Year 7 KS3 Science Year Booklet

Includes:

- Home-learning Tasks
- Revision Questions
- Content Checklists

Name:_____

Tutor Group:_____

Science Group:_____

Contents:

FAQs.

How many home-learning tasks will I need to do?

One a week, which should cover 3 tasks per unit.

How will I know which task to complete?

Your teacher will tell you which unit and task number to complete. But you are expected to complete the challenge task for each home-learning set.

What if I find the challenge task too hard?

We want to challenge you to increase your progress during the year, but if you do find it too hard, get your tutor or a parent to make and sign a note in your science book by your home-learning and complete the regular task. You will need to do this each time.

What do I do if I don't get it?

Go and talk to your teacher (or any science teacher) before the due date, we are here to help. There are revision resources in this book to help, otherwise try www.bbcbitesize.co.uk or buy a revision guide from the science lab technicians.

Can I do my home-learning on the computer?

Yes. But make sure you print it out and stick it in your book. If you arrive to your lesson with it on a memory stick, it will not be accepted.

Can I complete the tasks ahead of them being set?

Yes! Make sure it is easy for your science teacher to find it in your book

What are the revision questions and checklists for?

It is important to revise before each assessment. Use the checklists to find out if there are any areas you may need to work on before a test and the revision questions to get someone else or to test yourself on the topic.

7B1: Cells

Textbook pages 14-25

7B1: Home-Learning Tasks:

Task Number	Regular	Challenge	Completed?
1	Draw a picture of a microscope. Label the eyepiece, objective lens, stage, light and focus.	Give a step by step instruction to a year 7 student on how to use the microscope to see a slide	
2	Research a muscle cell. Draw a diagram of the cell, describe its function, describe where it is found and explain how it is adapted to its function.	Research a phagocyte Draw a diagram of the cell, describe its function, describe where it is found and explain how it is adapted to its function.	
3	Research a cilia cell. Draw a diagram of the cell, describe its function, describe where it is found and explain how it is adapted to its function.	Research what stem cells are. Describe what they are, what scientists want to do with stem cells and the for and against arguments of what stem cells are used for	
4	Summary Questions: Regular	Summary Questions: Challenge	

Summary Questions: Regular:

1. Describe what these parts of a cell do: a) A nucleus b) Cell membrane c) Chloroplast
2. Draw and label a diagram of a sperm cell. Explain how its streamlined head and tail helps the sperm cell
3. Draw and label a diagram of an egg cell (Ovum). Explain how its streamlined head and tail helps the sperm cell
4. Describe what diffusion is. Give an example of it

Summary Questions: Challenge:

1. Describe what the nucleus of a cell does
2. Describe the similarities and differences between plant and animal cells
3. Explain how substances get in and out of cells
4. Describe what red blood cells do and explain how they are adapted to their function
5. Explain using the correct parts of a cell, why plants can wilt if they have not been watered properly

7B1: Revision Questions:

Question	Answer
1. What are all living organisms made up from?	Cells
2. Who was the first person so look down a microscope?	Robert Hooke
3. What does "making an observation" mean?	Looking carefully and in detail at an object
4. Name the 7 parts of a microscope	Eyepiece, objective lens, stage, slide, fine focussing wheel, coarse focussing wheel, light
5. How do you calculate total magnification when looking down a microscope?	Total magnification = eyepiece lens magnification x objective lens magnification
6. Name the four parts of an animal cell	Cell membrane, cytoplasm, nucleus, mitochondrion
7. Name the seven parts of a plant cell	Chloroplast, vacuole, cytoplasm, mitochondrion, cell wall, cell membrane, nucleus
8. Which part of the cell controls the cell and contains the genetic information?	Nucleus
9. What happens in the mitochondria	Respiration
10. What happens in the chloroplasts	Photosynthesis
11. What happens in the cytoplasm	Cell reactions
12. What does the cell membrane do?	Controls substances entering and leaving the cell
13. What are specialised cells?	Cells that have become specially adapted to do a certain job
14. How is a nerve cell adapted to do its job?	It is long and thin and has connections at both ends to pass messages onto other nerve cells
15. How are red blood cells adapted to do their job?	They have a disk like shape to increase their surface area so they can carry more oxygen
16. How are sperm cells adapted to do their job?	They have a tail to help them swim. They have lots of mitochondria to give them enough energy.
17. How are leaf cells adapted to do their job?	They have lots of chloroplasts in them to absorb sunlight.
18. How are root hair cells adapted to do their job?	They have a large surface area to absorb water and nutrients. They do not have chloroplasts in them as they are found underground so no photosynthesis can take place
19. What substances are needed for respiration?	Glucose and oxygen
20. What is diffusion?	When particles move from a place where there is a high concentration of them to a place where there is a low concentration of them.

21. Why do plants wilt?	When a plant has not been watered there is not much water in each cell. Normally the vacuole is full and this pushes each cell outwards and makes the plant stand upright. If there is not much water then the vacuole shrinks and the plants wilt.
22. What is a unicellular organism?	A organism made up from only one cell
23. How do Amoebas reproduce?	By binary fission (they split into two new cells)
24. How does a Euglena move about?	Using a tail called a flagellum
25. How does an Amoeba eat?	They eat algae, bacteria and plant cells. They surround tiny particles of food engulf these particles into a food vacuole.
26. How does a Euglena eat?	Euglenas contain chloroplasts so they can make their own food by photosynthesis. If there is not enough light then they can eat other microorganisms my engulfing them.

7B1: Checklist:

Topic	Page	Spec points	Understanding   	Revised	RP
1.1	14-15	**Observing Cells:** • I can describe what cells are • I can name some equipment that may be used to observe cells • **I can describe the different parts of a microscope** • **I can calculate the magnification of a microscope**			
1.2	16-17	**Plant and animal cells:** • I can list the main parts of cells • I can identify parts of a cell from a diagram • I can accurately draw parts of cells when viewing them under a microscope • I can describe the functions of the main parts of cells • I can compare and contrast animal and plant cells			
1.3	18-19	**Specialised Cells:** • **I can identify different specialised cells** • I can describe the structural adaptations of some animal and plant cells (nerve, red blood, sperm, leaf and root hair) • **I can explain how the adaptations of cells improves their function**			
1.4	20-21	**Movement of substances:** • I can describe the process of diffusion and where it is used • I can suggest how the rate of diffusion may be affected • **I can describe the substances that move across cell membranes** • **I can give examples of diffusion**			

		• **I can explain why plants wilt in terms of cell structure** • **I can describe what osmosis is**					
1.5	22-23	**<u>Unicellular Organisms:</u>** • I can identify the structural adaptations of some unicellular organisms • **I can describe what a unicellular organism is** • **I can describe the structure of amoeba and euglena** • **I can explain how adaptations help unicellular organisms function** • **I can explain how unicellular organisms eat and reproduce**					

7C1: Particles and their Behaviour

Textbook pages 60-75

7C1: Home-Learning Tasks:

Task Number	Regular	Challenge	Completed?
1	Draw a picture of particles in solids, liquids and gases.	Draw and explain in detail how particles behave in the 3 states of matter.	
2	Draw on graph paper the cooling curve of steric acid when it freezes. Label on the diagram when a change of stare occurs.	Research and then explain why the temperature remains constant when a change of state occurs.	
3	Research the terms sublimation, condensation and diffusion. Explain what they mean.	Investigate different examples of diffusion. Explain why the rate of diffusion increases with temperature. Investigate and give examples of materials that undergo sublimation.	
4	Summary Questions: Regular	Summary Questions: Challenge	

Summary Questions: Regular:

1. Describe the arrangement and movement of particles in the liquid state.
2. Explain the different diffusion speeds through substances in solid, liquid and gas.
3. Explain why a balloon would get bigger as it gains altitude.
4. Explain why a balloon would get bigger as it gets hotter.

