

Y7 Science Checklist (Term 1)



Organisms (Biology) https://classroom.thenational.academy/units/cells-tissues-and-organs-03b2	😊	😐	☹️
Multicellular organisms are composed of cells which are organised into tissues, organs and systems to carry out life processes.			
Specialised cells: There are many types of cell. Each has a different structure or feature so it can do a specific job.			
Describe examples of specialised animal and plant cells.			
Use a light microscope to observe and draw cells.			
Explain what each part of the microscope does and how it is used.			
Carry out calculations involving magnification , real size and image size using the formula: $\text{magnification} = \frac{\text{size of image}}{\text{size of real object}}$			
Both plant and animal cells have a cell membrane, nucleus, cytoplasm and mitochondria and ribosomes.			
Plant cells also have a cell wall, chloroplasts and usually a permanent vacuole.			
Identify and name some substances that move into and out of cells. Describe the process of diffusion.			
KEYWORDS	😊	😐	☹️
Cell: The unit of a living organism, contains parts to carry out life processes.			
Uni-cellular: Living things made up of one cell.			
Multi-cellular: Living things made up of many types of cell.			
Tissue: Group of cells of one type.			
Organ: Group of different tissues working together to carry out a job.			
Diffusion: One way for substances to move into and out of cells.			
Structural adaptations: Special features to help a cell carry out its functions.			
Cell membrane: Surrounds the cell and controls movement of substances in and out.			
Nucleus: Contains genetic material (DNA) which controls the cell's activities.			
Vacuole: Area in a cell that contains liquid, and can be used by plants to keep the cell rigid and store substances.			
Mitochondria: Part of the cell where energy is released from food molecules by aerobic respiration.			
Ribosomes: Part of the cell where proteins are synthesised			
Cell wall: Strengthens the cell. In plant cells it is made of cellulose.			
Chloroplast: Absorbs light energy so the plant can make food.			
Cytoplasm: Jelly-like substance where most chemical processes happen.			
Immune system: Protects the body against infections.			
Reproductive system: Produces sperm and eggs, and is where the foetus develops.			
Digestive system: Breaks down and then absorbs food molecules.			

Circulatory system: Transports substances around the body.			
Respiratory system: Replaces oxygen and removes carbon dioxide from blood.			
Muscular skeletal system: Muscles and bones working together to cause movement and support the body.			
Genes (Biology) https://classroom.thenational.academy/units/reproduction-and-variation-f60f	😊	😐	😞
There is variation between individuals of the same species. Some variation is inherited, some is caused by the environment, and some is a combination.			
Variation between individuals is important for the survival of a species, helping it to avoid extinction in an always changing environment.			
The menstrual cycle prepares the female for pregnancy and stops if the egg is fertilised by a sperm.			
The developing foetus relies on the mother to provide it with oxygen and nutrients; to remove waste and protect it against harmful substances.			
The menstrual cycle lasts approximately 28 days. Identify key events on a diagram of the menstrual cycle.			
If an egg is fertilised it settles into the uterus lining.			
Describe causes of low fertility in male and female reproductive systems.			
Keywords	😊	😐	😞
Species: A group of living things that have more in common with each other than with other groups.			
Variation: The differences within and between species.			
Continuous variation: Where differences between living things can have any numerical value.			
Discontinuous variation: Where differences between living things can only be grouped into categories.			
Gamete: The male gamete (sex cell) in animals is a sperm, the female an egg.			
Fertilisation: Joining of a nucleus from a male and female sex cell.			
Ovary: Organ which contains eggs.			
Testicle: Organ where sperm are produced.			
Oviduct, or fallopian tube: Carries an egg from the ovary to the uterus and is where fertilisation occurs.			
Uterus, or womb: Where a baby develops in a pregnant woman.			
Ovulation: Release of an egg cell during the menstrual cycle, which may be met by a sperm.			
Menstruation: Loss of the lining of the uterus during the menstrual cycle.			
Reproductive system: All the male and female organs involved in reproduction.			
Placenta: Organ that provides the foetus with oxygen and nutrients and removes waste substances.			
Foetus: The developing baby during pregnancy.			

