Benjamin Britten Academy of Music and Mathematics

SCIENCE HOMEWORK BOOKLET

Year 7 Book A

AUTUMN TERM

Name:

Contents

WEEK	Homework Title	Date Due
1	Lab safety Rules and tips	
2	Naming Scientific equipment	
3	Seneca assignment 1	
4	Microscopy Crossword	
5	Atoms, elements and compounds	
6	Forces and their effects	
7	Seneca assignment 2	
8	Making a model cell	
9	Particle model	
10	Force diagrams	
11	Seneca assignment 3	
12	Diffusion story board	
13	Separation techniques	
14	Mass, Weight & Gravity	

How does it work?

- One homework will be set each week.
- The due date for each homework can be written on this page.
- Some homework's will need completing in this booklet, others on the internet.
- If you need help logging onto a website, you need to see your class teacher.
- If you need help with your homework task, you must speak to your teacher before the due date.

Below are the login instructions you will need to access and complete some of the homework tasks in this booklet.

Seneca

Username -
Password -
Class Code -

Completing your homework

All homework tasks need to be completed in this booklet or on a specific website.

There are also the answers for all booklet tasks on your Google Classroom.
Part of your homework task each week is to mark your homework. Make sure you mark all your answers in another colour pen, making any corrections if you need to.

Remember – if you need help, you must speak to your teacher before the due date.

If you see the logo above next to a task, you can scan the QR code for extra help

Watch the video and make notes, then try the homework task again. If you still need help, then speak to your science teacher at school.

Week 1 - Lab Safety Rules and Tips

Fill in the missing blanks with the vocabulary below.

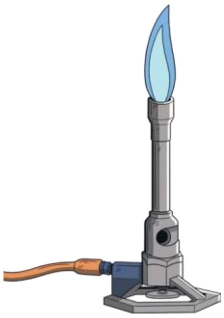
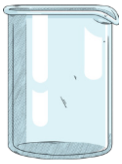
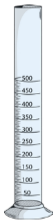
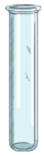
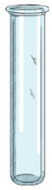
1. *It's important to wear _____ shoes when experimenting and in the lab.*
2. *Keep walkways clear of items like _____ or bags.*
3. *Wearing an _____ will protect you and your clothes.*
4. *_____ objects like lancets, syringes, or scalpel blades should be used under close _____.*
5. *Be aware of and know how to use the _____ and _____ in the case of a chemical splash to the eyes or body.*
6. *_____ are required when working with any substance that may hurt your eyes.*
7. *Inform a _____ immediately if any accidents or injuries occur, even little ones.*
8. *If working with hot containers or equipment, always use tongs, _____, or heat-resistant gloves.*
9. *_____ should be tied up to prevent any accidents.*
10. *should not be consumed in the lab or during experiments.*

long hair
food and drink
sharp
cords
bags
teacher
goggles
apron
closed-toe
clamps
supervision
emergency eyewash
emergency shower

Find and circle as many lab safety rules as possible in the scene below. Label them with the matching number from the fill-in-the-blank statements above.

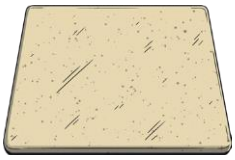
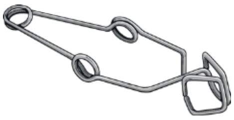
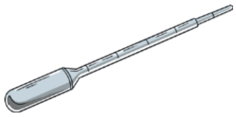
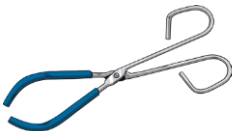
Week 2 - Naming Scientific Equipment

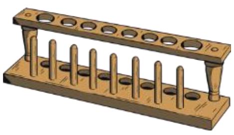
Give the name of each piece of scientific equipment.





BEYOND SCIENCE

Week 3 - Seneca Assignment 1

1) Head to the sign-up page and enter your personal information.

Registering for an account with Seneca is completely free.
You can choose to sign up with your school email address.
Fill in your personal information and agree to the Terms and Conditions.

2) Select 'Student Account'.

3) Select your school and year group.