Summary Questions: Challenge:

1. Investigate and explain what the kinetic theory of gases states.
2. Investigate and explain what the term latent heat of fusion means.
3. Investigate and explain why a plastic bottle would appear to shrink if it was placed into a freezer.
4. Neon has a boiling point of -249 degrees Celsius. Explain what would happen to the particles as it is slowly heated from -255 degrees Celsius to -245 degrees Celsius.

7C1: Revision Questions:

Question	Answer
What are materials made of?	Particles
What is a mixture?	A mixture is made of different types of particles
What do the properties of a substance depend on?	The particles
What are three states of matter?	Solid, liquid, gas
What are the properties of a solid?	Uncompressible, doesn't flow, fixed shape
What are the properties of a liquid?	Uncompressible, does flow, takes the shape of its container
What are the properties of a gas?	Compressible, does flow, fills its container
Describe the structure of a solid	Touching their neighbours, in a regular pattern, vibrate in place, don't move around
Describe the structure of a liquid	Touching neighbours with gaps, may move around
Describe the structure of a gas	Not touching neighbours, moving constantly
What are the solid/liquid state changes?	Melting and freezing
Describe what happens to the particles as ice melts	They gain energy and vibrate faster, they move out of their places so the ice melts
What is a melting point?	The temperature at which a substance melts
How can a melting point tell us about the identity of a substance?	Each substance has a specific melting point
How can a melting point tell us about the purity of a substance?	A pure substance has a sharp melting point
What is boiling?	The state change from liquid to gas
What is the boiling point?	The temperature at which a liquid boils
How can a boiling point tell us about the identity of a substance?	Each substance has a specific boiling point
What is evaporation?	Changing from liquid to gas without boiling
When might evaporation be useful?	Sweating to cool down
What is condensation?	State change from gas to liquid
What is sublimation?	State change from solid to gas without going to liquid
What is diffusion?	The random movement of particles through air or liquid to spread out.
What factors affect diffusion speed?	Temperature, particle size, state of the diffusing substance
What causes pressure?	Particles colliding with the container wall
How does the number of particles affect pressure?	More particles = more collisions =higher pressure
How does temperature affect pressure?	Higher temperature = more energy = faster particles = more collisions = higher pressure

7C1: Checklist:

Topic	Page	Spec points	Understanding			Revised	RP
			☹	😕	😃		
1.1	60-61	**The Particle Model:** • **I can describe what a particle is** • **I can use the particle model to explain why different materials have different properties**					
1.2	62-63	**States of Matter:** • I can name the three states of matter • I can describe the properties of the three states of matter • I can represent the three states of matter with drawings of particles • I can explain the properties of the three states of matter with reference to the particle model					
1.3	64-65	**Melting and Freezing** • I can list the changes of states • I can describe how changes of states may occur • I can explain changes of states of matter with reference to energy levels of particles • **I can describe what is meant by the melting point of a substance** • **I can describe how you can use melting points to check the purity of a substance** • **I can recall what happens to the temperature of a heated substance when it is melting**					
1.4	66-67	**Boiling:** • I can list the changes of states • I can describe how changes of states may occur					

		• I can explain changes of states of matter with reference to energy levels of particles • I can describe changes of states with reference to energy changes • **I can describe how to measure the boiling point of a substance** • **I can predict the state of a substance at a certain temperature using the boiling and melting point**					
1.5	68-69	**<u>Changes of State:</u>** • **I can describe what is meant by evaporation, sublimation and condensation** • **I can explain what happens in evaporation, sublimation and condensation in terms of particles and energy** • **I can explain how evaporation is useful**					
1.6	70-71	**<u>Diffusion:</u>** • I can state that particles may move through a fluid by diffusion • I can describe diffusion in terms of the particle model • I can explain how diffusion happens in terms of the particle model • I can suggest how the rate of diffusion may be affected					
1.7	72-73	**<u>Gas Pressure:</u>** • I can describe how pressure occurs in gases • I can explain how pressure in gases may change					

7P4: Space

Textbook pages 148-157

7P4: Home-Learning Tasks:

Research Project:

You need to use the internet, class text books or from any information provided to research answers to the following:

Regular:

- Describe how the Moon was formed and explain what evidence we have for this
- Describe the difference between a meteor and a meteorite. Explain the consequences of a meteorite colliding with Earth
- Describe how we explore space through landers, probes and rovers
- Describe what an asteroid is and what an asteroid belt is

Challenge:

- Describe what a star is
- Describe the formation of a star from a Nebula and explain the possible fate of stars
- Describe what black holes are and describe some of their properties
- Describe what dark matter and dark energy are

To submit to your teacher:

You need to produce in your book:

- The research questions answered with the questions as subtitles

- A full bibliography of where you obtained your findings

- A system to reference your work (Harvard referencing)

- Page numbers if necessary

7P4: Revision Questions:

Question	Answer
1. What is an artificial satellite?	A manmade satellite
2. What does orbit mean?	The path taken by one body in space as it moves around another body
3. How do we see the moon?	(It is non-luminous). Light reflects off it from the Sun
4. What is a comet? What is it made from?	It is a body made up of ice and rock that orbits the Sun (in an elliptical orbit)
5. What are asteroids?	Lumps of rock orbiting the Sun left over from when the Solar system was formed
6. What is the difference between a meteor and a meteorite?	A meteor is a rock that burns up in our atmosphere. A meteorite is a rock that collides with Earth.
7. How does an asteroid become a meteor?	The asteroids collide into each other, knocking them out of orbit. They then start moving towards planets
8. What is a star?	A large ball of gas that emits light and heat in space
9. What is a galaxy?	A large collection of stars and Solar systems
10. What is the universe?	Everything that exists
11. What is the shape of a planet's orbit?	An ellipse
12. What is an ellipse?	A squashed circle (an oval)
13. What is the order of the planets, starting from the closest to the Sun?	Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune
14. What are the 4 terrestrial planets?	Mercury, Venus, Earth, Mars
15. Which planets are the gas giants?	Jupiter, Saturn, Uranus, Neptune
16. Between which two planets is the asteroid belt?	Mars and Jupiter
17. What is a dwarf planet? Give an example	A small lump of rock that orbits the Sun. Pluto.
18. How did the universe form?	
19. Describe the motion of the Earth	It rotates on its axis
20. At what angle does the Earth tilt on its axis	23.4°
21. What is a year? How long is Earth's?	Time taken for a planet to orbit the Sun: 365.25 days
22. What is a day? How long is Earth's?	Time taken for a planet to make one complete rotation: 24 hours
23. What are the 4 different seasons?	Winter, spring, summer, autumn
24. What causes summer?	When that part of the Earth is tilted towards the Sun (as the sun is concentrated on a smaller area)
25. What causes winter?	When that part of the Earth is tilted away the Sun (as the sun is spread out over a larger area)
26. What is a constellation?	A collection of stars that makes a pattern
27. Why does the moon look different at different times of the month?	Its position around the Earth changes. It creates a shadow on part of the Moon

28. What is meant by the different phases of the moon?	The changing shapes of the Moon
29. What is a lunar month?	The time taken for the Moon to orbit the Earth (around 28 days)
30. What is a solar eclipse?	An eclipse where the moon comes between the Sun and the Earth
31. What is a lunar eclipse?	An eclipse that happens when the Earth comes between the Sun and the Moon
32. What is an umbra?	The area of total shadow behind an opaque object where no light has reached
33. What is a penumbra?	The area of blurred shadow around the edge of the umbra
34. What is a satellite?	A body that orbits another body
35. Give an example of a natural satellite	The Moon

7P4: Checklist:

Topic	Page	Spec points	Understanding			Revised	RP
							
4.1	148-149	**The Night Sky:** • I can explain that our Sun is a star, and that there are other stars and solar systems in our galaxy and other galaxies in the Universe • **I can describe what comets, meteors, meteorites, planets, galaxies, satellites are**					
4.2	150-151	**The Solar System:** • I can identify gravity as the force which exists between the Moon and the Earth and between the Sun and the Earth • I can list planets in our solar system in order • I can describe a solar system as a collection of plants and other objects orbiting a star • **I can describe the main theory for how our solar system formed** • **To describe the difference between terrestrial planets and gas giants**					
4.3	152-153	**The Earth:** • I can state the length of an Earth day • I can state the length of an Earth year • I can state that the Earth is tilted on its axis • I can list the seasons of the Earth in order • I can describe what a day is • I can describe a year is • I can explain what causes seasons • I can explain the existence of a					

		leap year, with reference to the fact that an earth year is actually 365.25 days • I can explain how the different seasons occur in the northern hemisphere, with reference to the tilt of the Earth and proximity to the Sun • I can apply knowledge of the seasons in the northern hemisphere to explain why the southern hemisphere experiences seasons differently					
4.4	154-155	**<u>The Moon:</u>** • I can state that on Earth, a lunar month is 28 days • **I can describe what a Solar and Lunar eclipse is** • **I can explain what causes Solar and Lunar eclipses** • **I can describe what an umbra and penumbra are** • **I can explain why we see different phases of the Moon.** • **I can explain why we only see one side of the Moon from the Earth**					

7B2: Structure & Function of Body Systems

Textbook pages 26-39

7B2: Home-Learning Tasks:

Task Number	Regular	Challenge	Completed?
1	Draw a Levels of Organisation triangle for the respiratory system	Draw a levels of organisation diagram for the transport system in plants	
2	Write a story outlining the journey of an oxygen molecule from the air to the muscles of a running rabbit	Describe as a list the movements of the chest when inhaling and exhaling. Include the changes in volume and pressure in the chest cavity	
3	Describe how the named muscles of your arm move the bones when lifting an object from the floor to the table	Explain the role of the ligaments, tendons, cartilage and synovial fluid in the knee joint	
4	Summary Questions: Regular	Summary Questions: Challenge	

Summary Questions: Regular:

1) Describe a) a tissue b) an organ c) an organ system in a human
2) Describe the role of the rib muscles and diaphragm muscles in breathing
3) Describe the role of a) skeleton b) muscles c) joints
4) Explain the difference between breathing and respiration

Summary Questions: Challenge:

1) Explain why multi-cellular organisms have many organ systems whereas unicellular organisms do not
2) Explain what would happen to breathing if the chest cavity was punctured
3) Describe and explain the different composition of breathed in and breathed out air
4) Explain how the antagonistic muscles in the leg move when we take a step

7B2: Revision Questions:

Question	Answer
1. What are multi-cellular organisms?	Organisms made up of many cells
2. List the 5 levels of organisation in multi-cellular organisms from smallest to largest	Cells →tissues → organs → organ systems → organism
3. Explain what a tissue is	A group of similar cells working together to perform a particular function
4. Explain what an organ is	An organ is made up of a group of different tissues that work together to perform a certain function
5. Explain what an organ system is	An organ system is a group of different organs that work together to perform a certain function
6. Explain what an organism is	An organism is made up of several organ systems working together to perform all the processes needed to stay alive
7. What job do your lungs do?	They are responsible for gas exchange – they take in oxygen and remove carbon dioxide from the body
8. What parts of the body does air have to pass through before the oxygen in it can get into the blood?	Nose/mouth → trachea → bronchus → bronchiole → alveolus → blood
9. What are alveoli?	Tiny air sacs found in the lungs. They create a large surface area for gas exchange.
10. What is breathing in called?	Inhaling
11. What is breathing out called?	Exhaling
12. Give two differences between inhaled and exhaled air.	Inhales air contains more oxygen. Exhaled air contains more carbon dioxide.
13. When you breathe in what happens to the muscles in your chest?	They contract
14. When you breathe in what happens to your diaphragm?	It contracts and moves down
15. When you breathe in what happens to the volume in your lungs?	It increases
16. When you breathe in what happens to the pressure in your chest?	It decreases – this pulls air into your lungs
17. When you breathe out what happens to the muscles in your chest?	They relax
18. When you breathe out what happens to your diaphragm?	It relaxes and moves down
19. When you breathe out what happens to the volume in your lungs?	It decreases
20. When you breathe out what happens to the pressure in your chest?	It increases and pushes air out of your lungs

21. List three factors that decrease your lung volume	Smoking, asthma and old age
22. How many bones are there in the average adult human skeleton?	206
23. List the four main functions of the skeleton	Support the body, protect organs, help the body move, make blood cells
24. Where is bone marrow found?	In the middle of some of the longer bones such as in your arms and legs
25. What does bone marrow do?	Makes new blood cells
26. What is a joint?	Where two or more bones join together
27. Name the three types of joint.	Hinge joints, ball and socket joints, fixed joints
28. Give an example of a hinge joint	Elbow or knee
29. Give an example of a ball and socket joint	Hip or shoulder
30. Give an example of a fixed joint	The skull
31. What is the job of cartilage?	This covers the ends of bones and stops them rubbing together and causing pain
32. What is the job of ligaments?	This holds the bones together
33. What is the job of tendons?	This attaches the muscle to the bone
34. What does antagonistic mean?	This is when a pair of muscles works opposite each other to move the body. For example the biceps and triceps. When the biceps contracts the triceps relaxes and when the triceps relaxes the biceps relaxes. This allows your arm to move up and down.

7B2: Checklist:

Topic	Page	Spec points	Understanding   	Revised	RP
2.1	26-27	**Levels of Organisation:** • **I can describe what a multi-cellular organism is** • I can list and identify different tissues and organs • I can describe how multicellular organisms are organised (cells > tissues > organs > organ systems > organisms) • I can describe a tissue, an organ and an organ system • I can name some organs and organ systems in humans • **I can describe the job of some organ systems**			
2.2	28-29	**Gas Exchange:** • I can name some tissues and organs in the human gas exchange system • I can label a simple diagram of the human gas exchange system • I can describe the functions of some tissues and organs in the human gas exchange system • **I can compare the amounts of gases in inhaled air to exhaled air** • **I can explain why you can see your breath on a cold mirror** • **I can explain how the breathing system is adapted to its function**			
2.3	30-31	**Breathing:** • I can state what happens to the air, ribs and diaphragm during breathing • I can describe changes in lung volume during breathing			

		• **I can describe how to measure lung volume** • **I can explain how models can demonstrate how the lungs work**					
2.4	32-33	**Skeleton:** • I can identify parts of the skeletal system • I can describe the individual functions of parts of the skeletal system • **I can describe the function of bones** • **I can explain how blood cells are made**					
2.5	34-35	**Movement: Joints:** • I can describe methods of measuring the force from muscles • I can explain why some muscles may need to be stronger than others • **I can describe the function of cartilage and ligaments** • **I can recall the different types of joint**					
2.6	36-37	**Movement: Muscles:** • I can identify parts of the muscular system • I can describe the individual functions of parts of the muscular system • I can explain how parts of the skeletal and muscular system work together • I can explain the function of antagonistic muscle pairs					

7C2: Elements, atoms and Compound

Textbook pages 76-85

7C2: Home-Learning Tasks:

Task Number	Regular	Challenge	Completed?
1	Define the term element. Research how many types of elements exist in the world.	Investigate the term element and list the first 20 elements in order of their atomic number.	
2	Investigate the term compound. Explain the differences between elements and compounds.	Research the difference between the term covalent compound and ionic compound.	
3	State the number of each type of atom in H_2O, H_2, H_2SO_4	Draw and label diagrams to show how you could make models of the molecules: H_2O, H_2, H_2SO_4	
4	Summary Questions: Regular	Summary Questions: Challenge	

Summary Questions: Regular:

1. Carbon dioxide is a compound made up out of which two elements?
2. Write the formula of sulphur dioxide.
3. Find the formula of sulphuric acid. State whether it is an element or a compound.
4. Investigate who designed the modern periodic table.

Summary Questions: Challenge:

1. The periodic table shows elements in order of their atomic number. Investigate the difference between the term atomic number and relative atomic mass.
2. Investigate what elements exist in group1. Research their melting points. What trend do you notice in their melting point as you descend the group?
3. What group do the Halogens exist in? List the first 3 halogens and comment on the trend in their boiling points as you descend the group.

