Benjamin Britten Academy of Music and Mathematics

SCIENCE HOMEWORK BOOKLET

Year 8 Book A

AUTUMN TERM

Name:

Contents

WEEK	Due Date
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	

How does it work?

- One homework will be set each week.
- The set and due date for each homework will be written on this page.
- Some homework's will need completing on 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 is the log in 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 at the back of this booklet.
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.

Homework 1: Hazards and Risks

Hazard symbols are used to warn us about the potential hazards of a substance.

Draw **one** line from each symbol to the meaning of that symbol, then draw **one** line from each meaning to the correct description.

Symbol	Meaning	Description
	flammable	Could cause illness or death if taken into the body.
	moderate health hazard	Catches fire when it comes into contact with oxygen and a heat source.
	corrosive	Could irritate the skin.
	harmful to the environment	Could cause damage to animal and plant life if released into water systems.
	serious health hazard	Could burn the skin and damage the eyes. Avoid breathing in vapours.

HW1

Some common risks and precautions are shown in the table below.

Hazard	Risk	How You Will Minimise the Risk
chemicals	They could cause skin irritation, damage eyes or be toxic if ingested.	Wear eye protection. Avoid contact with skin.
flames	They could cause burns.	Keep flammable objects away from the flame.
hot equipment or liquids	They could cause burns or scalds	Do not touch hot equipment or liquids. Allow equipment to cool before putting away. Set up the investigation away from the edge of the bench.
sharp equipment	It could cause cuts.	Cut in a direction away from yourself and others. Carry sharp objects in a tray.

Give **one** safety precaution for each of the experiments below.

1. A Bunsen burner is used to heat water.

Precaution:

_____

_____

2. Different metals react with an acid.

Precaution:

_____

_____

3. A scalpel is used to cut a piece of sodium.

Precaution:

_____

_____

You spill a chemical on the desk during a practical. What should you do?

_____

You notice a bag in the middle of the floor. What should you do?

_____

You drop a glass beaker on the floor and it breaks. What should you do?

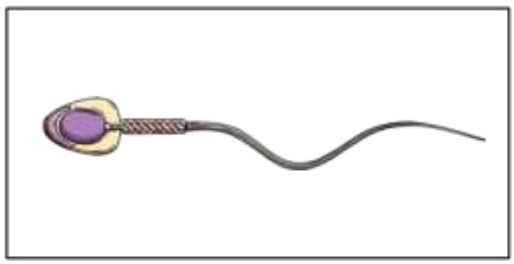
_____

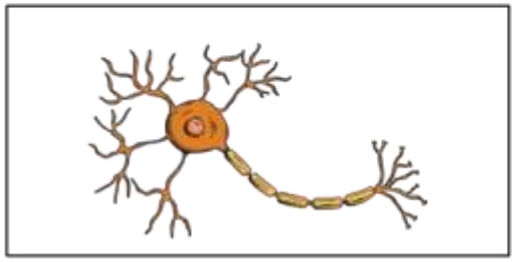
Homework 2: Cell Structures

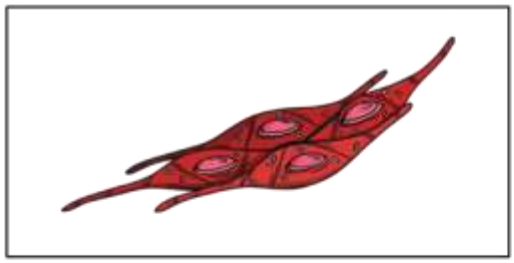
Label the sub-cellular structures found in animal and plant cells.

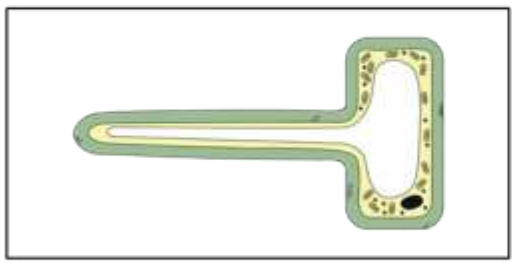
HW2

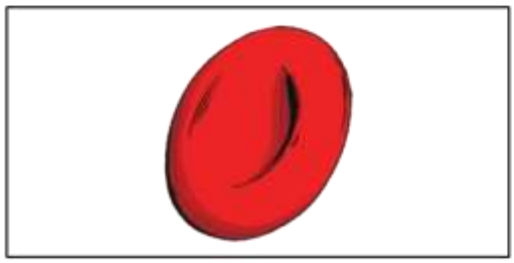
Draw **one** line from each picture to the name of the specialised cell.

