



SMILETutor

EFFICIENT . EFFECTIVE . EASY

PSLE Science Keywords List

Physical Sciences

Matter

- Air has mass, can be compressed, does not have a definite volume, does not have a definite shape, takes up the shape of its container and takes up the volume of its container
- Liquids have mass, cannot be compressed, do not have definite volumes, do not have definite shapes and take up the shape of their containers
- Solids have mass, cannot be compressed, do not have definite volumes and do not have definite shapes
- Matter occupies space. The hole on the top of the bottle allowed air in the bottle to escape into the surroundings and the hole on the bottom of the bottle allowed water to fill the bottle. Thus, the water entered the bottle and displaced the air
- By containing the air within a plastic bag, the mass of the air can be measured
- Since the substance is a gas at 110°C, it is stored in a seal container to prevent it from escaping into the surrounding air

Diversity of Materials

- X has more strength than Y as it can withstand a greater force without breaking
- X is flexible but material Y is stiff
- Material X is buoyant but material Y heavy
- Material X is transparent, but material Y is opaque

Heat

- Material X is buoyant but material Y heavy
- Material X is transparent, but material Y is opaque
- (cooler object) gains heat from (warmer object)
- (warmer object) loses heat to (cooler object)
- (The feather traps air/There is air between the double layered glass/etc.) Air is a poor conductor of heat, so the rate of heat loss from the (warmer body) to the (cooler body) is slowed down, keeping the (warmer body) warmer for longer
- The pavement gained heat from the sun and expanded, but since it had no space to expand, it cracked
- The top of the pavement lost heat to the cold wind and contracted, while the bottom of the pavement gained heat from the warm soil and expanded. The uneven expansion and contraction caused the pavement to crack
- The inner layer of the glass is in direct contact with the hot water while the air trapped between the glass was a poor conductor of heat and slowed down heat gain of the outer layer of the glass from the hot water. Thus, the inner layer of the glass gained heat faster and expanded more than the outer layer of the glass and the uneven expansion of the glass caused it to crack

Water Cycle

- The cooler water droplets gained heat from the warmer (surroundings/surrounding air/etc.) and evaporated, forming warmer water droplets that rose, came into contact with the cooler (inner surface of the bottle/window/etc.) and condensed, forming water

droplets (that collected in the cup/that dripped down and collected in the bowl/etc.).

- Water vapour in the air condenses, not the air itself.
- Water evaporates, not the salt/dirt/etc. that may be mixed with it.
- The temperature of the air in the (bus/room/etc.) was cooled to the same temperature as the (window/lens/etc.). Since there was no temperature different, condensation did not occur, and no more water droplets were formed.
- The water droplets on (his body/the animal/etc.) gained heat from his body and evaporated, bringing away some of (the boy's/the animal's/etc.) body heat. With (more wind/lower humidity/etc.), the rate of evaporation increases, hence, the water droplets gained more heat from his body and evaporated quicker, bringing away more of (the boy's/animal's/etc.) body heat, making him feel colder.

Electricity

- The material is a good conductor of electricity.
- The material is a poor conductor/insulator of electricity.
- When (the switch was closed/etc.), the circuit was closed and current could flow through the circuit (lightning the bulb/turning the iron rod into an electromagnet/etc.).
- Since the (rubber eraser/paper/etc.) is a poor conductor of electricity, there was a gap in the circuit, meaning the circuit was open and current could not flow through it. Thus, the (bulb did not light up/alarm didn't sound/etc.).
- The bulb will be brighter if more batteries arranged in series were added to the circuit. More batteries in series mean a greater current, which in turn means a brighter bulb.
- The bulb will be dimmer if more bulbs arranged in series were added to the circuit. More bulbs in series means there is more resistance and less current reaches each bulb, so each bulb will be dimmer.
- (in a circuit with the bulbs arranged in parallel) The other bulbs will still light up, as the bulbs are arranged in series, meaning the current can travel along the alternative pathways to light the other bulbs.
 - In questions concerning parallel circuits, keep in mind the rule that the current flows through the path of least resistance.
- The wire is thinner in circuit A than circuit B, meaning there is more resistance in circuit A than circuit B and less current reaches each bulb, meaning the bulbs in circuit A are dimmer than those in circuit B

Magnets

- The like poles of the magnets were facing each other, thus the magnets repelled each other.
- The unlike poles of the magnets were facing each other, thus the magnets attracted each other.
- (Iron/steel/cobalt/nickel) is a magnetic material, so the (iron coin/steel sheet/etc.) was attracted to the magnet.
- He can use one pole of the bar magnet to stroke the iron rod multiple times in one direction, magnetically inducing the iron rod and making it a temporary magnet.