7C2: Revision Questions:

Question	Answer
What is an element?	A substance made of only one type of atom
What is used to organise the elements?	The periodic table
What is a chemical symbol?	The one or two letter code for an element
What is an atom?	The smallest part of an element that can exist
Does one atom on its own have the properties of an element?	No
What is a compound?	Two or more different types of atom joined together
What molecules?	Atoms joined together
What happens to the chemical properties when atoms form compounds?	The chemical properties change
What is a chemical formula?	It shows the relative numbers of each atom in a compound
How many elements are there?	92+

7C2: Checklist:

Topic	Page	Spec points	Understanding			Revised	RP
			☹	😕	😃		
2.1	76-77	**Elements:** • I can list examples of atoms, elements and compounds • I can represent elements using chemical symbols • **I can describe what an element is**					
2.2	78-79	**Atoms:** • I can recognise an atomic model • **I can describe what an atom is** • **I can describe the difference between atoms**					
2.3	80-81	**Compounds:** • I can describe the differences between atoms, elements and compounds • **I can describe the properties of salt (sodium chloride)**					
2.4	82-83	**Chemical Formulae:** • I can represent compounds using chemical formulae • I can represent various chemical reactions using formulae and symbol equations • **I can compare different compounds**					

7P1: Forces

Textbook pages 112-123

7P1: Home-Learning Tasks:

Task Number	Regular	Challenge	Completed?
1	Find out what the dead sea is. Describe what happens when you are in the dead sea and explain why this happens	Describe what Newton's 3rd law is. Describe an example of it happening	
2	Describe the different ways that cars and other vehicles use to increase their top speed. Explain how this makes them faster	Describe what these athletes do to increase their speed, explain how it works and use pictures a) Cyclists b) Snowboarders c) Swimmers	
3	Describe at least 3 different methods that very fast cars use to slow them down. Explain how they work	In terms of forces describe what happens to a skydiver as they jump out of a plane. Describe what is meant by terminal velocity	
4	Summary Questions: Regular	Summary Questions: Challenge	

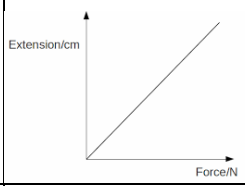
Summary Questions: Regular:

1. Describe the difference between a contact and a non-contact force. Give examples of each
2. Describe what happens if you double the force applied to stretch a spring
3. Describe what is meant by an object's elastic limit
4. Describe what friction is. Describe a situation where friction is and is not useful
5. Describe what happens to an object when the forces acting on it are balanced
6. Describe what you can do to decrease the air resistance acting on something

Summary Questions: Challenge:

1. A spring has a spring constant of 5 N/cm and is stretched by 4 cm. What force is required to do this?
2. Explain how making an object more streamline decreases the amount of air resistance acting on it
3. Describe the difference between mass and weight
4. A car accelerates from rest, travels at a constant speed, then brakes to a halt. Describe what happens to the forces acting on the car during this journey
5. Describe what happens when waves superpose

7P1: Revision Questions:

Question	Answer
1. What do forces do?	They can change the shape, direction or speed of an object
2. What types of force are there?	Pull, push and twist
3. Give some examples of contact forces	Friction, air resistance, tension
4. Give some examples of non-contact forces	Gravity, magnetism, static electricity
5. Describe what a non-contact force is	A force that acts on an object even though it is not touching the object
6. What is an interaction pair?	When 2 objects interact there is a force on each one that is the same size but in the opposite direction
7. Give an example of an interaction pair	Gravity between 2 objects
8. Describe how you measure forces	Using a Newton-meter
9. What unit is force measured in?	Newtons
10. What does deform mean?	To change the shape of an object
11. What does compress mean?	To squash an object
12.Describe what a reaction force is	The support force provided by a solid surface
13. Describe what extension is	Where something increases in length
14. Describe what Hooke's law is	A law that says if you double the force on an object, the extension of the spring doubles
15. Describe what is meant by a material's elastic limit	The point beyond which a spring will not return to its original length when the force is removed
16. Describe the shape of the graph for Hooke's law (extension against force)	 Straight line graph that goes through (0,0) Force is proportional to extension
17. Describe what causes friction	Contact between two surfaces
18. Describe a use of friction	Brakes on a car, moving against a surface
19. Describe a disadvantage of friction	Slipping (if there is not enough), slowing objects down
20. Describe how you can reduce friction	Lubrication
21. State some examples of drag forces	Air resistance, water resistance
22. Explain how drag forces slow objects down	Particles collide with the moving object providing a resisting force, slowing it down
23. Describe how to reduce drag forces	Making an object more streamline/ aerodynamic
24. Describe what is meant by a field	An invisible area around an object where something experiences a force
25. Describe what weight is. What's it measured in?	Newtons. It is a force caused by gravity
26. Describe what mass is. What's it measured in?	kg. It is the amount of matter in an object
27. Describe how to calculate the weight of	Weight = Mass x gravitational field strength

an object	(Gravitational field strength=10 on Earth)
28. Describe what happens to your weight on different planets	The bigger the mass of the planet, the larger the gravitational field strength and the larger the weight
29. Describe what happens if forces are balanced	An object will remain stationary (speed = 0) or will move at a constant speed
30. Describe what happens if forces are unbalanced	An object will either accelerate or decelerate (it will change speed)
31. Describe the forces acting on an orbiting object (E.g. The moon around Earth)	Gravity causes objects to orbit each other (an interaction pair). It causes a constant change in direction but not a change in the object's speed

7P1: Checklist:

Topic	Page	Spec points	Understanding			Revised	RP
			☹	😕	😃		
1.1	112-113	**Introduction to Forces:** • I can state that a force acts as a push or a pull, are either contact or non-contact, forces may occur when two objects interact and they are measured in Newtons • I can state what things a force will affect about an object • I can list some forces • I can describe forces using force arrows diagrams • **I can describe how to measure a force and the unit for forces** • **I can describe what an interaction pair of forces is**					
1.2	114-115	**Squashing and Stretching:** • I can describe forces in terms of deforming, compressing and stretching objects • I can describe Hooke's Law • I can calculate extension of springs using Hooke's Law • I can apply Hooke's Law to the measurement of forces using a force meter • **I can recall how to do an experiment for Hooke's law** • **I can describe an experiment to find Hooke's law**					
1.3	115-116	**Drag forces and friction:** • I can describe the effect of friction between surfaces • I can describe the effects of air and water resistance • I can explain ways to reduce or increase friction as necessary • I can explain ways to reduce or					

		increase air or water resistance as necessary • I can discuss applications of friction					
1.4	117-118	**Forces at a Distance:** • I can identify if a particular force is contact or non-contact (including gravity, magnetism and static electricity) • **I can describe what the differences between weight and mass** • **I can explain what happens to an object's weight in space** • **I can describe what a field is** • **I can calculate the weight of an object**					
1.5	119-120	**Balanced and Unbalanced:** • I can describe what balanced and unbalanced forces are and what a resultant force is • I can explain when a force is balanced or unbalanced • **I can explain what happens when forces are balanced and unbalanced**					

7B3:

Reproduction

Textbook pages 40-57

7B3: Home-Learning Tasks:

Task Number	Regular	Challenge	Completed?
1	Draw a table to compare the changes in boys and girls at puberty	Carry out research to find the effect of hormones on boys and girls at puberty	
2	Write a story of the journey of a sperm from ejaculation to fertilisation	Explain why millions of sperm are released during ejaculation but usually only one egg is released at ovulation	
3	Describe why pollination is sometimes called 'accidental' during insect pollination	Explain why wind pollinated plants often flower in spring but insect pollinated plants flower in summer	
4	Summary Questions: Regular	Summary Questions: Challenge	

Summary Questions: Regular:

1.Describe the role of these parts of the reproductive system: a) testes b) ovary c) uterus