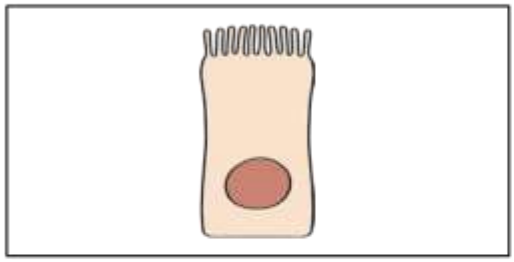


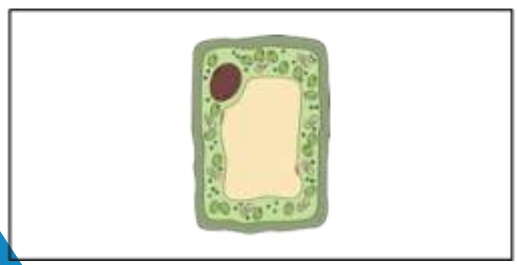












nerve cell

sperm cell

muscle cell

ciliated cell

root hair cell

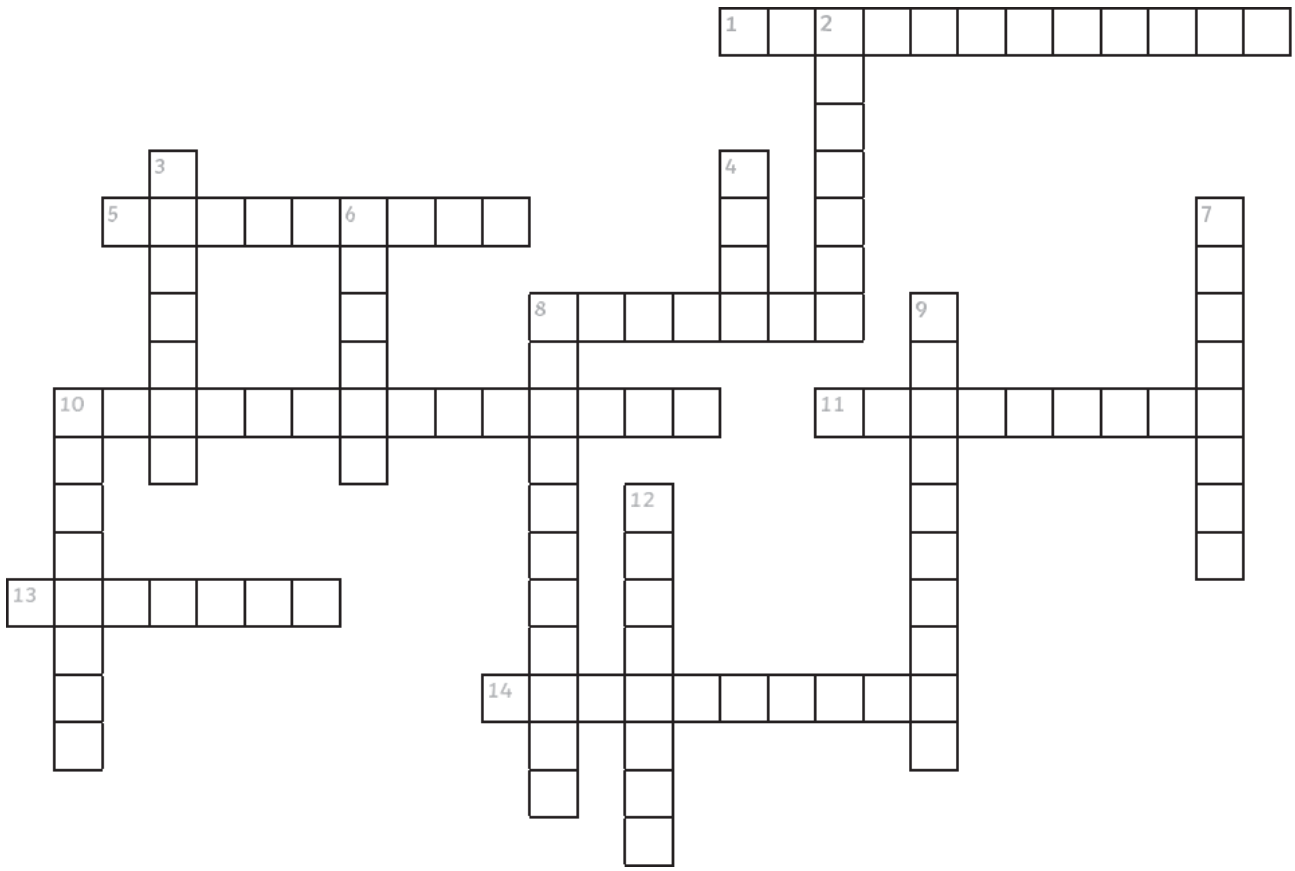
palisade cell

red blood cell

HW2

Homework 3: Separating Mixtures

1. Use the clues below to complete the crossword on separation techniques. There is a word bank on the opposite page to help you.



