

Plants

Candidates should be able to :

1. Show an understanding of plants as living things and of trees as examples of large plants.
2. Identify 3 main parts of a tree and to describe the evidence for trees being alive.
3. Classify trees as broadleaved, conifer, deciduous or evergreen.
4. Describe examples of the variation between trees,
5. Demonstrate an understanding of the tree as a habitat for other living things.
6. Describe the way a tree grows, and the best conditions for growth.
7. Describe how trees reproduce, including seed dispersal.
8. Explain the importance of trees in producing oxygen gas and many other foods and resources.
9. Recognize or describe basic plant structure and relate structures to function.
10. Explain how plants get the water that they need and why it is required.

11. Describe or label the detailed structure of a flower, and recall the function of each part in relation to pollination and fertilization.
12. Describe the Life Cycle of a flowering plant.
13. Give reasons for the dispersal of seeds and explain the various mechanisms used.
14. Describe the inside of a seed.
15. Describe the conditions necessary for germination and give reasons for germination or non-germination
16. Classify leaf structure as either simple or compound and relate structure to the function of leaves.
17. Explain how food chains show feeding relationships within a habitat.
18. Analyse more complex food webs.

Forces

Candidates should be able to :

1. Explain that forces are pushes or pulls and what they can do.
2. Identify magnets as having poles (North and South seeking) and describe and explain in terms of forces what happens when poles are put together.
3. State that certain metals, such as iron, are magnetic.
4. Describe some uses of magnets.
5. Describe the use of springs in a variety of ways.
6. Demonstrate an understanding that when a spring is stretched or compressed it exerts a force on whatever is stretching or compressing it.
7. Understand that when an elastic band is stretched downwards it exerts an upward force on whatever is stretching it.

8. Recall how to use a Newton meter/forcemeter to accurately measure forces.
9. Identify and use the Newton as the unit of force.
10. Explain that friction is a force between two surfaces that opposes motion and creates heat.
11. Reason that when objects float it is because the 2 forces acting on the object are balanced.
i.e. Gravity= up-thrust. When gravity is greater than up-thrust, the object sinks.
12. Reason that water resistance is a type of friction between object and water that slows the object down
13. Analyse or predict about how shape affects the magnitude of water resistance.
14. Use the idea that air resistance is friction between an object and air that resists motion.

Materials

Candidates should be able to :

1. identify a range of common materials and describe examples of the same material being used to make different objects.
2. Attribute properties to materials such as hardness, strength and flexibility.
3. Understand that materials are suitable for making a particular object because of their properties.
4. Describe the differing properties of solids, liquids and gases,
5. Recall that gases are formed when liquids evaporate and that air is a gas all around us.
6. Recall that liquids form when gases condense
7. Apply knowledge of state change to assist understanding of the water cycle.
8. Describe the safe use of the Bunsen burner e.g. in collecting temperature data on the changes of state of water.
9. Explain that heating causes materials to change, and that some changes are permanent, some are reversible.

10. Understand that temperature is a measure of how hot/cold things are and that the sense of touch is not an accurate way of judging temperature.
11. Describe how to use a thermometer safely and accurately
12. Understand that something hot will cool down and something cool will heat up to the temperature of their surroundings
13. Identify some materials that are good thermal insulators.
14. Recall that thermal insulators keep cold objects cold and warm objects warm.
15. Link the property of good thermal conduction with good electrical conduction.

Anatomy and Physiology

Candidates should be able to:

1. Describe how we have a skeleton inside us made of bones, with joints.
2. Locate some major bones e.g. skull, ribs, spine.
3. Describe the functions of the skeleton as: movement, support, protection.
4. Explain how other vertebrates have similar skeletons, but that the differences can be accounted for by adaption.
5. Consider bone as a growing/changing material, and describe its properties as hard, strong etc.
6. Explain that the skeleton allows movement only when attached to muscles.
7. Explain that muscles work in pairs, in opposing ways, and only pull - they do not push.

8. Explain that we need to eat an adequate and varied diet which includes the main food groups
9. That exercise is needed to stay healthy and to maintain our muscles
10. Understand that muscles work hard during exercise, and that, therefore, our bodies need more oxygen and food when we exercise.
11. Understand that exercise keeps our heart healthy and that; the heart pumps blood, which is cared around the body in the blood vessels.
12. Describe the connection between pulse rate and heart beat, Describe how exercise affects pulse rate and explain why, in terms of the blood flow needed to provide oxygen and energy.
13. Display awareness of the dangers of alcohol, tobacco and drugs.