2. Describe how the baby is born after 40 weeks in the uterus

3. Describe what happens to the ovule in a plant after pollination

4. Compare the methods of seed dispersal and explain which method you think is most effective

Summary Questions: Challenge:

1. Explain the importance of the placenta to the developing foetus
2. Carry out research to describe and compare the different methods of contraception
3. Explain why it is important to plant seeds at the correct depth to ensure germination

4. Producing seeds 'costs' the plant a lot of energy. Explain why you think this is a good or a poor use of energy.

7B3: Revision Questions:

Question	Answer
1. What is puberty?	The physical changes that happen to children as they develop into adults
2. List four changes that happen to both boys and girls during puberty	Pubic hair and underarm hair grows, body smell becomes stronger (body odour), you experience emotional changes, you have a growth spurt
3. List four changes that happen to girls during puberty	Breasts develop, ovaries start to release eggs, periods start, hips widen
4. List five changes that happen to boys during puberty	Voice breaks (gets deeper), testes and penis get bigger, testes start to produce sperm, shoulders wide, hair grown on face and chest
5. What controls the changes during puberty?	Sex hormones
6. What is the job of the testes?	To produce sperm cells
7. What is the job of the glands in the male reproductive system?	To produce nutrients to keep the sperm alive
8. What two substances are found in semen?	Sperm cells and nutrient fluid
9. What tubes do the sperm travel down when they move from the testes to the penis?	The sperm ducts
10. What does the urethra do?	Carries urine out of the body
11. What is the job of the ovaries	To contain egg cells and release one each month
12. What is the job of the oviduct?	To carry eggs from the ovaries to the uterus
13. What is the job of the uterus?	This is where a baby develops and grows before it is born
14. What is the job of the cervix?	This is a ring of muscle found at the entrance to the uterus. It keeps the baby in the uterus until it is ready to be born.
15. What is the job of the vagina?	This receives the sperm during sexual intercourse and the baby will pass out of the body through the vagina.
16. What is the job of the urethra?	This carries urine out of the body
17. What are gametes?	This is the scientific name for egg and sperm cells
18. What is fertilisation?	When an egg and sperm cell meet and the genetic information carried in them joins together.
19. How does an egg get from the ovary to the uterus?	It passes down the oviduct; the cells of the oviduct are covered in cilia (tiny hairs) that waft the egg cell along the oviduct.
20. What happens during ejaculation?	Semen is released from the penis
21. If an egg cell becomes fertilised, it	An embryo

divides several times to form a ball of cells. What is this ball of cells called?	
22. What is implantation?	This is when the embryo attaches to the uterus lining and begins to grow into a baby.
23. How long is the human gestation period?	Around 9 months (40 weeks)
24. Why should a pregnant woman avoid smoking and drinking alcohol?	Smoke from cigarettes can cause babies to be born early and underweight. Alcohol can affect the development of the baby's brain.
25. What is the job of the placenta?	This is an organ that the mother grows. In this organ substances pass between the mothers and babies blood. It acts as a barrier to stop infections and harmful substances reaching the baby.
26. What is the job of the umbilical cord?	This connects the foetus to the placenta
27. What is the job of the fluid sac?	This acts as a shock absorber, protecting the foetus from any bumps.
28. On average how often does a girl or woman have a period?	Every 28 days
29. On which day of the menstrual cycle is the egg usually released from the ovary?	Day 14
30. What is it called when an egg is released from the ovary?	Ovulation
31. What is contraception?	This is a method where a man and woman take steps to avoid becoming pregnant during sexual intercourse.
32. How do condoms work?	This is a barrier method of contraception. The condom prevents the semen from entering the woman's body.
33. How does the contraceptive pill work?	This is a pill full of hormones that the woman takes. These hormones prevent the woman from releasing an egg every month.
34. Do condoms and the contraceptive pill protect men and women from catching sexually transmitted diseases?	Condoms do protect men and women. The contraceptive pill does not protect men and women.
35. Name the two parts of the male part of a flower (the stamen)	Anther and filament
36. Name the three parts of the female part of a flower (the carpel)	The stigma, style and ovary
37. What is pollination?	This is when a pollen grain fertilises the ovule.
38. Name the two ways that pollination can happen	Wind and insects
39. In plants what is fertilisation?	When the nucleus of a pollen grain joins with the nucleus of the ovule
40. Name the three parts of a seed	Seed coat, embryo, food store
41. What three things does a seed need to germinate?	Water, oxygen, warmth

7B3: Checklist:

Topic	Page	Spec points	Understanding			Revised	RP
			☹	😕	😃		
3.1	40-41	**Adolescence:** • **I can describe what adolescence and puberty are** • **I can describe the changes that happen during puberty in boys and girls** • **I can explain what causes puberty**					
3.2	41-42	**Reproductive Systems:** • I can describe the functions of some tissues and organs in the male and female human reproductive systems • I can name some tissues and organs in the human reproductive systems • **I can recall the sex cells for males and females**					
3.3	43-44	**Fertilisation and implantation:** • I can explain how gametes are involved in human fertilisation • **I can describe what gametes are** • **I can recall where fertilisation takes place** • **I can explain how the games meet each other in fertilisation** • **I can describe what implantation and ejaculation are**					
3.4	45-46	**Development of a foetus:** • I can describe the stages of pregnancy and birth • **I can describe what gestation is** • **I can describe what a foetus is** • **I can describe the function of the placenta, umbilical cord and the fluid sac**					

3.5	47-48	**The Menstrual Cycle:** • I can describe the stages of the menstrual cycle • **I can describe what a period is** • **I can describe what ovulation** • **I can describe some methods of contraception** • **I can explain how condoms and the pill work**					
3.6	49-50	**Flowers and Pollination:** • I can name some tissues and organs in the reproductive systems of plants • I can describe the functions of some tissues and organs in the reproductive systems of plants • **I can describe what pollination is** • **I can explain how insect and the wind can pollinate other plants**					
3.7	51-52	**Fertilisation and Germination:** • I can explain how gametes are involved in plant fertilisation • **I can describe the structure of a seed** • **I can describe what seeds need to grow** • **I can explain how plants grow**					
3.8	53-54	**Seed Dispersal:** • I can describe the methods of seed and fruit dispersal • I can investigate methods of dispersal mechanisms quantitatively • **I can explain how seeds are adapted to different methods of dispersal**					

7C3: Reactions

Textbook pages 86-99

7C3: Home-Learning Tasks:

Task Number	Regular	Challenge	Completed?
1	Explain what the difference is between a physical change and a chemical change.	Compare physical changes with chemical changes; include examples to illustrate your answer. Investigate the term catalyst and explain what it can do to a chemical reaction.	
2	Explain what a word equation is. Give 3 examples of word equations.	Research and then illustrate word equations of oxidation of magnesium and the burning of a fuel.	
3	Investigate and explain the terms thermal decomposition, complete combustion, exothermic and endothermic.	Research the term thermal decomposition. Give a word equation for the thermal decomposition of copper carbonate. Explain how evolved carbon dioxide would be tested for.	
4	Summary Questions: Regular	Summary Questions: Challenge	

Summary Questions: Regular:

1. State whether burning fuels is exothermic or endothermic. Explain your answer.
2. Explain using an example what the conservation of mass states.
3. 10g of Zinc Carbonate is heated to form 7g of Zinc Oxide. Calculate the mass of carbon dioxide that would be formed.
4. Investigate the term oxidation. Write the word equation for the oxidation of iron.

Summary Questions: Challenge:

1. Research and explain what needs to happen to chemical bonds when a chemical reaction occurs. Explain how this influences whether a reaction is exothermic or endothermic.
2. Write a paragraph to compare exothermic and endothermic reactions. Include examples to illustrate your answer.
3. Burning fuels is exothermic. Investigate the term energy profile diagram. Draw an energy profile diagram of an exothermic reaction.