Across

1. Method of separating a solution to recover pure water. [13]
5. Movement of particles in a liquid or gas from an area of high concentration to an area of low concentration. [9]
8. A substance made up of only one type of atom. [7]
10. Separation of different dyes using an absorbent paper. [14]
11. A substance that cannot be dissolved, e.g. sand. [9]
13. A substance that can be dissolved, e.g. salt. [7]
14. Method of separating dissolved and not dissolved substances in a solution. [10]

Down

2. The substance into which something is dissolved. [7]
3. A substance made up of two or more different molecules not chemically joined together. [7]
4. A substance made up of one type of atom or compound only. [4]
6. The substance that is dissolved. [6]
7. A property of some metals that allows them to be separated using a magnet. [8]
8. Method of separating a solution to recover the dissolved substance. [11]
9. When a substance, usually solid, is being incorporated into a liquid. [10]
10. A substance made up of two or more different atoms, which are chemically joined together. [8]
12. The product of a solute being dissolved into a solvent. [8]

Crossword Word Bank

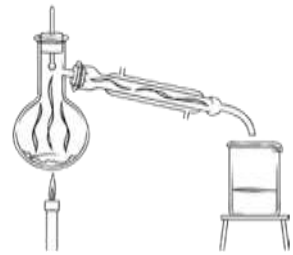
chromatography	distillation	insoluble	soluble
compound	element	magnetic	solute
diffusion	evaporation	mixture	solution
dissolving	filtration	pure	solvent

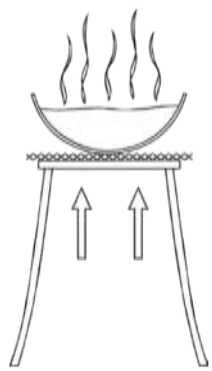
2. Complete the paragraph by writing the words from the box into the correct spaces.

solute	soluble	solution	saturated	solvent	insoluble

When salt is stirred into water, it dissolves. The salt is a _____ which mixes with the water, a _____, and forms a new _____. The salt can dissolve so we say it is _____. Pepper would not dissolve so it is _____. When a solution cannot dissolve any more solute we say it is _____.

3. Label each of the separation techniques pictured below.





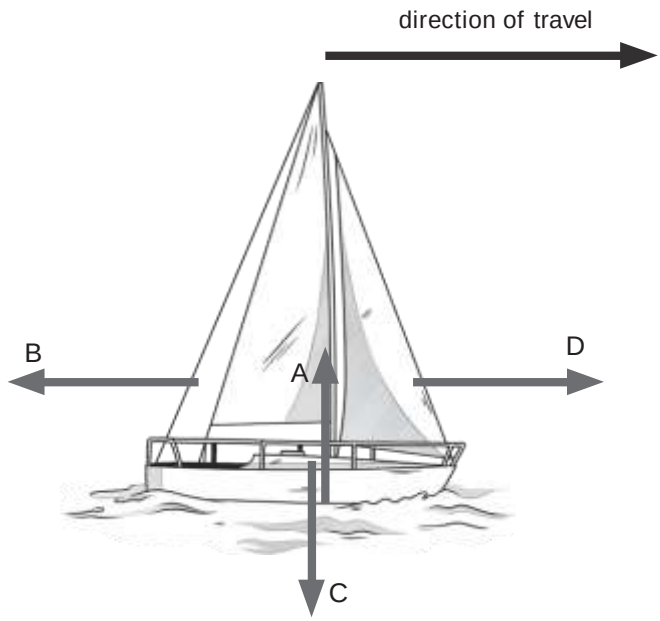
HW3

Homework 4: Forces

1. There are two types of forces: contact and non-contact.
   Place **one** tick in each row to show whether the named force is a contact force or a non-contact force.

Force	Contact	Non-Contact
friction		
air resistance		
gravitational		
upthrust		
magnetic		
reaction		
electrostatic		

2. The diagram shows a sailing boat pulling out of a harbour.



   a. Give the letter of the arrow that represents upthrust.

   _____

   b. Which force is represented by arrow B? Tick **one** box.

   air resistance ☐
   gravity ☐
   reaction ☐
   driving force ☐

   c. When the boat is travelling at a constant speed in the direction shown, which two forces must be balanced?
   Give **two** letters.

