreading out wet clothes help them dry faster?
5. Fill in the blank: Evaporation is a change of state from a liquid to a _____.

5B: Boiling and Evaporation

1. What is the main difference between where boiling occurs in a liquid versus where evaporation occurs?
2. What is the boiling point of pure water at sea level?
3. Which process, boiling or evaporation, is a fast process that happens at a specific temperature?
4. Do bubbles form throughout the liquid during evaporation? (Yes/No)
5. Explain why you feel cold after swimming, even on a warm day, as the water dries on your skin.

Chapter 6: Physical and Chemical Changes

6A: Physical changes

1. What is a physical change?
2. Is melting an ice cube a physical or a chemical change? Explain your answer.
3. Give two examples of a physical change.
4. True or False: A physical change results in the formation of a new substance.
5. Chopping wood is a physical change, but what kind of change is burning wood?

6B: Dissolving

1. When you dissolve salt in water to make a saline solution, what is the **solute** and what is the **solvent**?
2. What is a solution called when it cannot dissolve any more solute?
3. Is dissolving a physical or chemical change?
4. Name one factor that can help a solid dissolve faster in a liquid.
5. What is the name for a substance that does not dissolve in a liquid?

6C: Chemical Reactions

1. What is the key feature of a chemical reaction (or chemical change)?
2. List two common signs that a chemical reaction has taken place.
3. What happens to the atoms in the reactants during a chemical reaction?
4. True or False: A chemical change, like baking a cake, is easily reversible.
5. When iron rusts, it combines with oxygen. What is the new substance called?

Chapter 7: Effects of Forces

7A: Mass, Weight, and Gravity

1. What is the difference between mass and weight?
2. What is the standard unit of measurement for mass? And for weight?
3. If you travelled to the Moon, would your mass change? Would your weight change? Explain.
4. What is the name of the force that causes weight?
5. An object has a mass of 10 kg on Earth. What is its approximate weight on Earth? (Take g = 10 N/kg)

7B: Forces in Action

1. Name a force that opposes the motion of objects.
2. What is the name for the upward force exerted by a fluid (like water or air) that opposes the weight of an object?
3. Forces can change an object's motion. Name two other things a force can do to an object.
4. True or False: If the forces acting on an object are balanced, the object must be stationary.
5. Why do racing cars have a streamlined shape?

Chapter 8: Movement of Light

8A: Reflection of Light

1. What does it mean when light is reflected?
2. The law of reflection states that the angle of incidence is equal to the angle of _____.
3. What is the difference between specular (regular) reflection and diffuse reflection?
4. Why does a mirror form a clear image while a piece of paper does not?
5. An image formed by a plane mirror is called a 'virtual' image. What does this mean?

8B: Refraction of Light

1. What is refraction of light?
2. Explain why a pencil placed in a glass of water appears to be bent.
3. True or False: Light travels at the same speed through all materials.
4. What piece of optical equipment is commonly used to split white light into the colours of the rainbow (a spectrum)?
5. When light passes from air into a denser medium like glass, does it bend towards or away from the normal?

Chapter 9: More About Electrical Circuits

9A: Circuit Symbols and Diagrams

1. Why do scientists use standard symbols in circuit diagrams?
2. What does a circle with a cross inside it represent in a circuit diagram?
3. What is the difference in the symbol for a single cell and a battery?
4. Draw the circuit symbol for an open switch. What does an open switch do to the circuit?
5. Draw the circuit symbol for a resistor. What is its function?

9B: Types of Circuit

1. What are the two main types of electrical circuits?
2. What happens to the other lamps in a series circuit if one lamp breaks? Why?
3. What happens to the other lamps in a parallel circuit if one lamp breaks? Why?
4. Which type of circuit is used for wiring lights in a house? Give one reason for this.
5. In a series circuit with two bulbs, will the bulbs be brighter or dimmer than a circuit with just one bulb (using the same battery)?

Chapter 10: More about Rocks

10A: Types of Rocks

1. Name the three main types of rock.
2. How are igneous rocks formed? Give one example.
3. Which type of rock is formed from compacted layers of sediment and may contain fossils?
4. How are metamorphic rocks formed?
5. Granite is an igneous rock. When it undergoes intense heat and pressure, it can turn into gneiss. What type of rock is gneiss?

10B: The Rock Cycle

1. What is the rock cycle?
2. What process breaks down rocks into smaller pieces called sediments?
3. What two processes are needed to change sediments into sedimentary rock?
4. How can an igneous rock become a metamorphic rock?
5. What happens to a metamorphic rock if it melts and then cools?

Chapter 11: Soil

11A: Types of Soil

1. Name three main types of soil based on particle size.
2. Which soil type has large particles, feels gritty, and allows water to drain through it easily?
3. Which soil type has very small particles and can become waterlogged?
4. What is loam and why is it considered the best type of soil for growing most plants?
5. If you rub a type of soil between your fingers and it feels smooth and silky, what type of soil is it likely to be?

11B: Soil Composition and Plant Growth

1. Besides mineral particles, list three other essential components of healthy soil.
2. What is humus and why is it important for soil fertility?
3. Why do plant roots need air pockets in the soil?
4. How do earthworms contribute to the health of the soil?
5. True or False: The pH of soil does not affect plant growth.