Matter (Chemistry) https://classroom.thenational.academy/units/particles-f50c	☺	☹	☹
Properties of solids, liquids and gases can be described in terms of particles in motion but with differences in the arrangement and movement of these same particles: closely spaced and vibrating (solid), in random motion but in contact (liquid), or in random motion and widely spaced (gas).			
Observations where substances change temperature or state can be described in terms of particles gaining or losing energy.			
A substance is a solid below its melting point, a liquid above it, and a gas above its boiling point.			
Explain unfamiliar observations about gas pressure in terms of particles.			
Explain the properties of solids, liquids and gases based on the arrangement and movement of their particles.			
Explain changes in states in terms of changes to the energy of particles.			
Draw before and after diagrams of particles to explain observations about changes of state, gas pressure and diffusion.			
Argue for how to classify substances which behave unusually, as solids, liquids, or gases.			
Evaluate observations that provide evidence for the existence of particles.			
Make predictions about what will happen during unfamiliar physical processes, in terms of particles and their energy.			
Keywords	☺	☹	☹
Particle: A very tiny object such as an atom or molecule, too small to be seen with a microscope.			
Particle Model: A way to think about how substances behave in terms of small, moving particles.			
Diffusion: the process by which particles in liquids or gases spread out through random movement from a region where there are many particles to one where there are fewer.			
Gas pressure: Caused by collisions of particles with the walls of a container.			
Density: How much matter there is in a particular volume, or how close the particles are.			
Evaporate: Change from liquid to gas at the surface of a liquid, at any temperature.			
Boil: Change from liquid to a gas of all the liquid when the temperature reaches boiling point.			
Condense: Change of state from gas to liquid when the temperature drops to the boiling point.			
Melt: Change from solid to liquid when the temperature rises to the melting point.			
Freeze: Change from liquid to a solid when the temperature drops to the melting point.			
Sublime: Change from a solid directly into a gas.			
Acids have a pH below 7, neutral solutions have a pH of 7, alkalis have a pH above 7.			
Acids and alkalis can be corrosive or irritant and require safe handling.			
Hydrochloric, sulfuric and nitric acid are strong acids.			
Acetic and citric acid are weak acids.			
Indicators: Substances used to identify whether unknown solutions are acidic or alkaline			
Base: A substance that neutralises an acid - those that dissolve in water are called alkalis.			
Concentration: A measure of the number of particles in a given volume.			

Y7 Energy (Physics) https://classroom.thenational.academy/units/energy-0b08	☺	☹	☹
We can describe how jobs get done using an energy model where energy is transferred from one store at the start to another at the end.			
When energy is transferred, the total is conserved, but some energy is dissipated, reducing the useful energy.			
Describe how the energy of an object depends on its speed, temperature, height or whether it is stretched or compressed.			
Show how energy is transferred between energy stores in a range of real-life examples.			
Calculate the useful energy and the amount dissipated, given values of input and output energy.			
Explain how energy is dissipated in a range of situations.			
Compare the percentages of energy wasted by renewable energy sources.			
Explain why processes such as swinging pendulums or bouncing balls cannot go on forever, in terms of energy.			
Evaluate analogies and explanations for the transfer of energy			
Keywords	☺	☹	☹
Thermal energy store: Filled when an object is warmed up.			
Chemical energy store: Emptied during chemical reactions when energy is transferred to surroundings.			
Kinetic energy store: Filled when an object speeds up.			
Gravitational potential energy store: Filled when an object is raised.			
Elastic energy store: Filled when a material is stretched or compressed.			
Dissipated: Become spread out wastefully.			
We pay for our domestic electricity usage based on the amount of energy transferred.			
Electricity is generated by a combination of resources which each have advantages and disadvantages.			
Calculate the cost of home energy usage, using the formula: cost = power (kW) x time (hours) x price (per kWh).			
Food labels list the energy content of food in kilojoules (kJ).			
Compare the amounts of energy transferred by different foods and activities.			
Compare the energy usage and cost of running different home devices.			
Explain the advantages and disadvantages of different energy resources.			
Represent the energy transfers from a renewable or non-renewable resource to an electrical device in the home.			
Evaluate the social, economic and environmental consequences of using a resource to generate electricity, from data.			
Suggest actions a government or communities could take in response to rising energy demand.			
Suggest ways to reduce costs, by examining data on a home energy bill.			
Keywords	☺	☹	☹
Power: How quickly energy is transferred by a device (watts).			
Energy resource: Something with stored energy that can be released in a useful way			
Non-renewable: An energy resource that cannot be replaced and will be used up.			

Renewable: An energy resource that can be replaced and will not run out. Examples are solar, wind, waves, geothermal and biomass.			
Fossil fuels: Non-renewable energy resources formed from the remains of ancient plants or animals. Examples are coal, crude oil and natural gas.			