Light

- Light travels in a straight line and can be reflected.
- The opaque object does not allow light to pass through.
- The translucent object allows some light to pass through.
- The transparent object allows most of the light/all the light to pass through.
- A shadow is formed as light travels in a straight line and is blocked by the opaque/translucent object that does not allow light/allows only some light to pass through.
 - Move the torch further away from the objects to create a larger shadow.
 - Move the screen further away from the objects to create a larger shadow.
 - Move the objects towards the torch to create a larger shadow.

Forces

- The friction between (first surface) and (second surface).
- (Water/oil/etc.) acts as a lubricant, decreasing the amount of friction between (first surface) and (second surface) so the (block/car/etc.) needed less force to overcome the frictional force and travelled faster.
- Block A has a greater mass than block B, so more gravitational force acts on it and more force is needed to overcome the gravitational force. Thus, it is harder to push block A.
 - Gravitational force changes with mass, gravity changes with position on a solar system scale.

Energy

- Start energy chains with potential energy unless there are moving objects (in which case it would be kinetic energy) or with a powers socket (in which case it would be electrical energy but be sure not to mix this up with batteries).
- The object had kinetic energy as it was moving.
- When the (ball/water/etc.) is placed at a higher height, it has more gravitational potential energy that is converted to more kinetic energy when it falls (which is converted to more sound energy when it hits the bottom of the container/meaning the object hits the ground with more force and more impact/etc.).
- The object converted some of its kinetic energy into heat and sound energy.
 - The object lost some of its energy to the surroundings

Biological Sciences

Diversity of Living Things

- Living things need oxygen, water and food to survive. They can grow, reproduce, respond to changes and are able to move around by themselves.
- Classification of animals
 - Insects are cold-blooded invertebrates with hard outer coverings, three body parts and six legs. They breathe through breathing holes and they lay eggs.

- Fish are cold-blooded vertebrates with scales and fins. They breathe through gills and lay eggs.
- Birds are warm-blooded vertebrate with feathers, a beak, a pair of wings and two legs. They breathe with their lungs, lay eggs and look after their eggs till they hatch.
- Mammals are warm-blooded vertebrate with hair and two pairs of limbs. They breathe with their lungs, give birth to their young alive and suckle their young.
 - The platypus and spiny anteater lay eggs.
- Reptiles are cold-blooded vertebrate who have thick, waterproof, scaly skin. They breathe with their lungs, lay eggs with leathery shells and do not look after their young.
- Amphibians are cold-blooded vertebrate with moist skin. They breathe with their lungs on land and with moist skin in water. They lay their eggs in water and do not look after their young. The young do not look like the adults

Life Cycles

- Reproduction is important to ensure the continued survival of a species.
- You cannot infer the length of a life cycle based on the number of stages in it.
- The life cycle of a (butterfly/mealworm beetle/etc.) has four stages while the life cycle of (chicken/cockroach/etc.) only has three stages.
 - State the number of stages and not just say “while that of the (chicken/cockroach/etc.) does not”.
 - Mammals have two stages in their life cycles.
 - The young and adult stages
 - The frog, chicken, fish, grasshopper, cockroach and dragonfly have three stages in their life cycles.
 - The egg, nymph and adult stages for insects
 - The butterfly, mealworm beetle and mosquito have four stages in their life cycles.
 - The egg, larva, pupa and adult stages
 - The mass of insects does not change during the pupa stage as they do not eat anything.
 - Mosquito larvae go to the surface of the water and breathe through breathing tubes to obtain oxygen from the surrounding air for respiration. When oil is poured above the water, the oil floats on the water surface and the mosquitos can no longer take in oxygen for respiration, causing them to die.
- Both the life cycles of (the butterfly/the mosquito/etc.) have an egg stage.
- The young resemble the adults/do not resemble the adults.
- The young have wings/do not have wings while the adults do.