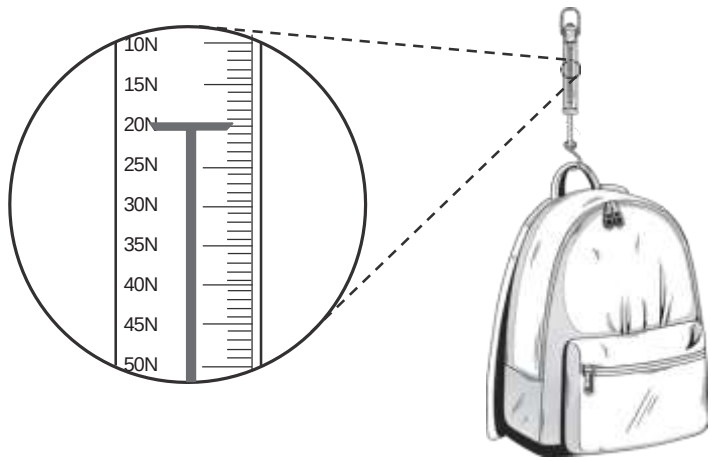
   _____ and _____

3. A student measures the weight of their school bag using the equipment shown below.

a. Name this piece of equipment.

_____

b. Look at the diagram below.
What is the weight of the bag?



Weight = ____ N

Homework 5: Seneca Learning

Log in to Seneca Learning and click on the assignments tab.
Complete the assignment called:

Week 5 – Biology Misconceptions

Record the percentage you achieve on the assignment below:

_____ %

Remember – you can redo the assignment if you want to improve your score!

Homework 6: Reproduction

Sort the statements into the Venn diagram to show changes that take place in males, changes that take place in females and changes that take place in both.