7C3: Revision Questions:

Question	Answer
What is a chemical reaction?	A change where atoms are rearranged to make new substances.
What does reversible mean?	It is quite easy to go back to the starting conditions
What are some signs of a chemical reaction?	Flames, sparks, smells, temperature change, bangs, fizzing
Are all reactions fast?	No, they go at different speeds
What can be used to speed up a reaction?	A catalyst
What is special about a catalyst?	It speeds up a reaction without being used up.
What is a state change?	A physical change
What elements make up carbon dioxide?	Carbon, oxygen
What are the substances at the start of a chemical reaction called?	Reactants
What are the substances made by a chemical reaction called?	Products
Where do you put the reactants and products in a word equation?	Reactants on the left Products on the right
What is a fuel?	A material that burns to transfer energy by heating
What is a more scientific word for burning?	Combustion
What two products are made when a fuel burns	Carbon dioxide and water
What is a fossil fuel?	Fuel made of dead organisms
What does non-renewable mean?	Cannot be replaced once they are used up
Why might hydrogen be a good fuel?	When it burns it only makes water
What does oxidation mean?	A reaction that adds oxygen to a substance
What is thermal decomposition?	Breaking up a compound by heating
What is made when a carbonate is heated?	An oxide and carbon dioxide are formed
What is the test for carbon dioxide?	Limewater turns cloudy
What is a discrete variable?	Can only have specific values
What does conservation of mass mean?	The total mass of the products is equal to the total mass of the reactants
Why is balancing equations important?	It makes them obey conservation of mass
What does exothermic mean?	Gives out energy and gets hotter
What does endothermic mean?	Takes in energy and gets colder
What is a hazard?	A possible source of danger
What is a risk	The chance of damage or injury from a hazard

7C3: Checklist:

Topic	Page	Spec points	Understanding			Revised	RP
			☹	😕	😃		
3.1	86-87	**Chemical Reactions:** • **I can describe what a chemical reaction is** • **I can describe the properties of chemical reactions** • **I can explain why chemical reactions are useful** • **I can state the different between chemical and physical reactions** • I can state neutralisation, combustion, thermal decomposition, oxidation, displacement and the reaction of metals and acids, as examples of chemical reactions • I can explain the conditions and uses of neutralisation, combustion, thermal decomposition, oxidation, displacement and the reaction of metals and acids, as examples of chemical reactions • I can state that catalysts speed up chemical reactions					
3.2	88-89	**Word Equations:** • I can represent chemical reactions using word equations • I can state that during chemical reactions *reactants* become *products* • I can state that during chemical reactions atoms are rearranged in order for reactants to become products					
3.3	90-91	**Burning Fuels:** • **I can describe what a fuel is**					

		• **I can give examples of different fuels** • **I can describe what a fossil fuel is** • **I can describe what happens in combustion** • **I can write word equations for combustion** • **I can describe what is meant by non-renewable** • **I can describe what an oxidation reaction is**					
3.4	92-93	**<u>Thermal Decomposition:</u>** • **I can describe and identify decomposition reactions** • **I can write word equations for decomposition reactions** • **I can describe what thermal decomposition is** • **I can describe an experiment for thermal decomposition**					
3.5	94-95	**<u>Conservation of Mass:</u>** • I can state that mass is conserved during changes of state and chemical reactions • I can explain why mass is conserved during changes of state and chemical reactions • I can represent chemical reactions using balanced symbol equations					
3.6	96-97	**<u>Endothermic and Exothermic:</u>** • I can describe identify endothermic and exothermic reactions • I can describe that during chemical reactions, surroundings may increase or decrease in temperature • I can explain changes of state with reference to the energy levels of particles and whether a chemical reaction is exothermic or endothermic					

7P2: Sound

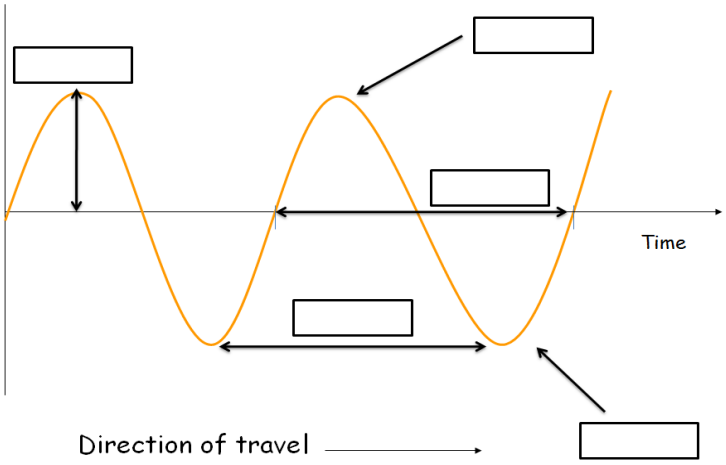
Textbook pages 124-135

7P2: Home-Learning Tasks:

Task Number	Regular	Challenge	Completed?
1	Describe how a tuning fork creates sound	Research an experiment that can work out the speed of sound	
2	Make a glossary of these key words: Ultrasound, pitch, amplitude, infrasound, vacuum, medium, frequency, oscillation, peak, trough	Research what a cochlear implant is and describe how it works	
3	Find out what a mosquito anti-teen device is. Describe how it works and describe any problems people have with it	Research what a coupling gel is and explain why it is necessary to use for ultra-scanning a foetus	
4	Summary Questions: Regular	Summary Questions: Challenge	

Summary Questions: Regular:

1. Copy and label the diagram with the correct key words
2. Describe what reflection is
3. Explain why sound cannot travel through a vacuum
4. Describe how an ultrasound image can be made of a baby
5. Describe how an ear works



Summary Questions: Challenge:

1. Describe the difference between a longitudinal and a transverse wave. Give examples of each
2. Explain which one sound travels the fastest in: solids, liquids or gases
3. Describe what happens to the wavelength of a sound wave if you increase its frequency
4. Explain how loud music can damage your hearing
5. Explain how ultrasound can be used to calculate how far away an object is

7P2: Revision Questions:

Question	Answer
1. What is a wave? What does it transfer?	An oscillation/ vibration that transfers energy
2. What is meant by the amplitude of a wave?	The maximum displacement of the particles (the distance from the middle of the wave to the peak)
3. What is meant by the frequency of a wave?	The number of waves that past a point per second
4. What is meant by the wavelength of a wave?	The distance from one point of a wave to the next identical point
5. What is meant by the peak or crest of a wave?	The highest point of a wave
6. What is meant by the trough of a wave?	The lowest point of a wave
7. Describe what a transverse wave is. Give an example	Where the oscillations of a wave are at a right angle to the direction the wave moves. Light
8. Describe what a longitudinal wave is. Give an example	Where the oscillations of a wave are in the same direction as the direction the wave moves. Sound
9. What is meant by compression and rarefaction? Which wave has these areas?	Where particles are close together. Where particles are spread out. Longitudinal waves
10. What is reflection?	Where waves bounce off a surface
11. What is it called when sound reflects?	An echo
12. What happens when waves superpose?	Where waves join together to either add up or cancel each other out
13. What is an incident wave?	The wave going into a surface
14. What creates a sound wave?	A vibration/ oscillation
15. What is needed for a sound wave to travel?	A medium
16. What can sound not travel through?	A vacuum
17. What speed does sound travel in air?	340m/s
18. Explain why sound travels faster in a solid than a liquid?	The particles are closer together, so the vibrations of the particles can be passed along quicker
19. What happens when you travel faster than the speed of sound?	You 'break the sound barrier'
20. State three differences between light and sound.	Light travels faster than sound, sound needs a medium to travel, light does not, light is a transverse wave, sound is a longitudinal
21. What equipment can you use to view a sound wave?	A microphone and an oscilloscope
22. What is meant by the pitch of a sound wave?	How high the sound wave is. How high the frequency of the sound wave is
23. What is frequency measured in?	Hertz
24. What is a kilohertz?	1000Hz
25. What is ultrasound?	Sound waves with a frequency above the highest

	human hearing frequency (20,000Hz)
26. What is infrasound?	Sound waves with a frequency lower the lowest human hearing frequency (20Hz)
27. What is meant by the human audible range?	The range of frequencies that a human can hear
28. Describe how the ear works	Sound moves through the pinna, this vibrates the ear drum. The ear drum vibrates bones called ossicles. This makes the liquid in the cochlea vibrate. Hairs then vibrate, which create an electrical signal sent along the auditory nerve to the brain.
29. What parts is the outer ear made from?	Pinna, auditory canal and the eardrum
30. How can you damage your hearing?	Very loud noises can burst/ break your ear drum
31. What is sound intensity measured in?	Decibels
32. What can ultrasound be used for?	Physiotherapy, on ships, to make images of unborn babies, measuring distances
33. What is a reverberation?	Lots of echoes joined together
34. Explain how ultrasound is used to measure distances	Ultrasound is sent to a surface where it reflects off it and is received by the sender again. The time delay can be used with the speed of the wave to calculate the object is away
35. What produces ultrasound waves?	A transmitter
36. What detects ultrasound waves	A receiver