Plants

- The chloroplasts in the plant take in light to photosynthesize in order to make food. The food is transported to other parts of the plant via the food carrying tube and the excess food is then converted to and stored as starch.
 - The further the plant from the lamp, the lower the intensity of the light received by the plant and thus, there will be a lower rate of photosynthesis. As such, less food is made, and the plant takes in less water.
 - The floating plants on the surface of the water blocked sunlight from reaching the totally submerged plants. As the chloroplasts of the leaves of the totally submerged plants could not take in sunlight, it could not carry out photosynthesis to make food. As the totally submerged plants could not make food, they were unable to survive.
 - The plants converted some starch back into food, so they were still able to survive for a little time before they ran out of starch.
- The roots of the plant absorb water and mineral salts which are transported to other parts of the plant via the water carrying tubes and the roots also anchor the plant firmly into the soil.
 - Mineral salts \neq nutrients (use “mineral salts” when it comes to roots”)
 - The roots are the most widespread, the deepest and have the longest horizontal distance of root growth, meaning they can hold the soil together the best.
- The water taken in by the roots was transported upwards to the leaves via the water carrying tubes, where transpiration occurred so the water evaporated through the stomata and the plant lost water in the form of water vapour.
 - The plants transpired, losing water in the form of water vapour through its stomata, resulting in a decrease in mass.
 - The water vapour lost via the stomata of the plant during transpiration was contained within the plastic bag, so there was no change in mass.
- When there is light, the plants can photosynthesize and take in carbon dioxide released during respiration and release oxygen. When there is no light, plants cannot photosynthesize and instead take in the oxygen released during photosynthesis for respiration and release carbon dioxide.

Pollination

- The flower will not be able to bear fruits as by plucking off the stigma, the flower will not be able to receive pollen grains for pollination thus no fertilisation can take place.
- The anther produces pollen grains containing the male sex cells.
- The flower is insect pollinated as it has bright colours that attract insects and it has anthers and stigmas that are found inside the flower.
- The flower is wind pollinated as it has stigmas and anthers that hang out of the flower so that the pollen grains are carried to the stigmas by the wind and it has flowery stigmas to catch the pollen grains.

Seed Dispersal

- The fibrous husk helps trap air so the fruit can float in water. Thus, the water can carry the fruit and the seeds further away from the parent plant in the direction of the current.
- The wing-like structures helps the seed float in the air so the wind can carry the seeds further away from the parent plant in the direction of the wind.
- The juicy/fleshy/fragrant fruits attract animals and the hook-like structures help the fruits to attach to the animal's fur or skin so it will be carried by the animal away from the parent plant.
- The small seeds are swallowed by the animal, travels along the digestive track and is passed out after the animal is travelled and carried the seed further away from the parent plant.
- The pod-shaped fruits dry up and split along the line of weakness, dispersing the seeds away from the parent plant.
- The seeds are dispersed further away from the parent plant, so the young seedlings do not have to compete with an adult plant for water, nutrients, space, sunlight and oxygen.
 - Use each factor as necessary.

Circulatory System

- During exercise, the heart beats faster in order to pump more blood that is rich in oxygen and digested food to the muscles so the muscles can produce more energy and to pump more blood that is rich in carbon dioxide away from the muscles.
- The human's circulatory system is in two directions while the fish's circulatory system is in one direction.

Respiratory System

- The (lungs/gills/etc.) are where gaseous exchange occurs, so oxygen can enter the organism to keep cells alive and carbon dioxide waste can be taken out of the body.
- The (air sacs/gills/etc.) increases surface area for quicker gaseous exchange as there is quicker diffusion of oxygen and carbon dioxide across itself.
- The volume of air in an athlete's lungs during exercise changes more rapidly as the athlete requires more energy and thus more oxygen, meaning she has to breathe faster in order to breathe in more oxygen and breathe out more carbon dioxide.

