Year 7 AP 2 – Science



How to revise Science:

Memorise the facts

- Make flash cards
- Produce mind maps
- Write the information in a book

Practice answering questions

- Use online tests
- Use Tassomai
- Use BBC bitesize multichoice tests at the end of units

Revision List:

Biology:

Animal Cells

1. Identify the location of the sub-cellular structures in animal cell diagrams, nucleus, cytoplasm, cell membrane and mitochondria.

- 2. The function of the cell membrane is to control the movement of substances into and out of the body
- 3. The cytoplasm is the jelly-like substance found in cells where reactions happen
- 4. The nucleus is the part of the cell that stores the genetic material of the cell
- 5. The function of the mitochondria is to transfer energy.

6. A group of similar cells working together form tissues, tissues work together to form organs, many organs working together form organ systems, and all of the organ systems form organisms.

- 7. A light microscope can be used to view objects that are too small to see with the naked eye
- 8. Identify the key parts of the microscope to include the: stage, eye piece lens, objective lens, focussing wheel
- 9. The three main functions of the human skeleton are protection, production of blood cells and support
- 10. The place where two bones meet is called a joint
- 11. Muscles are attached to bones with tendons to help them move
- 12. A muscle will contract to exert a force on a bone and bring about movement around a joint
- 13. Most movement in the body is controlled by two muscles that work together these are called

antagonistic muscles.

Revision List:

Biology:

The breathing system

1. The trachea is the organ that runs down the neck and carries air from the mouth and nose to the lungs.

2. Identify the trachea, bronchi, bronchioles, alveoli, diaphragm, ribs and intercostal muscles on a diagram of the breathing system.

3. The airways are adapted with ciliated epithelial cells and goblet cells to maintain the health of the breathing system.

4. At the end of all the air tubes are microscopic air sacs called alveoli (singular alveolus) which have thin walls and a high blood supply for diffusion of gases.

5. Diffusion is the movement of molecules from an area of high concentration

6. In the alveoli, Carbon Dioxide diffuses from the blood to the air in the alveoli and oxygen diffuses from the air in the alveoli to the blood.

7. To breathe in (inhale), we make the chest cavity bigger by contracting the diaphragm to move it down, and contracting the muscles between the ribs, moving the rib cage out.

8. When we make the chest cavity bigger, the air pressure in the lungs decreases and air flows into the lungs.

9. To breathe out (exhale), we make the chest cavity smaller by relaxing the diaphragm to move it up, and relaxing the muscles between the ribs, moving the rib cage in.

10. When we make the chest cavity smaller, the air pressure in the lungs increases and air flows out of the lungs.

11. The maximum amount of air you can breathe in and out is your vital lung capacity

Chemistry:

Particle Model

1. Particles in particle diagrams are represented as spheres but they may not be spherical in shape.

2. Atoms and molecules are very small particles.

3. The density of a substance is how much matter is in a specific volume.

4. Solids are arranged in a regular pattern. Liquids are not.

5. Solid particles vibrate in their positions but cannot move around.

6. Materials in the solid or liquid states are incompressible as the particles are very closely packed

together.

7. Solid ice is less than dense than liquid water. Ice floating on water is an anomaly.

8. Substances in the gas state are less dense than the solid and liquid states.

9. Gases are fairly easy to compress as most of the particles are far from each other.

10. Substances in the gas state spread out to fill the whole space they are in.

11. Gaseous particles move around rapidly in all directions and most of the particles are too far apart to exert any force on each other.

Revision List:

Chemistry:

The Atom

1. John Dalton suggested that atoms are spherical and have a definitive size and mass.

2. An element is a made of one type of atom only which has the same size and mass.

3. A molecule is when two or more atoms are chemically combined.

4. A compound is a particle that contains two or more different elements that are chemically combined.

5. Substances have different properties because of the elements they contain.

6. A compound has a fixed melting and boiling point (Water - 0°C / 100°C).

7. Each element is represented by an assigned name and symbol. (H, O, C, S, Cl, Mg, Na, Fe, Cu)

8. The names and quantities of atoms in a chemical compound can be derived from its formula. (H₂O, O₂,

H₂, CO₂, NaCl, MgO)

9. The following chemical symbols of elements can be used to create chemical formula. (H, O, C, Cl, Mg,

Na, Fe, S, Cu)

10. Write chemical formula based on the number of each atom for the following elements and compounds

 $(\mathsf{H}_2\mathsf{O},\,\mathsf{O}_2,\,\mathsf{H}2,\,\mathsf{CO}_2,\,\mathsf{MgO},\,\mathsf{NaCl})$

11. Atoms are not created or destroyed during chemical reactions they are rearranged to form new products.

12. Word equations can be used to represent reactants and products in a chemical reaction (Iron + Sulphur

 \rightarrow Iron Sulphide) and (Carbon + Oxygen \rightarrow Carbon Dioxide)

Physics:

Astrophysics

1. A planet is a large, almost spherical object that orbits a star.

2. The inner planets are rocky planets; the outer planets are gas planets.

3. A moon is an object that orbits a planet or another celestial body that is not a star.

4. An asteroid is a small rock orbiting the sun.

5. A comet is a celestial object that is made of ice and dust.

6. A star is a luminous object - it produces its own light.

7. The Sun is the star at the centre of our solar system.

8. Gravity is the force keeping the planets orbiting the sun, and the moons orbiting the planets.

9. A galaxy is a system of millions or billions of stars, together with gas and dust.

10. Our galaxy is called the milky way.

Revision List:

Physics:

11. Mass is a measure of the amount of matter an object or substance is comprised of.

12. Weight is the force needed to support an object or substance.

13. Weight of a stationary object can be calculated by multiplying the mass of an object by the gravitational field strength.

Changing Shape

1. The unit for force is Newtons

- 2. Forces act as pushes or pulls.
- 3. Forces act in pairs.
- 4. Some contact forces are tension, friction, air resistance, upthrust, thrust, normal reaction force.
- 5. Some non-contact forces are magnetic force, electrostatic force, gravitational force.

6. Forces can be represented using arrows. These arrows have both direction and magnitude.

- 7. When a force is placed on a material, that material may be stretched or compressed.
- 8. Elastic materials will often return to their original shape when the force is removed.
- 9. When forces acting on an object are unbalanced, the objects motion, direction or shape may change.

10. Equilibrium describes when opposing forces are equal or balanced.

Working Scientifically Knowledge

1. Recognise the importance of new evidence on the ideas/laws/theories of science and their real-world application.

- 2. Identify data as categoric, discrete or continuous.
- 3. Describe the importance of peer review.
- 4. Categorise data as quantitative or qualitative.
- 5. Identify anomalous results and suggest ways to reduce their effect.
- 6. Suggest how uncertainty can be reduced when using a thermometer or a measuring cylinder.

7. Draw valid conclusions using more than one piece of supporting evidence, including numerical data and graphs.

Mathematical Skills

a) Change the subject of a formula.

- b) Construct line graphs from given data.
- c) Translate data between graphical and numerical form.