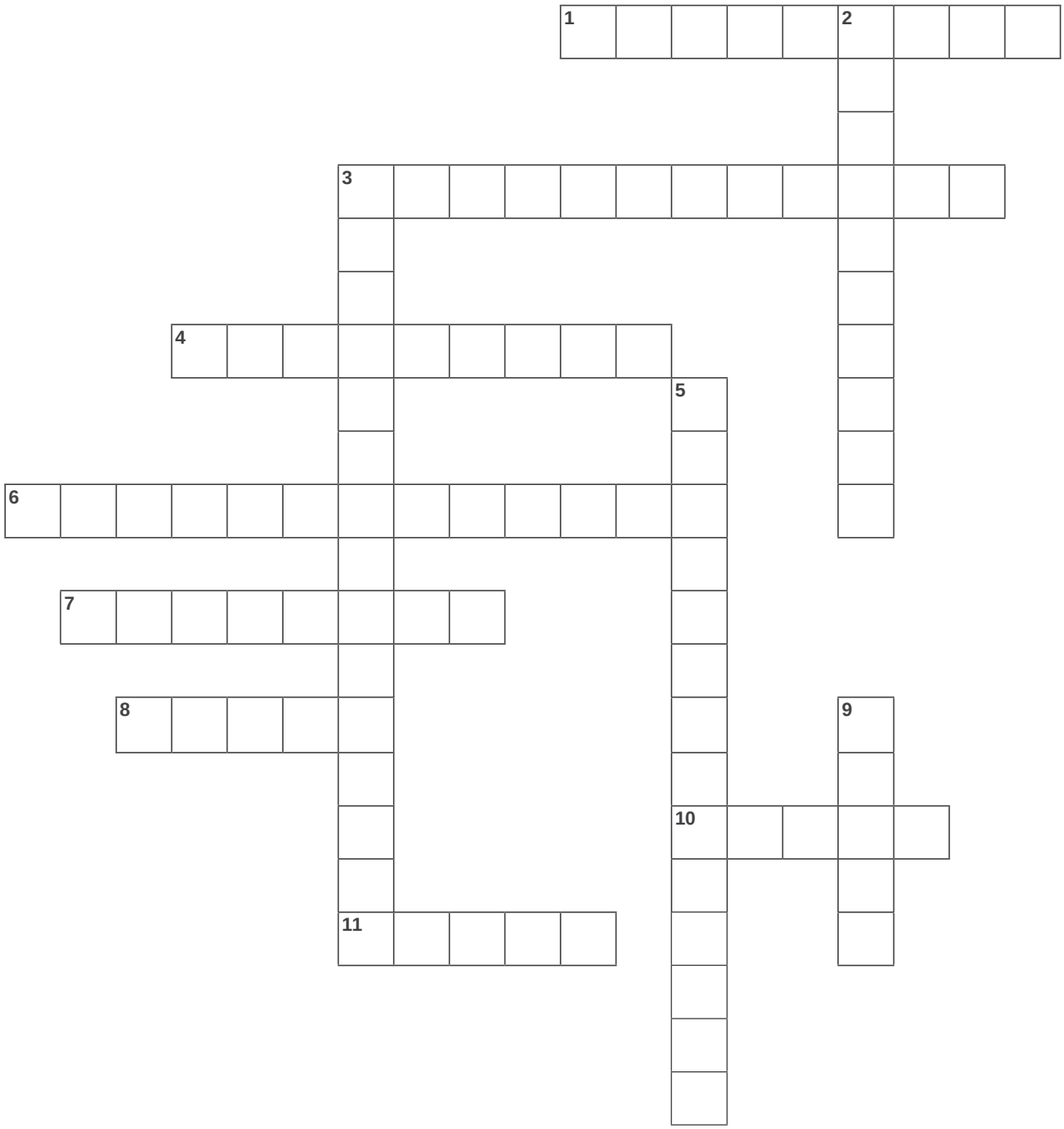
Tick the box that states you have permission to use Seneca (You do not need to enter your parents' email address)

That's it! Your teachers will invite you to their class; go to your Google Classroom to get the link.

Complete your first assignment.

Week 4 - Microscopy **Crossword**

Solve the clues relating to microscopy to complete the crossword. The numbers at the end of each clue tell you how many letters there are in the answer.



Look

Scan me!

