

Welcome to Science @ SHS



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Meet the KS3 team:

7A and 7C

Miss Sara Barnes
KS3 Science co-
ordinator

7D, 7E, & 7H

Mr Louis
Timmermans

7E & 7G

Miss Theresa
Harris

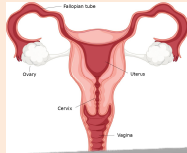
7B, 7F & 7I

Mr Andrew
O'Kane

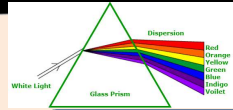
Science learning journey

All of the topics we teach in year 7 and 8 will either build upon existing knowledge from KS2 or introduce students to the content we will build upon at GCSE.

Term 6 Sexual and asexual reproduction, reproductive organs, puberty, menstrual cycle, basic genetics **Reproduction**



Term 5

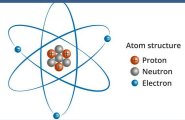


Sound and light

What is sound, frequency and pitch, speed of sound, reflection, refraction and dispersion

Term 4 **Periodic table**

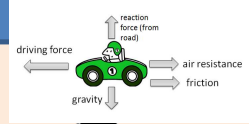
Structure of the atom, elements and symbols, periodic table, making compounds, chemical reactions



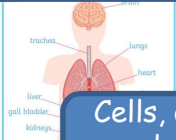
Periodic Table																																		
1	2											8	9	10	11	12	13	14	15	16	17	18												
Li	Be											B	C	N	O	F	Ne	Na	Mg	Al	Si	P	S	Cl	Ar									
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	Rb	Sr	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
Ra	Ba											Hg	Tl	Pb	Bi	Po	At	Rn	Fr	Ra														

Term 3

Contact and non contact, balanced and unbalanced, gravity, mass and weight **Forces**

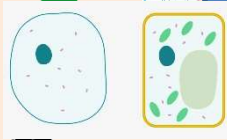


Term 2



Cells, organs and organ systems

Cell structure, organs and organ systems, microscopes



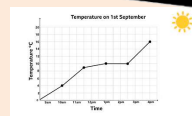
particles Particle model, changes of state, diffusion, dissolving, separation techniques

Term 1

Being a scientist

Lab equipment, safety, identifying variables, graphs

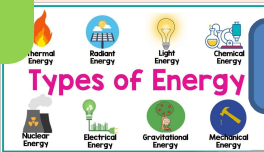
solid	liquid	gas
rigid	not rigid	not rigid
fixed shape	no fixed shape	no fixed shape
fixed volume	fixed volume	no fixed volume
cannot be squashed	cannot be squashed	can be squashed



Term 6

Energy & energy transfers

Types of energy, energy calculations, transfers of energy, thermal energy



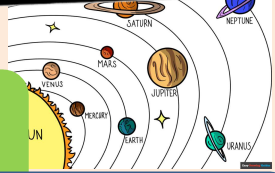
Food chains and webs, bioaccumulation, Photosynthesis, Earth's atmosphere, recycling

Term 5

Earth & the environment

Term 4

Structure of the Earth, rock cycle, day, night & seasons, the solar system



Earth & beyond

potassium	most reactive
sodium	
calcium	
magnesium	
aluminium	
carbon	
zinc	
iron	
tin	
lead	
hydrogen	
copper	
silver	
gold	
platinum	

Materials

Periodic table, metals and non-metals, acid reactions

Respiration, food groups, digestion a healthy diet, enzymes

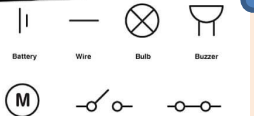
Term 3

A healthy you

Term 2

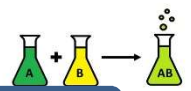
Electricity and magnetism

Circuit diagrams, series & parallel circuits, measuring current, potential difference & resistance, electromagnets, magnets



Chemical reactions

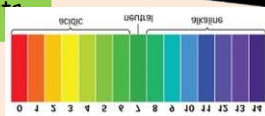
Chemical reactions & physical changes, acids & alkalis, endothermic & exothermic, catalysts and combustion



Term 1

Reproduction

Continuation from year 7. Fertilisation, pregnancy, birth, variation, genetics



Working safely in the lab

- We want our students to enjoy taking part in practical investigations
- All of our practical investigations are risk assessed.



Being a scientist

All of our year 7 classes have completed the Being a scientist unit.

In this topic we introduced students to:

- Safety in the lab
- Hazard symbols and what they mean
- How to light a Bunsen burner
- Identifying variables
- Plotting graphs

This has provided the students with some of the skills needed in science. Others will be introduced as we go through the year.