body odour becomes stronger

breasts develop

facial hair grows

growth spurts

hips widen

increased muscle growth

menstrual cycle starts

mood changes

pimples or acne

pubic hair grows

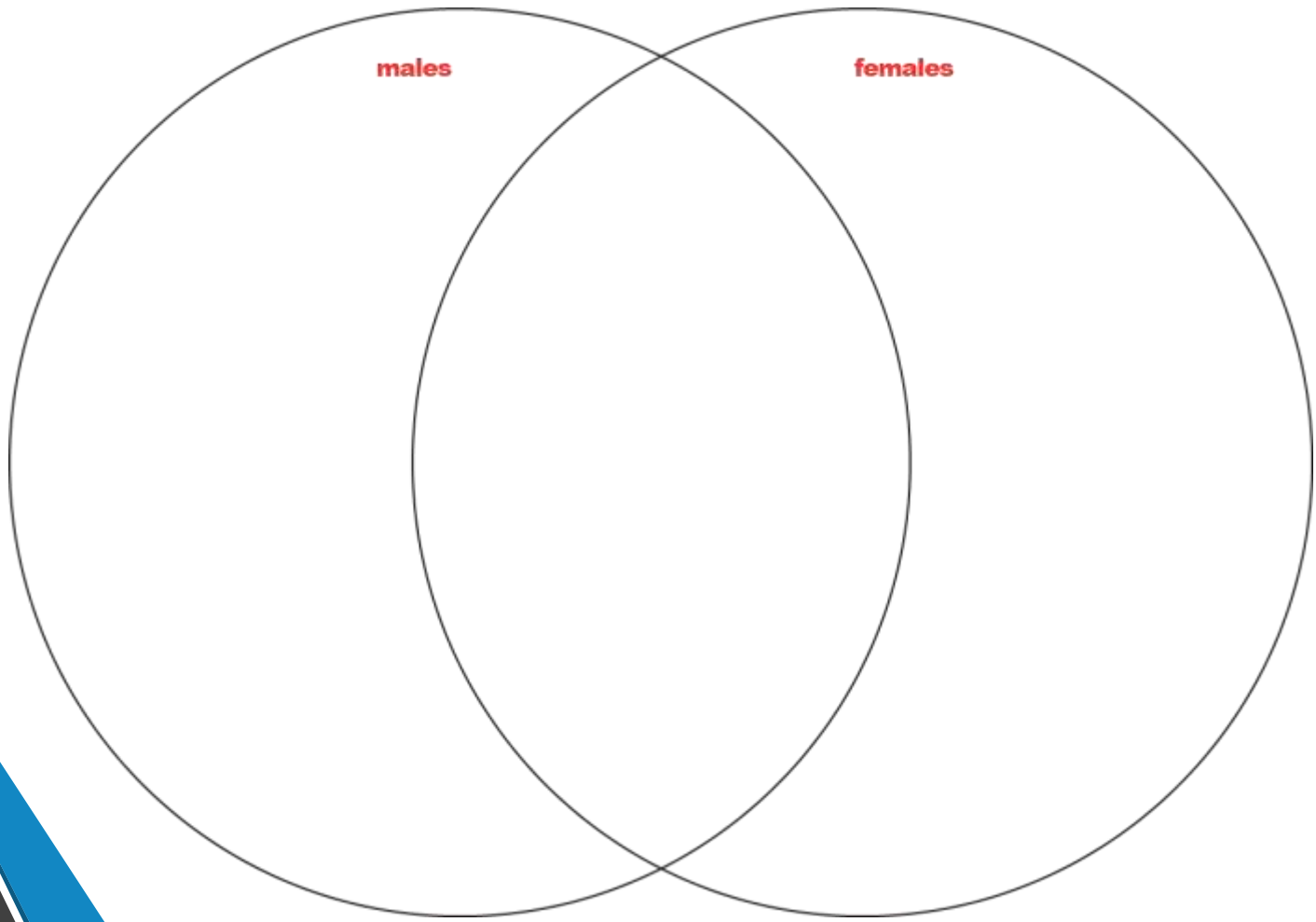
testes and penis get bigger

testes start to produce sperm cells

underarm hair grows

vaginal discharge is produced

voice deepens

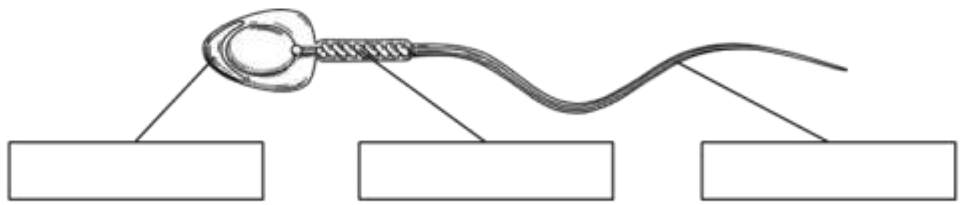


The male sex cell is called a sperm cell. Its structure is specifically adapted to carry out its function.

1. Draw one line from the name of each part of the sperm cell to the correct description.

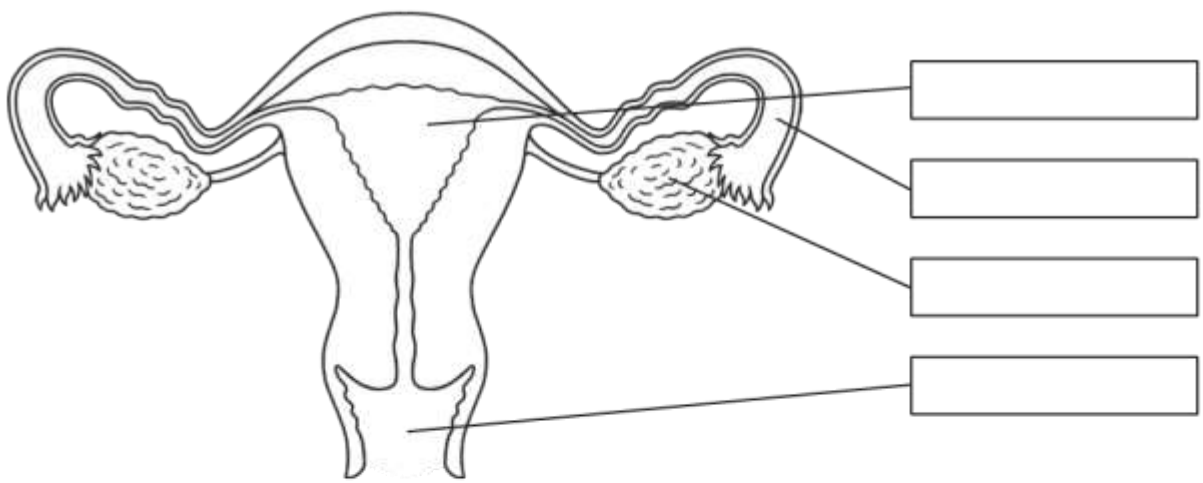
Cell Part	Description
tail	contains the nucleus which holds the DNA of the cell
midpiece	moves like a propeller to allow the cell to move to the egg
head	contains many mitochondria that release energy

2. Label the parts of the sperm cell.



3. Label the organs of the female reproductive system. Use words from the box below.

ovary	oviduct	uterus	vagina



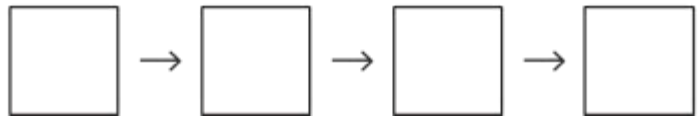
4. Read the statements below and write the letters in the boxes to show the correct sequence of events.