BEYOND SCIENCE

Across

1. The part of a light microscope used to control the amount of light that passes through the specimen. (9)

3. A microscope helps you to make these about objects that are too small to see with the naked eye. (12)

4. A small, thin piece of glass that is placed over the specimen. (9)

6. The degree to which an object is made to appear bigger. (13)

7. The lens at the top of the microscope that you look through. (8)

8. A rectangular piece of glass on which a specimen is placed. (5)

10. The flat surface of a light microscope on which a slide is placed. (5)

11. A substance that is added to a specimen to make it more clearly visible. (5)

Down

2. The smallest interval measurable between two points on an image. (10)

3. These can be rotated between to change the magnification. (9,6)

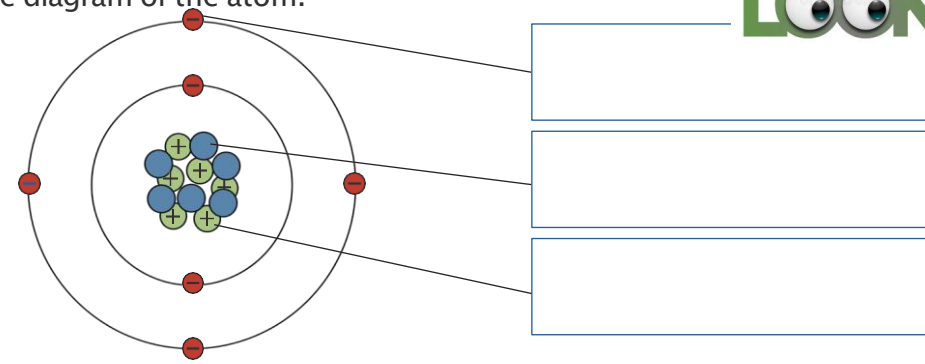
5. This knob is used to refine the resolution, making theimage sharp instead of blurry. (4,10)

9. This is used to illuminate the specimen in some types of microscope. (5)

Week 5 - Atoms, Elements and Compounds

Atoms are tiny particles which make up all substances and matter. They contain a central nucleus made up of neutral neutrons and positively charged protons. Negatively charged electrons orbit the nucleus.

1. Label the diagram of the atom.



An element is made up of only one type of atom. There are around 100 different elements, which can all be found on the periodic table.

A compound is formed when two or more different atoms are chemically bonded together. For example, water (H_2O) is a compound made up of hydrogen and oxygen atoms. Compounds can be represented by their chemical formula; this shows the number of atoms of each element present in the compound.

2. Complete the table below. The first row has been done for you.

   You might find it helpful to use a periodic table for this question.

Name of Substance	Chemical Formula	Number of Atoms of Each Element
water	H_2O	2 × hydrogen, 1 × oxygen
		1 × magnesium, 1 × oxygen
carbon	C	
		2 × oxygen
methane	CH_4	
		1 × iron
glucose	$C_6H_{12}O_6$	
		1 × hydrogen, 1 × chlorine
sulfur dioxide	SO_2	

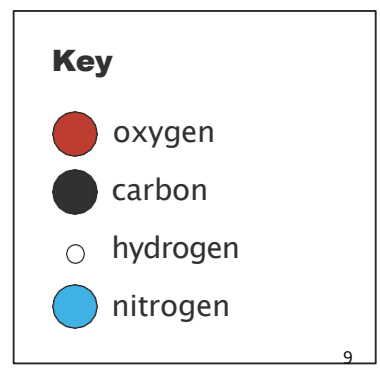
3. Sort the following substances into the table. Each substance should be written into one column only.

aluminium
boron
carbon dioxide
calcium carbonate
copper sulfate
hydrogen
hydrogen peroxide
magnesium
sodium chloride
sulfur
tin
zinc oxide

Elements	Compounds

4. For each of the substances below, draw a particle diagram to represent one molecule of the substance. Use the key shown below. The first one has been done for you.

water H_2O	carbon dioxide CO_2	ammonia NH_3
		
oxygen O_2	hydrogen H_2	



Week 6 - Forces and Their Effects

Forces are measured in newtons, using a newton meter. The table below lists some forces and their descriptions.

Force	Description
friction	The force between two surfaces that are sliding, or trying to slide, past each other.
air resistance	The force that acts in the opposite direction to an object's movement as it moves through the air.
reaction	The force that supports an object on a solid surface.
tension	The force transmitted through a rope, string or wire when pulled by forces acting from opposite ends.
upthrust	The upward force exerted by a fluid on an object floating in it.
gravitational force	The force acting on an object due to gravity.
magnetic force	The force exerted by a magnetic field on a magnetic material.
electrostatic force	The force that acts between two charged objects.

1. Name the force that is acting in each of the situations described below.

The force of the water acting on a boat that keeps it afloat.	
The force of the table acting on a cup that is resting on the table.	
The force that keeps a car on the ground.	
The force that holds up a decoration that is hanging from a string.	
The force that causes a paperclip to be attracted to a magnet.	
The force of the air acting on a moving bus.	
The force that holds together sodium and chloride ions to make salt.	
The force of the doormat on your shoes when you wipe your feet.	