Where are we now?

Currently we are working on a topic called Particles.

This topic builds on work students will have completed at KS2 on solids, liquids and gases.

Students will have looked at the particle model, changes of state, density, gas pressure and will be starting to work on dissolving.

What's next for year 7?

After we have completed the particles unit we will move on to cells.

This is a biology based topic that introduces students to cells. We will use microscopes in this unit to look at both plant and animal cells (taken from the students!).

We then extend this understanding to look at how cells are just the building blocks of organs and organ systems.

- Being a scientist
- Particles
- Cells
- Forces
- Periodic table
- Sound and light
- Reproduction

Assessments and DIT

Summative end of unit knowledge checks

- These to allow students to demonstrate their understanding of the whole topic and are comprised of exam style questions.
- The knowledge checks will take place in lessons and are closed book.
- The knowledge checks will be returned to students and a lesson will be spent going through the paper, during which time the class teacher will go through the paper allowing students to address any mistakes made.
- Students will make any corrections in green pen as per the school assessment policy.
- Students will then complete a self reflection sheet, these are then glued into books.
- The knowledge checks are stored in the students' assessment folders.

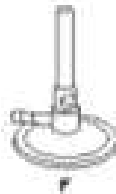
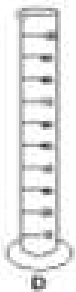
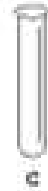
Year 7

Being a scientist knowledge check

Name:

Mark: /25 %:

Q1. The diagram below shows six pieces of equipment.



(a) Linda investigates how quickly sugar dissolves in water.
(i) Which piece of equipment does she use to weigh 5 g of sugar?
Circle the correct letter

A B C D E F 1 mark

(ii) Which piece of equipment does she use to measure out 90 cm³ of water?
Circle the correct letter

A B C D E F 1 mark

(b) Linda heats the water in a beaker.

(i) Which piece of equipment shown is a beaker?
Circle the correct letter

A B C D E F 1 mark

(ii) Which piece of equipment shown is used to heat water?

Student Reflection: To be completed in GREEN pen

Assessment:

Score: ____/____ % Achieved: ____

(c) This assessment tested my understanding of:

I was confident at answering questions on:

I need to improve my understanding of:

DIT: In the space below, show one way in which you have improved your understanding of one area from this assessment e.g., make notes, draw a diagram, write a definition, design a question to test someone else.

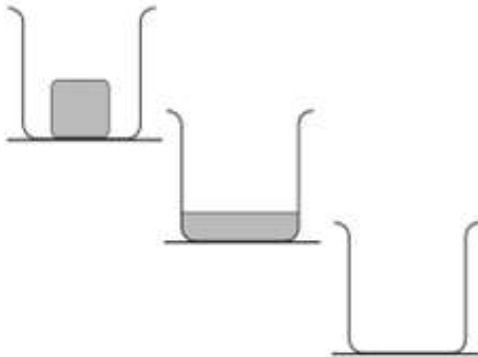
These will be on yellow paper so can be easily located in student books.

Formative assessment tasks.

- These tasks usually focus on one aspect within the topic. Students are provided with success criteria to support their learning.
- These tasks may be completed in class or as homework. Students are encouraged to use their exercise books to support them in these tasks.
- The work will be returned with a clear indication of which success criteria have and have not been met.
- Performance will be recorded as a % based on criteria met.
- During the lesson in which the work is returned, students are given clear, specific improvement tasks to allow them to further develop their understanding.
- Any improvement work will be completed in exercise books, clearly indicated by the use of green pen.

Ice cube poster

Some students were watching an ice cube in a beaker as it slowly melted. They were wondering why it melts. When they inspected the beaker the next lesson, the water was gone.



Success criteria	Self-assessment (met/not met)
Draw a melting ice cube	
Name the changes between each state	
Describe what solids, liquids and gases are like	
Draw particle diagrams to show the arrangement of particles at each state	
Identify and describe similarities between two different states	
Identify and describe differences between two different states	
Explain why the ice cube melts, using the idea of particles in your answer	
Explain why the melted ice cube will evaporate, using the idea of particles in your answer	
Explain how melting and evaporating can be reversed	
Explain what happens when a substance sublimates, giving an example	

Reflection sheet - Melting ice cubes

Name: _____ %

achieved:

This task was:

Self-assessed Peer assessed Teacher assessed

Success criteria	✓ Met X Not met	DIT task
Draw a melting ice cube		N/A
Name the changes of state		2
Describe what solids, liquids and gases are like		1
Draw particle diagrams to show the arrangement of particles at each state		1
Identify and describe similarities between two different states		1
Identify and describe differences between two different states		1
Explain why the ice cube melts, using the idea of particles in your answer		3
Explain why the melted ice cube will evaporate, using the idea of particles in your answer		3
Explain how melting and evaporating can be reversed		4
Explain what happens when a substance sublimates, giving an example		5

Tasks - Use your books and/or the text book/revision guide

Task 1

Create a poster that shows the particle diagrams for the three different states of matter (solid, liquid and gas)

Identify three properties for each state of matter

Explain at least one property per substance using your understanding of the particle model.