6/9/2010

Light

Candidates should be able to:

1. Reason that light travels from a source and in straight lines and that we see light sources because the light emitted enters our eyes. We see all objects because light is reflected from them into our eyes.
2. Compare transparent, translucent and opaque materials and describe how opaque objects block out light to form shadows.
3. Explain that all light travels through transparent materials.
4. Explain how the height of a shadow changes as the position of the light source changes.
5. Describe how shadows caused by blocked sunlight change in length and position throughout the day.
6. Understand how a mirror or other shiny surface can reflect light from an object.
7. Recall that white light is made up of the 7 colours of the spectrum

Sound

Candidates should be able to :

1. Sound is made when something vibrates.
2. Sound travels through different materials to our ears.
3. Sound travels better through some materials rather than others.
4. Pitch is affected by various factors, for example , the length and tautness of a guitar string.
5. Recognise that volume describes loudness, and that we can change the volume of a sound.
6. Reason that exposure to loud sounds can damage our ears.
7. Explain that sound can be made when air vibrates.
8. Describe how we hear.
9. Explain how echoes are made, and how bats, dolphins, radar, sonar rely on echolocation.

Astronomy

Candidates should be able to:

1. Describe Earth, Sun and Moon as spheres.
2. Compare sizes of E, S and M and their distances apart.
3. Model the solar system on the ideas that: the Earth rotates on its axis; the Sun does not move;; the Earth orbits the Sun once in 365.3 days
4. Explain that as the Earth spins once in 24 hours we get day and night, one day being 24 hours.
5. Explain how the Earth's orbit and tilt gives rise to seasons.
6. Understand why the Moon appears to change shape based on the ideas that the Moon orbits the Earth once in 28 days and that the Moon reflects the sun's light.
7. Recall that the planet Earth is part of a Solar System of planets that orbit the Sun.

Investigation skills

Candidates are expected to have undergone an introduction to scientific investigation and to have had experience of obtaining data for themselves.

In the context of the written entrance examination

Candidates should be able to:

1. Design a fair test in the context of, for example, magnetism, friction, evaporation, insulation, bone growth or pulse rate, and predict probable outcomes of these or other experiments
2. Make comparisons and identify simple patterns or associations in observations and measurements or other data, including presenting data in the form of bar charts.
3. Use observations, measurements or other data to draw scientific conclusions
4. Decide whether these conclusions agree with any prediction made and/or whether they enable further predictions to be made
5. Review an investigation and describe its significance and limitations

Ideas not tested in the entrance exam but expected to be covered by the start of Year 7.

Climate Change

1. *At this stage of KS2 pupils need continuous stimulus to maintain their interest, and relate science to current affairs. It would be useful to have back-up info about population growth over the last 50 years.*
2. *The Earth is a green fertile planet with opportunities for life. But, then to consider how human have impacted on the Earth. Growing populations, use of resources, over crowding, burning fossil fuels. Effects of these activities – greenhouse effect, global warming, flooding due to melting of polar ice caps.*
3. *How can we help on an individual/family/ school basis?*
4. *Littering is a form of pollution – it makes our school appear untidy, it can damage the wildlife here too.*

Changing circuits

1. *To assess children's current knowledge and see how much they recall from Y4.*
2. *To remind children that a circuit must be complete for the current to flow.*
3. *To learn that some materials allow electricity to flow through them and some do not – conductors and insulators. Metals conduct, non-metals do not except graphite.*
4. *To learn that when circuits are drawn, components are represented by symbols, and learn those symbols.*
5. *To learn that the bulbs in a circuit can be made brighter and dimmer.*
6. *To learn that current can be varied by using resistors in a circuit, by changing the material, or the length or thickness of a material.*
7. *To use their investigative skills to conduct a fair test investigation into resistors.*

Dissolving

8. *To show that not all solids dissolve in water. To differentiate between dissolving and making a suspension.*
9. *To know that when a solid dissolves in water or any other solvent it looks as though it disappears and it makes a solution.*
10. *We can separate mixtures of materials. To show that a solid remains in the solution despite not being able to see it, and that we can get it back by evaporating the water.*
11. *To develop an understanding of the correct graphical representation of data, i.e. bar chart (discrete) or line graph (continuous).*
12. *To devise a fair test investigation to ascertain how certain factors affect the speed of dissolving.*
13. *To present their data appropriately according to their data*

Microorganisms

1. *To find out what micro-organisms are – microscopic living things, bacteria, viruses and fungi.*
2. *To learn that diseases can be caused by micro-organisms, and how scientists obtained evidence to prove this.*
3. *To use secondary sources to learn about scientists who helped fight diseases.*
4. *To learn that some common illnesses are caused by micro-organisms.*
5. *To observe that micro-organisms are on our hands, and that in order to see them we need to transfer them on to agar to let them grow so that we can see colonies (millions) of them.*
6. *To understand that micro-organisms are responsible for decay.*
7. *To understand that micro-organisms are alive and that they feed and grow. Some are used to make food, e.g. bread, yoghurt.*