We can't see forces but we can see their effects on objects.

Forces can make objects change speed, direction or even shape.

2. Draw some diagrams in the space below to help you remember the three things that forces can do.

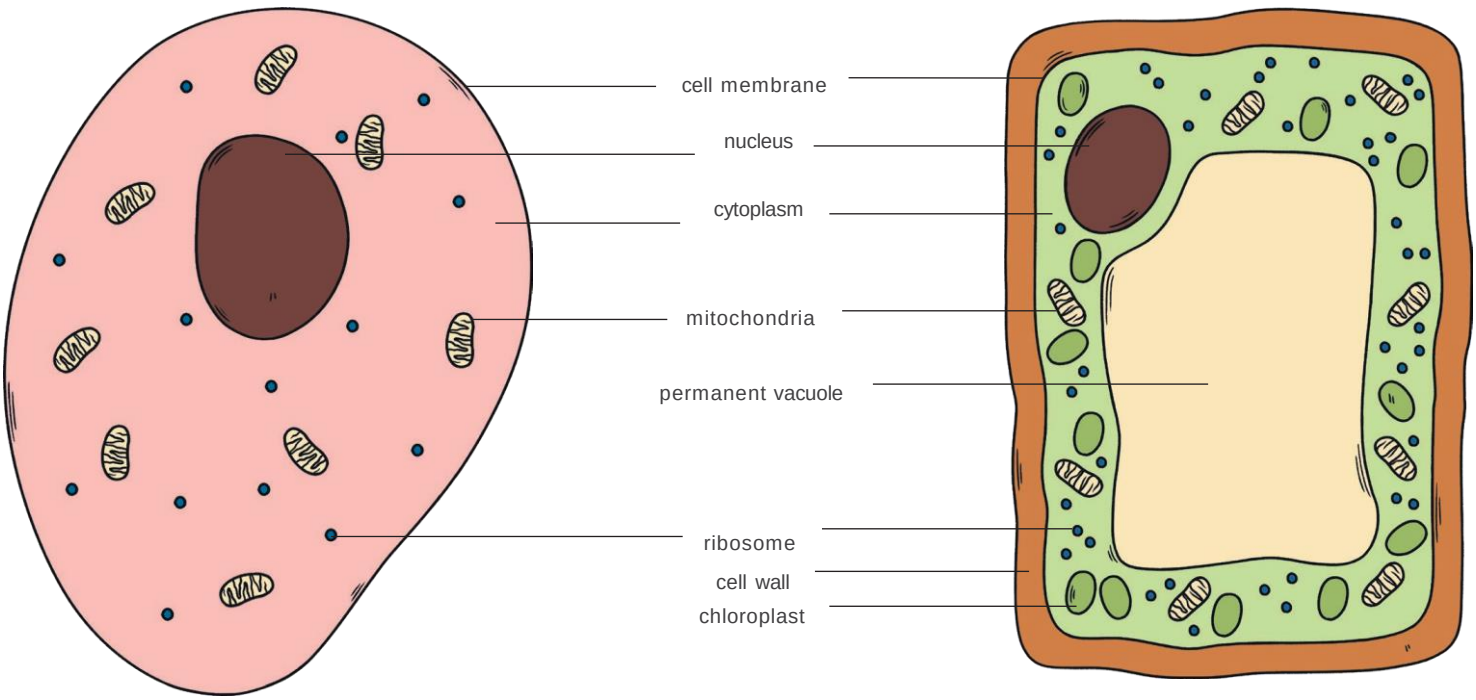
Week 7 - Seneca Assignment 2

Sign in to Seneca. You will find the link on your Google Classroom.

Complete your second assignment.

Week 8 - Making a Model Cell

Typical plant and animal cells have specific sub-cellular structures that help the cells to carry out their functions. You need to be able to identify the different sub-cellular structures found in each and describe the role they carry out.



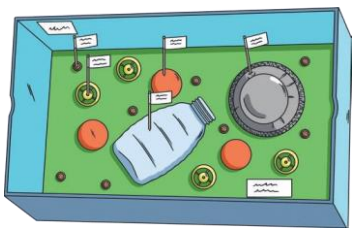
Produce a model of a cell from the items that are available to you. Some ideas are shown on the next page, but you can come up with your own materials too.