A. The fertilised egg moves along the oviduct into the uterus.

B. A single sperm penetrates the egg cell and the two nuclei fuse.

C. Sperm travels through the female reproductive system towards the egg cell.

D. The fused cells embed into the lining of the uterus and develop into an embryo.



HW6

Homework 7: Atoms Fact File

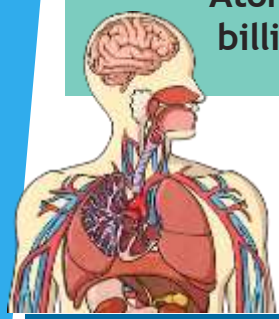
Read the information below and then answer the questions on the next page.

What are Atoms?

Atoms are everywhere. They are the basic building blocks for all matter in the universe. Every animal, person, plant, and object is made up of atoms. The word 'atom' stems from the Greek word atomos, meaning indivisible.

Atoms are small. They are so small we cannot see them with the naked eye. Scientists have to use a special kind of microscope called a transmission electron microscope to see atoms.

Atoms are plentiful. There are around seven billion billion billion atoms in the human body.



If you were to write that as a number, it would be a seven with 27 zeroes after it! Some people believe there are more atoms in the human body than stars in the observable universe.

Atoms can last forever because the centre of the atom, the nucleus, is tough to break apart.

What does an Atom Look Like?

Atoms are made up of a nucleus, protons, neutrons and electrons. These are also known as subatomic particles. The nucleus is the centre of the atom. Neutrons and protons can be found within the nucleus. Protons are positively charged particles, and neutrons are not charged at all. Spinning around the outside of the nucleus are electrons. Electrons are negatively charged particles that are attracted to the nucleus and the positively charged protons.

Every element on the periodic table has its unique structure determined by the number of protons within the atom, also known as its atomic number. Along with this, the atom's mass and radioactivity depend on how many protons and neutrons are in the atom. For example, the hydrogen atom has only one proton and one electron but no neutrons in its nucleus. In contrast, radium atoms have 88 protons, 138 neutrons and 88 electrons.

Most atoms have an equal number of protons and electrons, which means that the negative and positive charges are balanced.

1.Test your Knowledge!

