Cove Junior School

Skills and Knowledge Assessment Overview Science

Year 5 Autumn 1 'Making a Difference' **Getting oxygen into the blood**
• All animals need oxygen to survive. • Air is breathed into the lungs where the oxygen in the air is passed into the blood. • Every part of animals' bodies need oxygen, especially muscles. • Muscles need a supply of oxygen and sugar (glucose) to make them work, they are supplied by the blood.
The blood circulation model
• The heart is a vital organ pumps blood through the blood vessels. • Blood Vessels are the tubes that blood flows through. • The blood circulates around the body in a way that ensures all muscles in the body get a supply of oxygen and sugar. • The heart pumps blood to every muscle in the body. The circulatory route must allow the blood to collect oxygen from the lungs, sugar from the intestines and visit muscles. • The blood then returns to the heart where it is pumped again. • Exercise helps the heart to work more efficiently. • Eating a healthy diet helps to keep the blood vessels from getting blocked. • Avoiding smoking and alcohol puts less stress on the whole system and keeps it healthier.
Year 5 Autumn 2 'Coast to Coast' **Plants don't go to McDonalds**
• Flowering plants reproduce by the process of pollination • Pollination leads to the formation of a seed which can grow into a new plant • Flowering plants have evolved specific parts to carry out pollination and seed growth • Those parts are stamen where pollen is produced, stigma where pollen is collected, and the ovaries which contains the eggs that become a seed when the pollen travels down the stigma and meets the egg • Flowers have petals also are a range of colours, patterns, and smells to attract insects
All flowers are similar but different
• Plants and flowers look different because they pollinate in different ways. • There are two types of pollination Insect and wind • Insect pollinated flowers are usually bright coloured and strong scents • Wind pollinated flowers have less colourful petals and much less scent
Seed dispersal
• Plants have evolved many different ways to disperse their seeds • Seed dispersal increases the chances of seeds germinating and growing into a mature plant
What a seed does
• A seed contains a miniature, undeveloped version of the plant • They contain a food store for the first stage of growth (until the plant can make its own food) • They are surrounded with a protective coat.
Year 5 Spring 1 'Groovy Greeks' **Water and air resistance**
• When objects move through air and water, they have to push it out of the way. The water and air push back with forces called water resistance and air resistance. The harder it is to push the material out of the way the greater the resistance. • Gases weigh less than liquids and so water resistance is greater than air resistance.
Friction
• Friction is a force against motion caused by two surfaces rubbing against each other. It occurs because no surfaces are perfectly smooth; they have bumps and undulations that can interlock when placed on top of each other. • To move one interlocking surface over another, one of three things must happen: • The surfaces must rise slightly • The bumps on the surface must bend • The bumps on the surface must break • All of these actions require a force, this is what causes friction
Managing Forces
• Some objects require large forces to make them move; gears, pulley and levers can reduce the force needed to make things move. • The use of levers can reduce the force needed to move things. The object you are lifting is called the load, and the force you apply to the arm to make the object move is called the effort.

- The use of pulleys can reduce the force needed to move things

Year 5 Spring 2 'Potions and Possibilities'
Reversible and irreversible changes

- All matter, including gas, has mass.
- Sometimes, mixed substances react to make a new substance. These changes are usually irreversible.
- Heating can sometimes cause materials to change permanently. When this happens, a new substance is made. These changes are not reversible.
- Indicators that something new has been made are the properties of the material are different (colour, state, texture, hardness, smell, temperature)
- If it is not possible to get the material back easily it is likely that it is not there anymore and something new has been made (irreversible change)

What mixtures are

- A substance is an object with the same properties throughout.
- A mixture is when more than one substance is present in the same container

What dissolving is

- When a substance is added to a liquid the substance can disappear- this is called dissolving
- A mixture of a substance that has dissolved in a liquid is called a solution
- Not every substance can dissolve in water

Separating mixtures

- Mixtures can be separated if the substances have different properties
- This is because the substances in the mixture are still present and are unchanged
- There are different techniques for separating mixtures
    - Filtration requires the substances be one that does not dissolve in a liquid to work.
    - Sieving requires the substances to be of different sizes to work
    - Magnets requires the substances to be some magnetic materials and some non-magnet materials to work.
    - Evaporation requires a solid substance dissolved in water and the solid has a higher boiling point in water to work.
    - Floating requires some substances to float and some substances to sink to work.

Year 5 Summer 1 'Ferocious Fighters'
Life Cycles

- Describe the changes as humans develop to old age (taught through RSE curriculum)
- Mammals, amphibians, insects and birds have different life cycles.
- Lifecycles vary in time depending on the species of animal- it can be as short as just a few weeks for insects, to up to 200 years for sea urchins. Larger animals often have longer life cycles but not always.
- All animal life cycles begin with growth and development followed by reproduction.
- Some animals undergo a complete metamorphosis as they grow. Metamorphosis is a process where animals undergo an abrupt and obvious change in the structure of their body and their behaviour.
- Some animals are eusocial. This means they live in colonies (groups) with one animal or group producing young and the others working to care for them.

Year 5 Summer 2 'To Infinity and Beyond'
Our Solar system

- A Solar system is a collection of planets, which orbit (a curved path) a star.
- There are huge number of stars in space and therefore a huge number of solar systems
- Our solar system consists of 8 planets, many of those planets have moons which orbit around them.
- Earth's moon is not a planet but is a satellite which orbits Earth. It is around a quarter of the size of Earth.
- As the Moon orbits the Earth, the Sun lights up different parts of it, making it seem as if the Moon is changing shape. We call these the phases of the moon.
- The Moon doesn't emit (give off) light itself, the 'moonlight' we see is actually the Sun's light reflected off the lunar surface.
- Our solar system can be represented with a model (see diagram), but it isn't possible to draw it to scale.
- The planets and moons are rotating (spinning)
- The time it takes one planet to rotate is called a day. On Earth this is 24 hours
- The time it takes a planet to complete one orbit around its star is called a year. On Earth this is 356.25 days
- The solar system is with a massive collection of stars called the galaxy (called the Milky way)
- The Milky way is one of billions of galaxies in the Universe.

What else is in the solar system?

- Stars are huge balls of gas that produce vast amounts of light and heat.
- Asteroids are lumps of rock that orbit a star (there are millions in between Mars and Jupiter)
- Comets are objects that are made of Ice, which melts when they get closer to the sun leaving a tail.

Gravity and its effects
• Gravity is force of attraction between two objects with mass (a quantity of matter) • The bigger the mass the bigger force it exerts • Gravity works over distance but gets weaker as distance increases • Stars, planets, moons have a very large amount of mass. They exert a gravitational attraction on each other • Differences in gravity result in smaller mass objects orbiting around lager mass objects, e.g., planets around stars and moons around planets