You should add labels to identify each sub-cellular structure.

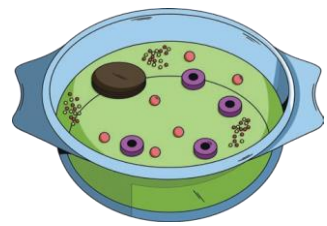
Look

Scan me!

Week 8 - Making a Model Cell

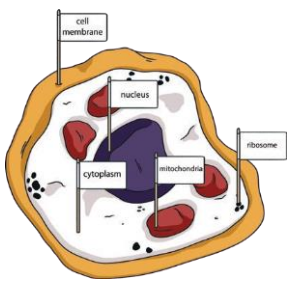


Craft Cell Model

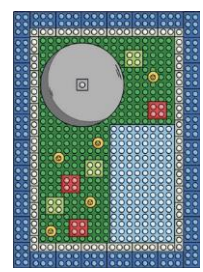


Jelly Cell Model

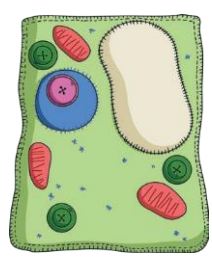
Cake Cell Model



Modelling Dough Cell Model



Modelling Bricks Cell Model



Fabric Cell Model

Week 8 - Making a Model Cell

Once you have completed your model, complete the following tasks:

1. Identify the type of cell that you made.

_____

2. Complete the table to identify the sub-cellular structures in your model and show how they have been represented.

Sub-Cellular Structure	Present (✓or ×)	How It Is Represented
cell membrane		
cell wall		
chloroplast		
cytoplasm		
mitochondria		
nucleus		
permanent vacuole		
ribosome		

3. Give a feature of your model that you think is a good representation of the cell. Explain why you think it is a good representation.

_____

_____

_____

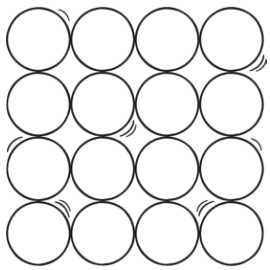
_____

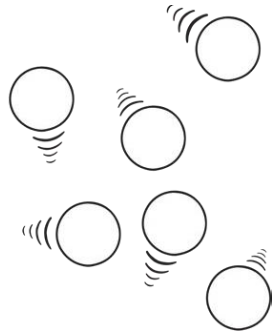
Week 9 - Particle Model

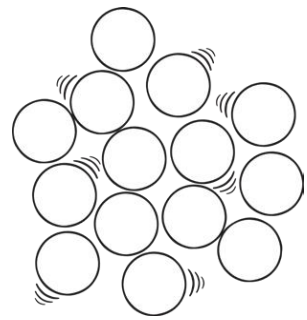
Look

Scan me!

1. Label the states of matter represented by each of the particle diagrams below. [3]







_____ _____ _____

2. Using the diagrams in question 1 to help you, explain why:

a. A solid cannot be squashed. [2]

_____

_____

b. Liquids and gases can flow. [2]

_____

_____

c. Gases do not have a fixed volume. [2]