7P2: Checklist:

Topic	Page	Spec points	Understanding			Revised	RP
			☹	😕	😃		
2.1	124-125	**Waves:** • I can state what waves transfer • I can name some types of waves • I can describe the reflection of an observed wave in water • I can explain how superposition may result in a rogue wave • I can recall some longitudinal and transverse waves • I can describe what frequency is • I can recognise a longitudinal wave from a diagram • I can label a diagram of a longitudinal wave, including compressions, rarefactions • I can explain what It means to describe sound as a longitudinal wave, with reference to the direction of vibrations and energy • **I can describe the properties of a wave**					
2.2	126-127	**Sound and Energy transfer:** • I can state that different types of waves can travel through matter and vacuums • I can state that sound is produced by vibrations • I can explain why sound cannot travel through a vacuum • I can describe how sound requires matter to travel • I can explain which material sound will travel fastest through, with reference to particle arrangement • **I can describe what a vacuum is** • **I can state which wave**					

		travels faster out of light and sound					
2.3	128-129	**Loudness and Pitch:** • I can state that frequencies of sound are measured in Hertz (Hz) • I can state the auditory range of humans • I can name some animals that use sound and have different auditory ranges than humans • **I can describe the difference between infrasound and ultrasound** • **I can identify which waves have higher/ lower frequencies from wave diagrams**					
2.4	130-131	**Detecting Sound:** • I can name some devices that can detect sound, including microphones and ear drums • I can describe some applications of absorbing sound, including sound proofing and ear defenders • I can describe how sound waves can be used to transfer information if they are converted to electrical signals • **I can describe and label the different parts of the ear** • **I can describe how hearing can be damaged** • **I can describe how you can measure loudness** • **I can describe how a microphone works**					
2.5	132-133	**Echoes and Ultrasound:** • I can describe what an echo is • I can describe some applications of echoes, including sonar, ultrasound and echolocation • **I can explain how ultrasound can be used to build up an image of an object**					

7C4: Acids & Alkalis

Textbook pages 100-109

7C4: Home-Learning Tasks:

Task Number	Regular	Challenge	Completed?
1	List 3 examples of acids and alkalis. Compare their properties.	Research and illustrate the formula of sulphuric acid, hydrochloric acid and nitric acid. What elements do all acids contain?	
2	Investigate the difference between the terms concentrated and dilute. Illustrate your answer with a diagram.	Research the difference between the term strong acid and concentrated acid.	
3	Research the term Neutralisation. Give examples of when neutralisation is useful.	Draw on graph paper the pH graph that would be produced is a strong acid neutralised a strong alkali.	
4	Summary Questions: Regular	Summary Questions: Challenge	

Summary Questions: Regular:

1. What does the term indicator mean? Illustrate your answer by showing the colours that universal indicator goes in acids and alkalis.
2. Investigate the term salt. Explain how different salts can be formed.
3. What gas is evolved if an acid reacts with a metal? How would you test for this gas?
4. What gas is evolved if an acid is reacted with a metal carbonate? How would this gas be tested for?

Summary Questions: Challenge:

1. Research the term acid indicator. Show the colours that Universal, Litmus, Methyl Orange and Phenolphalein indicators go in acids and alkalis.
2. Investigate and explain the differences between a base and an alkali. Use examples to illustrate your answer.
3. Give 3 examples of where neutralisation is useful.
4. Explain with diagrams how copper sulphate crystals can be prepared from reacting copper oxide with sulphuric acid.
5. Describe and explain the stages of making magnesium chloride crystals from an acid and an alkali.

7C4: Revision Questions:

Question	Answer
1. Give some examples of acids.	Hydrochloric acid (stomach acid), citric acid (lemon juice), ethanoic acid (vinegar), sulphuric acid (battery acid)
2. What type of chemical is contained in liquid soap, oven cleaner and toothpaste?	They contain alkalis.
3. What does corrosive mean?	Corrosive means a chemical could burn your skin and eyes.
4. Give two ways of controlling risks from corrosive solutions.	Wear eye protection; keep the solution off your skin.
5. Describe a concentrated acid solution.	A concentrated acid solution contains a high number of acid particles in one litre of solution.
6. What is an indicator?	An indicator is a dye that turns a different colour in acidic and alkaline solutions.
7. What colour does red litmus paper turn when adding alkali?	Red litmus turns blue on adding alkali.
8. What colour does blue litmus paper turn when adding acid?	Blue litmus turns red on adding acid.
9. What pH is neutral? What colour does Universal indicator turn in a neutral solution?	pH7 is neutral, turns Universal indicator green.
10. What sort of chemical gives pH 14? What colour is this in Universal indicator?	A strong alkali would be pH 14, colour purple.
11. What sort of chemical gives pH 1? What colour is this in Universal indicator?	A strong acid would be pH 1, colour red
12. Describe what neutral means.	Neutral means that the solution is neither acidic nor alkaline, the pH is exactly 7.
13. Give a difference between a base and an alkali.	Alkalis are bases that dissolve in water.
14. Give the general word equation for an acid reacting with a base.	Acid + base $\rightarrow$ salt + water
15. Give the general word equation for a acid reacting with a metal	**M**etal + **a**cid $\rightarrow$**s**alt + **H**ydrogen
16. Describe the test for Hydrogen	A lit splint makes a squeaky pop sound only when Hydrogen is present.
17. Give the name of the liquid that is collected when filtering a mixture.	Filtrate.
18. Explain how to make salt crystals from an acid and a metal.	React an acid with a metal or base to give a salt solution. Filter to remove excess metal or base. Heat the filtrate in an evaporating basin to remove the water. Leave the evaporating basin in a warm place to allow the rest of the water to evaporate. Crystals will remain.

19. What type of salt is given when sulphuric acid is used in the reaction?	Sulphate salt
20. What type of salt is given when hydrochloric acid is used in the reaction?	Chloride salt
21. What type of salt is given when nitric acid is used in the reaction?	Nitrate salt
22. Give the name of the products when calcium oxide is reacted with hydrochloric acid.	Calcium chloride + water
23. What is the pH scale?	The pH scale shows how acidic or alkaline a solution is.
24. Describe how neutralisation reactions can be helpful.	Neutralising bee/ wasp stings, neutralising soil to allow more plants to grow, neutralising lakes to enable more wildlife to live there, neutralising stomach acid
25. Which element do all acids contain?	All acids contain hydrogen.
26. Describe what a salt is.	A salt is a compound that forms when an acid reacts with a metal element or compound. The hydrogen atoms of the acid are replaced by atoms of the metal element.
18. Explain how to make magnesium chloride salt crystals from an acid and a metal.	React magnesium, magnesium oxide or magnesium hydroxide with hydrochloric acid to give a magnesium chloride solution. Filter to remove excess reactant. Heat the filtrate in an evaporating basin to remove the water. Leave the evaporating basin in a warm place to allow the rest of the water to evaporate. Magnesium chloride salt crystals will remain.