Digestive System

- The tongue mixes chewed food with saliva, which is a type of digestive juice, making the food wet and easy to swallow.
- The teeth chew on the food and break them down into smaller pieces so that when it travels down the gullet to the stomach and small intestine, there is a larger exposed surface area to the digestive juices and the food can be digested at a faster rate.
- The stomach is where partially digested food is mixed with digestive juices to be broken down into simpler substances

- The small intestine is where digested food is absorbed, and the large intestine is where water is absorbed from the digested food.
 - Digestion is completed in the small intestine and no digestive juices are found in the large intestine.

Reproduction in Humans

- (in a question where the fallopian tubes are cut or blocked) No, the woman cannot get pregnant. The eggs produced by the ovaries cannot travel down the fallopian tube to fuse with the sperms, meaning that fertilisation cannot occur, and the woman will not be pregnant.
- (in a question where the uterus lining is scraped off) No, the woman cannot get pregnant. Since the uterus lining is scraped off, even if an egg fuses with a sperm, the fertilised egg will not have anywhere to stick to grow.

Cells

- The cell contains a nucleus that contains the genetic information necessary to produce more cells.
- The cell contains a nucleus that controls the growth and repairs injured parts of the cell.
- The cytoplasm allows only certain substances to move in and out of a cell.
- The extensions on the root hair cells increase the exposed surface area to the soil so the roots can take in more water for the plant.

Food Chains and Webs

- Organism A is the prey/predator of Organism B.
- (in a food chain where Organism A → Organism B → Organism C) If the population of Organism A decreases, Organism B will not have any food and its population will also decrease. Thus, Organism C also will not have any food and its population will decrease.
- (in a food chain where Organism A → Organism B → Organism C) If the population of Organism C decreases, Organism B will have less predators and thus its population will increase. This means that Organism A will have more predators and its population will decrease.
- (in a food web where Organism A → Organism B → Organism C and Organism A → Organism D → Organism C) Organism C will have the greatest amount of poison as it has two sources contaminated with poison, thus the poison will be transferred to Organism C and will accumulate.
- Detritivores feed on dead organic matter and break them down into smaller pieces, so decomposers can break them down into simpler substances during decomposition that can be returned to the soil for plants to take in.

Interactions

- The two animals have a parasitic/commensalistic/mutualistic relationship.
 - Always use the word “host” when describing parasitism and commensalism.

- Examples: ox and ox-pecker (mutualism), barnacles and whales (commensalism), ticks and cats (parasitism)
- Fungus is a living thing and requires warmth and moisture to grow well. Box A is warm and contains water, so fungus would first appear in box A
 - Dark is preferred but light is not a factor.
- There is oxygen, warmth and moisture which is needed for the mushrooms spores to germinate.
 - All three factors must be mentioned as all of them need to be present before the seed is able to germinate.
- There was more moisture/a higher temperature/a greater exposed surface area of the bread, meaning the rate of decomposition was faster and the piece of bread was decomposed faster and decreased in mass faster.
- The plants provide shelter and food for the animals to grow and reproduce. With the absence of predators, the populations of the animals increased rapidly.
 - Factors: Shelter, food, space and mates. Choose which factors to include in the answers based on the question.
- The animal protects itself from predators by hiding in its hard shell when it is not feeding, decreasing the chance of predators spotting them.
 - Do not use absolute terms in interactions questions.
- The animal attaches itself to ships instead of rocks as it can be carried to other places without using much energy. This means that the animal can reduce competition for food amongst the species and colonise new areas.
- The tiny green plants compete for oxygen and space with animal A.
 - Factors of competition: space, food, air, water, sunlight and mineral salts. Choose as per required by the question.

Adaptions

- Never use absolute terms when talking about adaptations.
- The trees in the town were light in colour, so the white moths can camouflage better with the trees and are less likely to be spotted by predators than the black moths, so it would survive better.
 - Camouflage ≠ Blend in
 - Decreased chance of being spotted/Less easily spotted ≠ Hide

Man and His Environment

- Burning fossil fuels/burning trees/etc.) produces (more) carbon dioxide in the atmosphere that traps (more) heat from the sun so the earth gains (more) heat and has a higher temperature, causing global warming.
- Use the “more”s if the question requires a comparison
- By cutting down trees, there are less trees to photosynthesize to take in carbon dioxide and release oxygen. Thus, there is more carbon dioxide in the atmosphere that traps more heat from the sun, so the earth gains more heat and has a higher temperature, causing global warming

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