_____

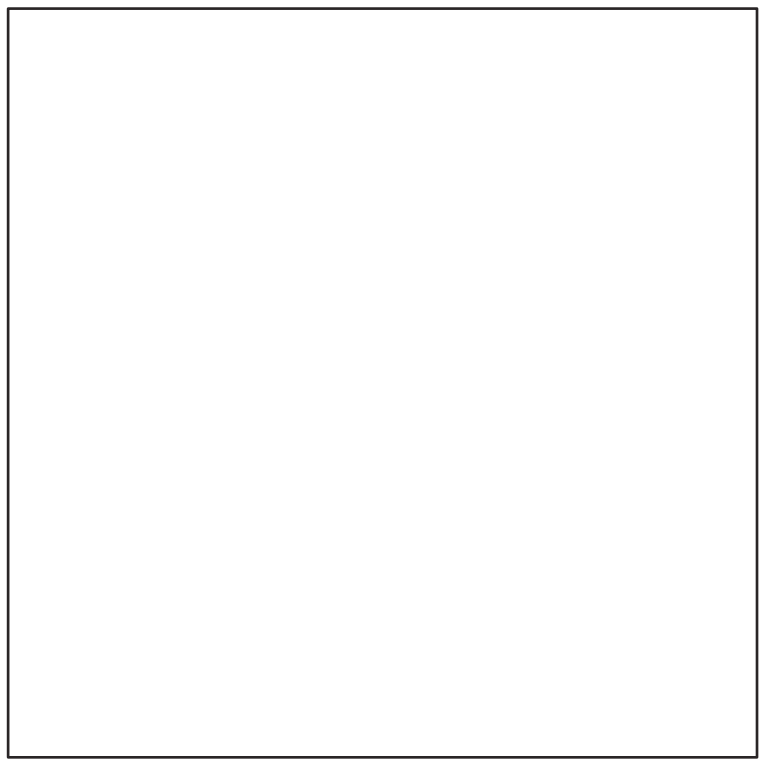
_____

d. Liquids do not have a fixed shape. [2]

_____

_____

3. Is sand a solid, liquid or gas? Explain your answer. Draw a particle diagram to help show your answer. [4]



Learning Outcomes (tick if achieved)

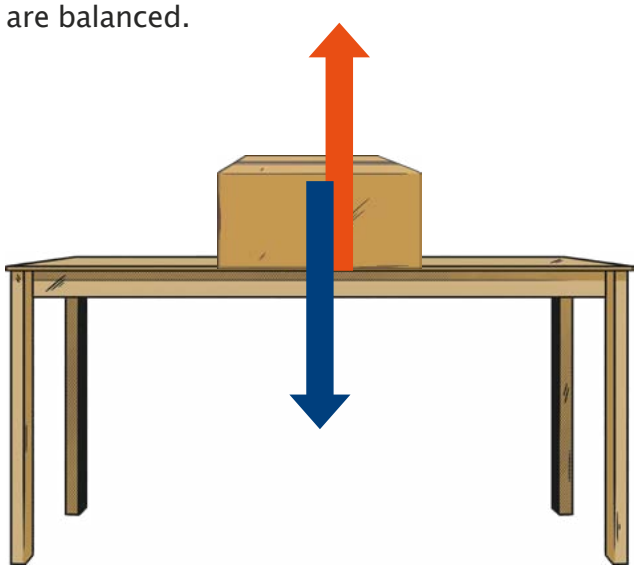
Q1	I can identify SLG from their particle arrangement	
Q2	I can explain properties of SLG in terms of particle arrangement	
Q3	I can justify why an object is a SLG, in terms of particles and properties	

Week 10 - Force Diagrams

You add force arrows to a diagram to show which forces are acting on an object. The arrows show the direction and the size of the force (the longer the arrow, the bigger the force).

The arrows must touch the object in the diagram.

If an object is stationary, or moving at a constant speed, the forces on it are balanced. Balanced forces act in opposite directions and are the same size. The forces in the diagram below are balanced.



The upwards arrow represents the **normal contact** force. This is the force of the table supporting the box.

The downwards arrow represents the gravitational force acting on the box, also known as **weight**. This is the force of the Earth acting on the box.

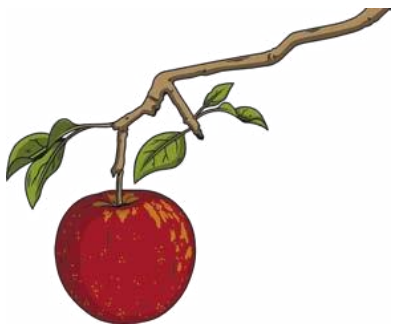
If forces acting on an object are unbalanced, the object will be speeding up (accelerating) or slowing down.

If an object is speeding up, the forward arrow will be larger.

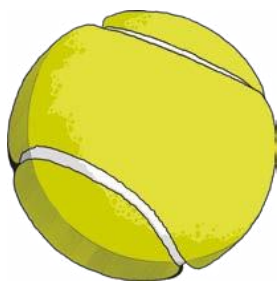
If an object is slowing down, the backward arrow will be larger.

Add force arrows to the diagrams below. Label the arrows with the force and add a description that says whether the forces are balanced or unbalanced.

A person sitting on a chair.



An apple hanging on a tree.



A ball accelerating downwards.

A car travelling at a constant speed.