7C4: Checklist:

Topic	Page	Spec points	Understanding			Revised	RP
			☹	😕	😃		
4.1	100-101	**Acids and Alkalis:** • I can state that different acids and alkalis may have different strengths • **I can describe what corrosive and irritant means** • **I can describe what concentrated and dilute means** • **I can explain how to dilute a chemical**					
4.2	102-103	**Indicators and PH:** • I can state what an indicator does • I can describe how to use Universal indicator and litmus paper to find the strength of an acid or an alkali, using the pH scale • **I can identify the PH of different substances**					
4.3	104-105	**Neutralisation:** • I can define the term 'neutralisation' • **I can describe what a base is** • **I can give examples of neutralisation reactions and where they are used**					
4.4	106-107	**Making Salts:** • **I can describe what a salt is** • **I can describe how to make a salt** • **I can use word equations to show how a salt is made** • **I can describe an experiment for how to make salt crystals**					

7P3: Light

Textbook pages 136-147

7P3: Home-Learning Tasks:

Task Number	Regular	Challenge	Completed?
1	Find out what a reflective telescope is. Using diagrams explain how it works	Find out what is meant by the electromagnetic spectrum. Describe the properties of all of these waves and the order of the 7 different waves in it	
2	Describe what is meant by a mirage and explain how one is created	Find out what total internal reflection. Use it to explain why diamonds sparkle in light	
3	Find out what LASER stands for. Describe some properties and uses of lasers	Find out what an emission and an absorption spectrum are. Describe what we can use them for	
4	Summary Questions: Regular	Summary Questions: Challenge	

Summary Questions: Regular:

1. Describe what is meant by a luminous object
2. Describe the difference between opaque, transparent and translucent
3. Describe what is meant by the law of reflection
4. Describe what refraction is and explain why it happens (you may want to use a model to help you)
5. Describe how your eye works
6. Describe how we see colours. EG. Why does a red shirt look red?

Summary Questions: Challenge:

1. Explain why a green shirt looks black in red light
2. Describe what a light year is
3. Describe what a colour spectrum is
4. Explain what happens if light travels along the normal to a glass block
5. Explain what happens when light scatters
6. Explain how we can see planets, even though they do not give off light

7P3: Revision Questions:

Question	Answer
1. What is a luminous object?	A object that emits light
2. How do we see non-luminous objects?	They reflect light into our eyes
3. What does transmit mean?	It allows light to pass through it
4. What does translucent mean?	A material that transmits some light, the rest is scattered (you cannot see the object clearly)
5. What does opaque mean?	A material that does not transmits light (you cannot see through it)
6. What does transparent mean?	A material that transmits light (you can see through it)
7. What is light?	A wave
8. How fast does light travel?	300,000,000 metres/second
9. What is a light year?	The distance travelled by light in one year
10. What is a virtual image?	An image that cannot be focussed/ projected onto a screen
11. What is a real image?	An image that can be projected
12. What is the law of reflection?	The angle of incidence is equal to the angle of reflection
13. What is specular reflection?	Reflection from a smooth surface. It reflects using the law of reflection
14. What is (diffuse) scattering?	Reflection from a rough surface. It reflects in random directions
15. What is refraction?	The change in direction of a ray or wave as a result of the change in its speed
16. What is a medium?	Something that a wave travels through?
17. Explain why light refracts	Part of the light wave changes speed before the other part of the light wave
18. Describe what a convex lens is	A lens that converges light. It is a circular piece of glass that is thick in the middle and thinner around the outside
19. Describe what a convex lens does	It converges light (focuses light onto a point)
20. What does the retina do?	It responds to light and converts it into electrical impulse sent up the optic nerve to the brain
21. What does the iris do?	It controls how big the pupil is (to let more or less light into the eye)
22. What does the cornea do?	It is a lens that refracts the light onto the retina
23. What does the pupil do?	It is a hole that allows light into the eye
24.What are the different types of photoreceptor that make up the retina	Rods (for movement) and cones (for colour)
25. What is at the back of a digital camera that detects light?	A CCD (Charged-coupled device)

26.What happens when you shine white light into a triangular prism?	It separates into colours/ a spectrum
27. What is meant by white light?	All the colours/ frequencies from the colour spectrum. It is continuous
28. What are the primary light colours?	Red, green and blue
29. What are the secondary light colours?	Cyan, yellow and magenta
30. What happens when white light is shone through a filter?	It transmits the colour of the filter and absorbs every other colour
31. How do we see colours?	The colour you see is reflected off the object, all the other colours are absorbed by the object
32. Why do objects appear white?	They reflect all colours and absorb no colours
33. Why do objects appear black?	They absorb all the colours and reflect no colours

7P3: Checklist:

Topic	Page	Spec points	Understanding   	Revised	RP
3.1	136-137	**Light:** • I can state that light waves are able to travel through a vacuum • I can state that in a vacuum, light waves have a maximum speed, the speed of light • I can describe how light behaves in relation to different materials using the words transparent, translucent and opaque • **I can describe how we can see objects due to light** • **I can state how fast light is**			
3.2	138-139	**Reflection:** • I can state that during specular reflection in a plane mirror, the angle of incidence is always equal to the angle of reflection • I can state that light waves may be absorbed, reflected (diffuse and specular), refracted and diffused • I can give some examples of when light is absorbed or reflected • I can describe what is meant by absorbing and reflecting light • I can describe the formation of an image from specular reflection in a plane mirror using a ray model diagram • I can describe the difference between a virtual and real image • **I can describe what happens when light reflects off a smooth and rough surface**			
3.3	140-141	**Refraction:** • I can describe what convex lenses			

		do • I can describe refraction using a ray model diagram • I can describe how convex lenses focus light using a ray diagram • I can apply my knowledge of light waves to explaining why refraction occurs, with reference to particles and the speed of light • **I can describe what the focal length and focus is for a converging lens**					
3.4 3.4	142-143	**<u>The Eye and the Camera:</u>** • I can describe how the human eye forms an image using ray diagrams • I can state that pinhole cameras, cameras with lenses and the human eye form images from light • I can label the main parts of the human eye: cornea, pupil, iris, lens, retina, optic nerve • I can describe the functions of the main parts of the human eye: cornea, pupil, iris, lens, retina, optic nerve • I can describe how a pinhole camera works using a ray diagram • I can explain some applications of convex lenses, in cameras and the eye • I can compare and contrast the human eye and a camera • I can apply my knowledge of light waves to explain how colour blindness occurs, with reference to rod and cones					
3.5	144-145	**<u>Colour:</u>** • I can state that white light is a mixture of colours • I can describe that we see different colours due to the different absorption and reflection of light by objects • I can describe how combinations of the primary colours of light result in the secondary colours of					

		light • I can describe how white light is a mixture of colours with reference to frequency • I can explain how we see different colours, with reference to the colour of the object and the colour of the light available • I can explain how a prism may be used to diffuse the different colours of light, with reference to refraction and wave speed					

Practical Skills Checklist:

Lesson	Skills	Understanding			Check
		☹	😕	😃	
1	• I can describe the safety rules of the lab • I can describe the hazards in a lab • I can create a risk assessment • I can identify science equipment • I can create a diagram of science equipment • I can describe how to light a Bunsen burner				
2	• I can recall the 3 different types of variables • I can define the 3 different types of variables • I can identify the 3 different variables in different experiments • I can create the 3 different variables for an experiment				
3	• I can create a plan for an experiment • I can identify errors in an experiment • I can adapt a method to reduce errors				
4	• I can describe the features of a successful results table • I can describe the features of a successful graph • I can create a results table and a graph				
5	• I can conclude an experiment • I can find trends in data • I can spot anomalies in data • I can describe what the words repeatable, reproducible and accurate mean • I can identify with explanation if data is repeatable, reproducible and accurate				
6	• I can evaluate an experiment • I can suggest improvements for an experiment • I can explain how improvement for an experiment will make the results more accurate and repeatable				