Year 8 Checklist (Term 1)

Matter (Chemistry) https://classroom.thenational.academy/units/atoms-and-the-periodic-table-68d3	☺	😐	☹
Most substances are not pure elements, but compounds or mixtures containing atoms of different elements. They have different properties to the elements they contain.			
Use particle diagrams to classify a substance as an element, mixture or compound, and as molecules or atoms.			
Name simple compounds using rules: change non-metal to –ide; mono, di, tri prefixes; and symbols of hydroxide, nitrate, sulfate and carbonate.			
The symbols of hydrogen, oxygen, nitrogen, carbon, iron, zinc, copper, sulfur, aluminium, iodine, bromine, chlorine, sodium, potassium, magnesium.			
Name compounds using their chemical formulae.			
Given chemical formulae, name the elements present and their relative proportions.			
Represent atoms, molecules and elements, mixtures and compounds using particle diagrams.			
Use observations from chemical reactions to decide if an unknown substance is an element or a compound.			
Keywords	☺	😐	☹
Elements: what all substances are made up of, and which contain only one type of atom.			
Atom: The smallest particle of an element that can exist.			
Molecules: Two to thousands of atoms joined together. Most non-metals exist either as small or giant molecules.			
Compound: Pure substances made up of two or more elements strongly joined together.			
Chemical formula: Shows the elements present in a compound and their relative proportions.			
Polymer: A molecule made of thousands of smaller molecules in a repeating pattern. Plastics are man-made polymers, starch is a natural polymer.			

Organisms (Biology) https://classroom.thenational.academy/units/biological-systems-and-processes-bf5a	☺	😐	☹
In gas exchange, oxygen and carbon dioxide move between alveoli and the blood. Oxygen is transported to cells for aerobic respiration and carbon dioxide, a waste product of respiration, is removed from the body.			
Breathing occurs through the action of muscles in the ribcage and diaphragm. The amount of oxygen required by body cells determines the rate of breathing.			
Explain how exercise, smoking and asthma affect the gas exchange system.			
Explain how the parts of the gas exchange system are adapted to their function.			
Explain observations about changes to breathing rate and volume.			
Explain how changes in volume and pressure inside the chest move gases in and out of the lungs.			
Evaluate a possible treatment for a lung disease.			
Predict how a change in the gas exchange system could affect other processes in the body.			
Evaluate a model for showing the mechanism of breathing.			
Find out how recreation drugs might affect different body systems.			
The body needs a balanced diet with lipids, proteins, vitamins, minerals, dietary fibre and water, for its cells' energy, growth and maintenance.			
Organs of the digestive system are adapted to break large food molecules into small ones which can travel in the blood to cells and are used for life processes.			
Iron is a mineral important for red blood cells.			
Calcium is a mineral needed for strong teeth and bones.			
Vitamins and minerals are needed in small amounts to keep the body healthy.			
Describe possible health effects of unbalanced diets from data provided.			
Calculate food requirements for a healthy diet, using information provided.			
Describe how organs and tissues involved in digestion are adapted for their role.			
Describe the events that take place in order to turn a meal into simple food molecules inside a cell.			
Design a diet for a person with specific dietary needs.			
Critique claims for a food product or diet by analysing nutritional information.			
Make deductions from medical symptoms showing problems with the digestive system.			
Keywords	☺	😐	☹
Breathing: The movement of air in and out of the lungs.			
Trachea (windpipe): Carries air from the mouth and nose to the lungs.			
Bronchi: Two tubes which carry air to the lungs.			
Bronchioles: Small tubes in the lung.			
Alveoli: Small air sacs found at the end of each bronchiole			
Ribs: Bones which surround the lungs to form the ribcage.			
Diaphragm: A sheet of muscle found underneath the lungs.			

Lung volume: Measure of the amount of air breathed in or out.			
Enzymes: Substances that speed up the chemical reactions of digestion.			
Dietary fibre: Parts of plants that cannot be digested, which helps the body eliminate waste.			
Carbohydrates: The body's main source of energy. There are two types: simple (sugars) and complex (starch).			
Lipids: (fats and oils) A source of energy. Found in butter, milk, eggs, nuts.			
Protein: Nutrient your body uses to build new tissue for growth and repair. Sources are meat, fish, eggs, dairy products, beans, nuts and seeds.			
Stomach: A sac where food is mixed with acidic juices to start the digestion of protein and kill microorganisms.			
Small intestine: Upper part of the intestine where digestion is completed and nutrients are absorbed by the blood.			
Large intestine: Lower part of the intestine from which water is absorbed and where faeces are formed.			
Gut bacteria: Microorganisms that naturally live in the intestine and help food break down.			

Energy (Physics) **https://classroom.thenational.academy/units/energy-0b08**	☺	😐	☹
Work is done and energy transferred when a force moves an object. The bigger the force or distance, the greater the work. Machines make work easier by reducing the force needed. Levers and pulleys do this by increasing the distance moved, and wheels reduce friction.			
Draw a diagram to explain how a lever makes a job easier.			
Compare the work needed to move objects different distances.			
Use the formula: work done (J) = force (N) x distance moved (m) to compare energy transferred for objects moving horizontally.			
Compare and contrast the advantages of different levers in terms of the forces needed and distance moved.			
The thermal energy of an object depends upon its mass and temperature and what it's made of. When there is a temperature difference, energy transfers from the hotter to the cooler object.			
Thermal energy is transferred through different pathways, by particles in conduction and convection, and by radiation.			
Explain observations about changing temperature in terms of energy transfer.			
Describe how an object's temperature changes over time when heated or cooled.			
Explain how a method of thermal insulation works in terms of conduction, convection and radiation.			
Sketch diagrams to show convection currents in unfamiliar situations.			
Sketch a graph to show the pattern of temperature change against time.			
Evaluate a claim about insulation in the home or for clothing technology.			
Compare and contrast the three ways that energy can be moved from one place to another by heating.			
Keywords	☺	😐	☹
Work: The transfer of energy when a force moves an object, in joules.			
Lever: A type of machine which is a rigid bar that pivots about a point.			
Input force: The force you apply to a machine.			
Output force: The force that is applied to the object moved by the machine.			
Displacement: The distance an object moves from its original position.			
Deformation: When an elastic object is stretched or squashed, which requires work.			
Thermal conductor: Material that allows heat to move quickly through it.			
Thermal insulator: Material that only allows heat to travel slowly through it.			
Temperature: A measure of the motion and energy of the particles.			
Thermal energy: The quantity of energy stored in a substance due to the vibration of its particles.			
Conduction: Transfer of thermal energy by the vibration of particles.			
Convection: Transfer of thermal energy when particles in a heated fluid rise.			
Radiation: Transfer of thermal energy as a wave.			

Yr 7 Topics that will be reviewed in term 1

Yr 7 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.			

Yr 7 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.			