Answer Key

Chapter 5: Properties of Matter

5A: Properties of Evaporation

1. Evaporation is the process where a liquid changes into a gas at its surface.
2. Any two of: increased temperature, increased surface area, increased wind/airflow.
3. False. Evaporation happens at any temperature above freezing.
4. Spreading out clothes increases their surface area, which speeds up the rate of evaporation.
5. Gas

5B: Boiling and Evaporation

1. Evaporation happens only at the surface of the liquid, while boiling happens throughout the entire liquid.

2. 100 degrees Celsius (°C).
3. Boiling.
4. No.
5. The water on your skin evaporates. This process requires energy, which it takes from your skin as heat, making you feel cold.

Chapter 6: Physical and Chemical Changes

6A: Physical changes

1. A physical change is a change in the form or appearance of a substance, but not its chemical composition. No new substance is formed.
2. It is a physical change because the substance is still water (H_2O), just in a different state (liquid instead of solid). It can be easily reversed by freezing.
3. Any two of: melting, freezing, boiling, tearing paper, chopping wood, dissolving.
4. False.
5. A chemical change.

6B: Dissolving

1. The **solute** is the salt. The **solvent** is the water.
2. A saturated solution.
3. A physical change.
4. Any one of: stirring/agitating, heating the solvent, crushing the solute into smaller pieces.
5. Insoluble.

6C: Chemical Reactions

1. A new substance with different properties is formed.
2. Any two of: change in colour, production of a gas (bubbles), release of heat or light, formation of a precipitate (solid).
3. The atoms are rearranged to form new molecules.
4. False. Chemical changes are generally difficult to reverse.
5. Iron oxide.

Chapter 7: Effects of Forces

7A: Mass, Weight, and Gravity

1. Mass is the amount of matter in an object. Weight is the force of gravity acting on an object's mass.
2. Mass is measured in kilograms (kg). Weight is measured in Newtons (N).
3. Your mass would not change because it is the amount of matter you are made of. Your weight would change (it would be less) because the Moon's gravitational pull is weaker than Earth's.
4. Gravity.
5. Weight = mass × gravitational field strength (g). So, Weight = 10 kg × 10 N/kg = 100 N.

7B: Forces in Action

1. Friction or air resistance.
2. Upthrust.
3. Change its shape or change its direction of movement.
4. False. The object could also be moving at a constant velocity (not accelerating or decelerating).
5. To reduce air resistance (drag), allowing them to travel at higher speeds.

Chapter 8: Movement of Light

8A: Reflection of Light

1. It means light bounces off a surface.
2. Reflection.
3. Specular reflection is from a smooth surface (like a mirror), creating a clear image. Diffuse reflection is from a rough surface, scattering light in many directions.
4. A mirror has a very smooth surface causing specular reflection, while paper has a rough surface causing diffuse reflection.
5. It means the image appears to be behind the mirror, and light rays do not actually meet there. It cannot be projected onto a screen.

8B: Refraction of Light

1. Refraction is the bending of light as it passes from one medium to another (e.g., from air to water).
2. Light from the part of the pencil in the water travels from water to air before reaching your eyes. It changes speed and bends, making the pencil appear bent at the water's surface.
3. False. Light travels at different speeds in different media (it is fastest in a vacuum).
4. A prism.
5. It bends towards the normal.

Chapter 9: More About Electrical Circuits

9A: Circuit Symbols and Diagrams

1. To create a clear, universally understood representation of a circuit, no matter what language a person speaks.
2. A lamp or a bulb.
3. A single cell is represented by one long line and one shorter, thicker line. A battery is a collection of cells, represented by two or more of these symbols in series.
4. (Student should draw a line with a break in it, with a gate-like line angled up). An open switch breaks the circuit and stops the flow of current.
5. (Student should draw a rectangle). A resistor limits the flow of current in a circuit.

9B: Types of Circuit

1. Series circuits and parallel circuits.
2. All the other lamps go out because the break in the filament creates a gap in the single path, stopping the flow of current for the entire circuit.
3. The other lamps stay lit because the current has multiple paths to flow through. The other paths remain complete.
4. A parallel circuit. This ensures that if one light bulb fails, the others will continue to work, and each appliance receives the full voltage from the source.
5. Dimmer. The voltage from the battery is shared between the two bulbs.

Chapter 10: More about Rocks

10A: Types of Rocks

1. Igneous, Sedimentary, and Metamorphic.
2. Igneous rocks are formed from the cooling and solidification of molten rock (magma or lava). Examples include granite or basalt.
3. Sedimentary rock.
4. Metamorphic rocks are formed when existing rocks are changed by intense heat and pressure.

5. Metamorphic.

10B: The Rock Cycle

1. The rock cycle is the continuous process by which rocks are created, changed from one form to another, destroyed, and then formed again.
2. Weathering and erosion.
3. Compaction and cementation.
4. It must be subjected to intense heat and pressure deep within the Earth's crust.
5. It becomes molten rock (magma). If this magma then cools and solidifies, it will become an igneous rock.

Chapter 11: Soil

11A: Types of Soil

1. Sandy soil, clay soil, and silt soil.
2. Sandy soil.
3. Clay soil.
4. Loam is a soil that is a mixture of sand, silt, and clay. It is considered best for plants because it holds moisture well but also drains well, and is rich in nutrients.
5. Silt soil.

11B: Soil Composition and Plant Growth

1. Water, air, and organic matter (humus).
2. Humus is the dark, organic material in soil, formed from decomposed plants and animals. It is important because it provides nutrients for plants and helps the soil retain water.
3. For respiration. The roots need to take in oxygen to carry out their life processes.
4. They help to aerate the soil by burrowing, and they enrich the soil by breaking down organic matter and through their waste products.
5. False. The pH (acidity or alkalinity) of soil is a crucial factor that affects which nutrients are available to the plant.