Task 2

Copy and complete the table below for the four changes of state:

Name of state change	Start state → end state	Example
melting	Solid → liquid	

Task 3 Explain why an increase in temperature can lead to melting and evaporation of a substance.

You should try to include the following key words:

particle energy heat move vibrate
temperature solid liquid increase gain

Task 4 Explain why a decrease in temperature can lead to condensing and freezing of a substance.

You should try to include the following key words:

particle energy cooling move vibrate
temperature solid liquid decrease lose

Task 5

Both carbon dioxide (dry ice) and iodine can sublime. What does this mean? Write an explanation suitable for a year 6 student to understand.

(WWW):

(E):

Formal reporting of progress

Students will sit two formal exams during the course of year 7.

The results of these assessments will be reported as both a % score and a standardised score.

How else we assess your child's progress?

Science teachers constantly assess the knowledge and understanding of students through questioning and marking of assessments.

We also mark for spelling and grammar.



Formative comments are given and pupils have the opportunity to reflect and respond to targets by improving work or making corrections during **DIT (green pen)**.

We also use self and peer assessment at regular intervals.

How can you help your child?

- Talk to them! What have they learnt, what are they learning? Does the work they are looking at impact their everyday lives?
- Discuss science in the news,
- Make sure they have a space to complete any homework that is set. Homework tasks will vary depending on the unit of work. Some will be completion of class work, some may be stand alone tasks, some may make use of SENECA an online revision tool.
- All homework will be put on teams with clear instructions, worksheets or weblinks and a due date.
- Failure to submit/hand in homework by the due date will result in a lack of independent study detention. A member of the science department will be at the detention to support with the work
- Support them with revision for knowledge checks/formal exams. Prior to the formal exams students will be provided with a revision checklist to help them to focus their studies.

Useful websites:

- bbc.co.uk/bitesize (KS3 science)
- senecalearning.com - H/W tasks may be set using this resource

Year 8

In year 8 we continue to build on students understanding, recapping and introducing new practical based skills.

- Chemical reactions
- Electricity and magnetism
- A healthy you
- Materials
- Earth and beyond
- Earth and the environment
- Energy and energy transfers

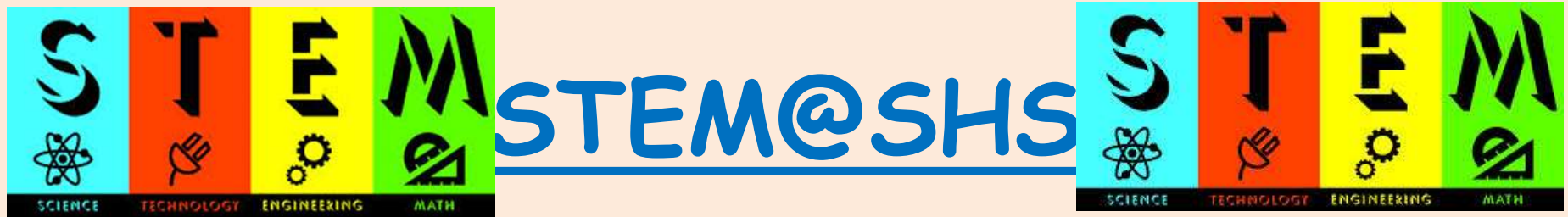
KS4

All students will start year 9 in mixed ability groups.

Towards the end of Year 9 students will sit 3 one hour exams during their ordinary science lessons.

Performance in these exams is used to group the students into Science classes for Year 10 and 11.

- Students in Set 1 and 2 follow the Higher Triple Science course (Grades 7 -9)
- Students in Set 3 follow a mixture of the Higher and Foundation Triple Science course (Grades 4 -6)
- Students in Set 4 and 5 follow mostly the Foundation Triple Science course (Grades 1 - 5)



Science Technology Engineering and Maths

People with STEM qualifications are in demand: you put yourself in a stronger position in today's competitive job market.

Studying STEM subjects leads directly to a huge variety of exciting and rewarding career opportunities.

With STEM skills, you can make a big contribution to many of the big challenges facing society today.

Any
Questions?