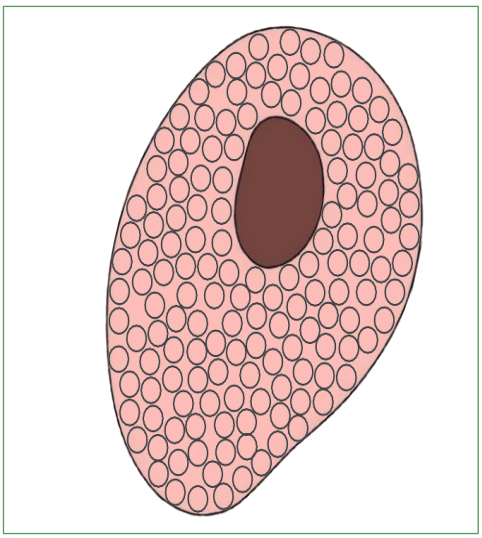
Week 11 - Seneca Assignment 3

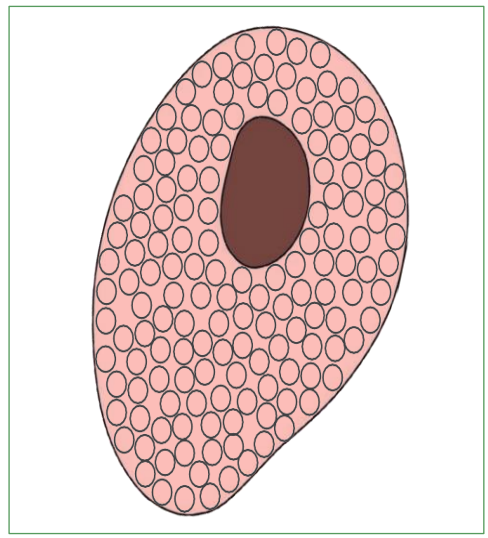
Sign in to Seneca. You will find the link on your Google Classroom.

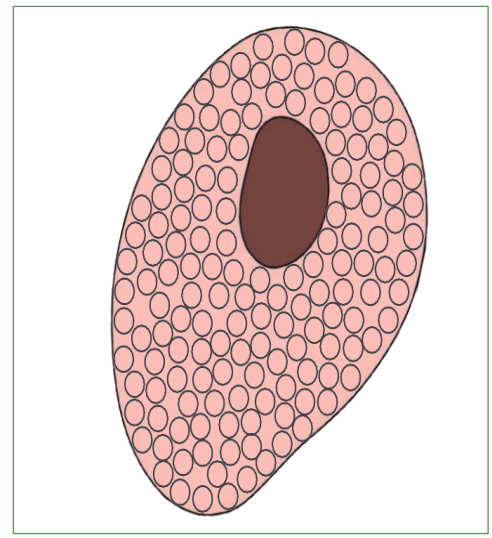
Complete your third assignment.

Week 12 – Diffusion Storyboard

1. Colour particles in the left diagram to show a high concentration of oxygen in the bottom right corner of the cell.
2. Colour the particles in the other two diagrams to show the process of diffusion within a cell.
3. Explain what happens underneath the diagrams.







Look

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Week 13 Separation Techniques

Look

SCAN ME

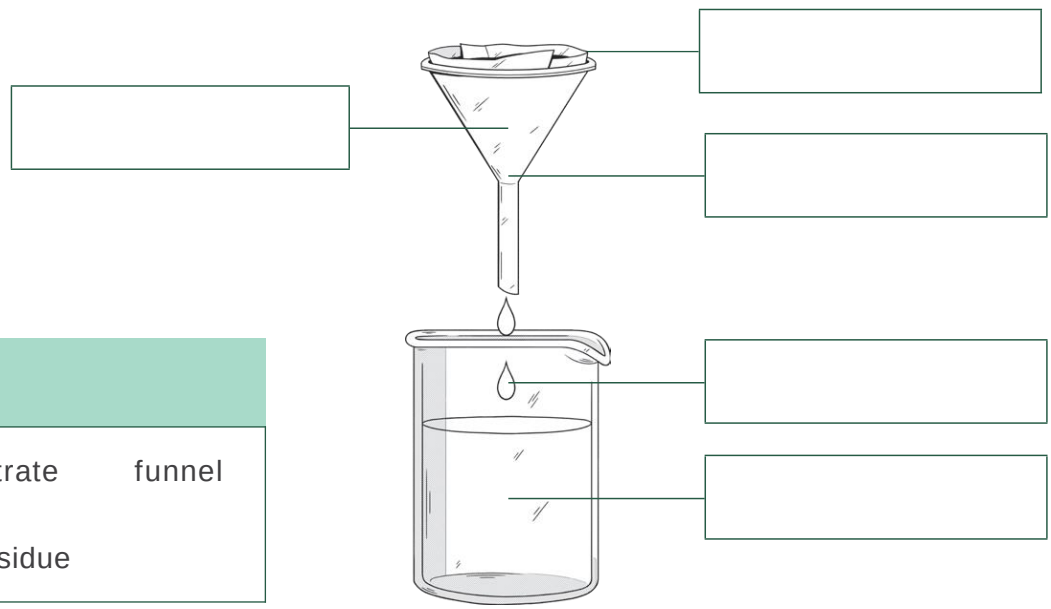
Match and Draw

Draw **one** line from each key word to the correct definition.

solute	a mixture of the solid and liquid
solvent	a substance that will dissolve in a liquid
solution	a solid that dissolves in a liquid
soluble	a liquid in which the solid dissolves

Filtration

Use the following key words to label the equipment.



Key Words

filter paper	filtrate	funnel
liquid	residue	

Dissolving

Complete the boxes below to show the particles in salt, water and saltwater.

salt | water | saltwater

Week 13 - Separation Techniques

Match and Draw

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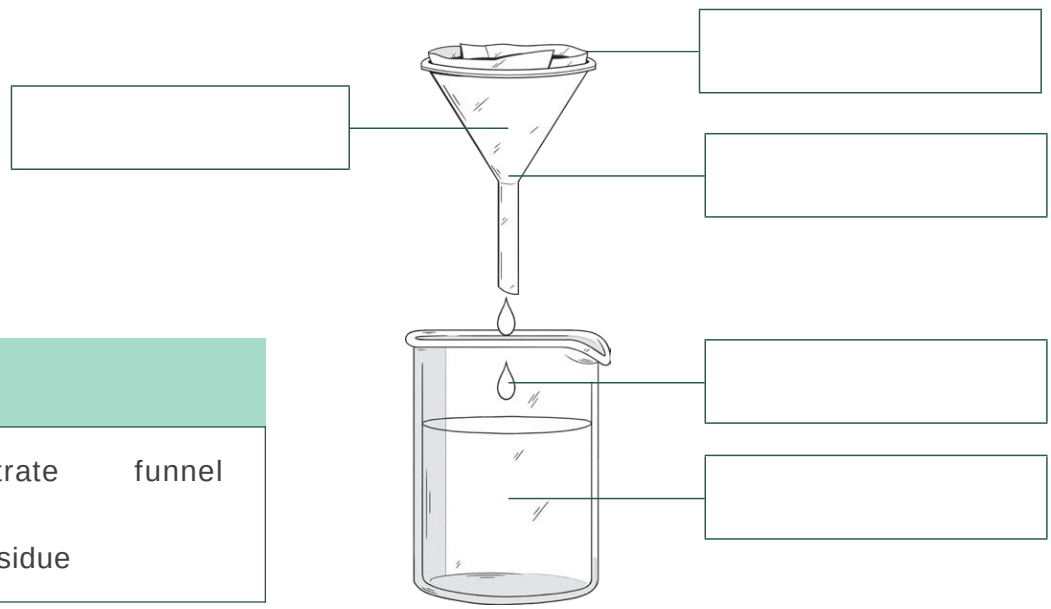

Key Words

filter paper	filtrate	funnel
liquid	residue	

Dissolving

Complete the boxes below to show the particles in salt, water and saltwater.

salt | water | saltwater

Week 14 – Gravity, Weight and Mas

Look

SCAN ME

1. Draw an arrow on the diagram below to show the direction of the force of gravity on the mouse.

2. Draw **one** line from each variable to the correct unit of measurement.

gravitational field strength	N
mass	kg
weight	N/kg

3. The mass of some objects is shown below.
The gravitational field strength on Earth is approximately 10N/kg.
Calculate the weight of the objects on Earth.

Use the equation:

weight = mass × gravitational field strength

mass = 1kg

_____

_____

_____

weight = _____N

mass = 0.02kg

_____

_____

_____

weight = _____N

mass = 0.06kg

_____

_____

_____

weight = _____N

4. The mass of the Moon is smaller than the mass of Earth.

a) Choose **two** answers from the box below to complete the sentences below.

greater than	equal to	smaller than

The gravitational field strength on Earth is _____ the gravitational field strength on the Moon.

If an astronaut travelled to the Moon, their weight would be _____ their weight on Earth.

b) An astronaut has a mass of 80kg. On the Moon, they have a weight of 128N. Calculate the gravitational field strength on the Moon.

Use the equation:

gravitational field strength = weight ÷ mass

_____

_____

_____

gravitational field strength = _____ N/kg