- *What is an atom?*

_____

_____

- *Can atoms be seen with your eyes? Why or why not?*

_____

- *How many atoms are in the human body?*

_____

- *What determines the atomic number of an atom?*

_____

_____

- *What can change depending on the number of protons in an atom?*

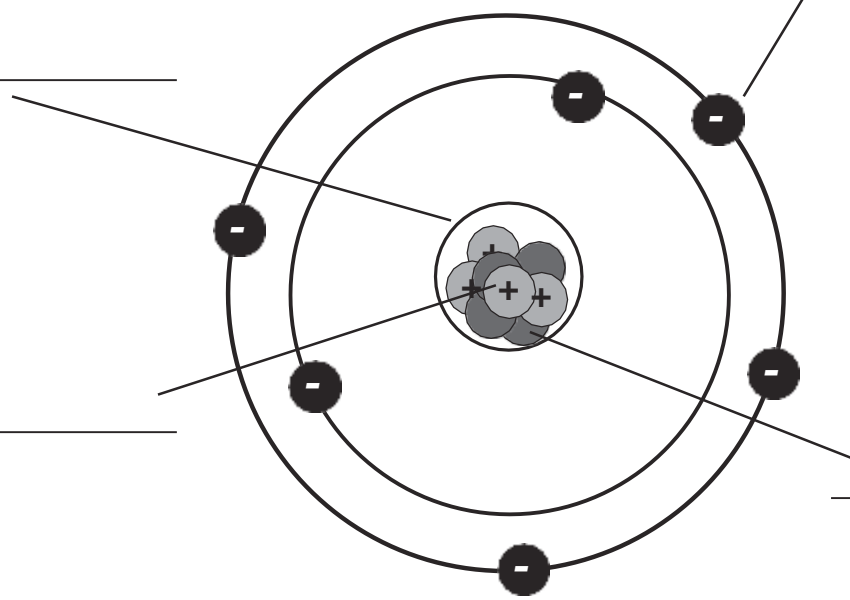
_____

_____

2. Label this picture of an atom.

_____ _____

_____ _____



_____ _____

HW7

Homework 8: Hearing and Sound Waves

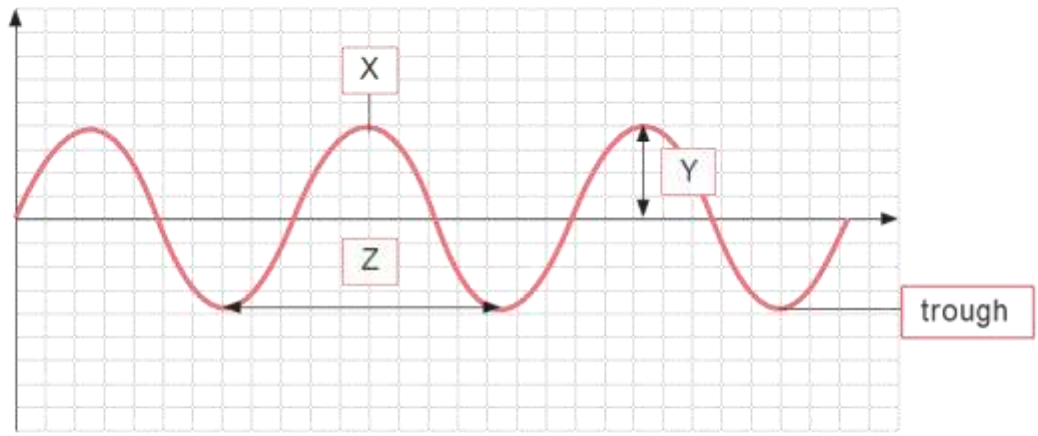
Label the picture of the ear below.

HW8

Draw **one** line from each feature of the sound wave to the correct description.

amplitude	The distance between two corresponding points on repeating cycles of a wave.
frequency	A measure of how much the wave is displaced from its rest position. It affects the loudness of the sound.
wavelength	The number of whole waves passing a given point every second. It is measured in hertz (Hz) and affects the pitch of a sound.

The diagram below shows a sound wave.



Use the graph to answer the questions. For each question tick **one** answer.

a. Which part of the graph shows the amplitude? ☐ X ☐ Y ☐ Z

b. Which part of the graph shows the crest of the wave? ☐ X ☐ Y ☐ Z

c. Which part of the graph shows the wavelength? ☐ X ☐ Y ☐ Z

Homework 9: Seneca Learning

Log in to Seneca Learning and click on the assignments tab.
Complete the assignment called:

Week 9 – Chemistry Misconceptions

Record the percentage you achieve on the assignment below:

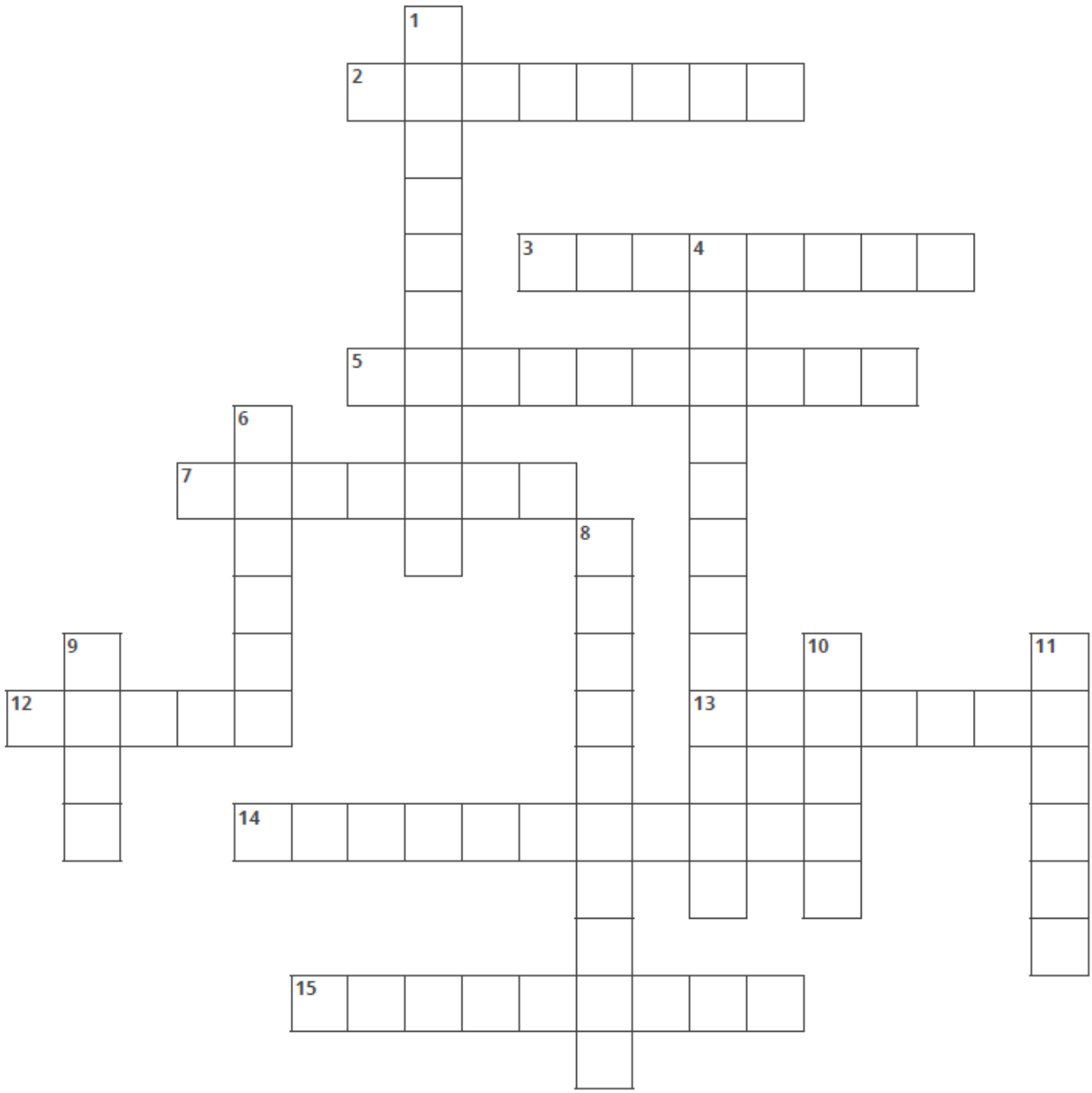
_____ %

Remember – you can redo the assignment if you want to improve your score!

HW8 + 9

Homework 10: Skeleton and Muscles

Solve the clues relating to the skeletal and muscular systems to complete the crossword. Choose the answers from the box on the opposite page. The numbers at the end of each clue tell you how many letters there are in the answer.



HW10

Word Bank

antagonistic	cartilage	ligament	storage
blood cells	contraction	movement	support
bone	force	muscle	tendon
bone marrow	joint	protection	

Across

2. A process caused by the skeletal and muscular systems working together. (8)
3. A connective tissue that connects two bones across a joint. (8)
5. A function of the skeleton that keeps vital organs safe by surrounding them in bone. (10)
7. A function of the skeleton that keeps the body upright and gives it the correct shape to hold the organs in place. (7)
12. The pull applied to an object when a muscle contracts to cause movement. (5)
13. A function of the skeleton that allows for minerals to be released into the blood when the body needs them. (7)
14. An action that muscles take to become shorter and cause movement. (11)
15. A smooth connective tissue that lines the surfaces of joints to reduce friction. (9)

Down

1. The substance inside bones that contains adult stem cells and is where blood cells are produced. (4,6)
4. A pair of muscles that work together to cause movement. When one of the muscles contracts, the other relaxes. (12)
6. A bundle of tissues that can contract to produce movement. (6)
8. Cells that are produced in the bone marrow. (5,5)
9. A hard, rigid organ that makes up the body's skeleton. (4)
10. A connection between bones that allows for the movement of the skeleton. (5)
11. A connective tissue that connects a muscle to a bone. (6)

Homework 11: pH and Indicators

Draw **one** line from each substance to its pH.

Substance	pH
vinegar	0
	1
toothpaste	2
	3
	4
lemon juice	5
	6
handwash	7
	8
orange juice	9
	10
	11
water	12
	13
bleach	14

HW11

A student uses universal indicator to test the pH of some different liquids.

They use the pH chart below to identify the pH of the substances.

pH chart

pH	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
colour	red		orange			yellow		green	blue			purple			

One of the liquids tested was lemon juice. Lemon juice has a pH of 2.

Give the colour that universal indicator would turn after being added to lemon juice.

Use the pH scale to help you.

_____

What type of substance is lemon juice?

Tick **one** box.

- ☐ acid
- ☐ alkali
- ☐ neutral

The results for three other liquids that were tested are shown in **Table 1**.

Table 1

Liquid	**Colour of Universal Indicator**
bleach	purple
vinegar	orange
water	green

Give the name of **one** neutral liquid in **Table 1**.

_____

Give the name of **one** alkaline liquid in **Table 1**.

_____

Homework 12: Space

1. Which planet is closest to the Sun?

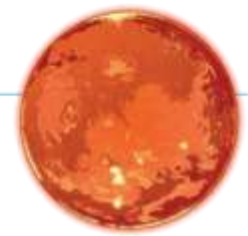
☐ A. Earth ☐ B. Venus ☐ C. Mercury

2. Which planet is known as the 'Red Planet'?

☐ A. Jupiter ☐ B. Mars ☐ C. Saturn

3. Which planet has the most moons?

☐ A. Saturn ☐ B. Neptune ☐ C. Uranus



4. Which planet is famous for its rings?

☐ A. Mars ☐ B. Saturn ☐ C. Venus

5. Which planet is the largest in our Solar System?

☐ A. Earth ☐ B. Neptune ☐ C. Jupiter

6. Which planet is known as Earth's twin because it is similar in size and composition?

☐ A. Mars ☐ B. Neptune ☐ C. Venus

7. Which planet is the smallest in the Solar System?

☐ A. Earth ☐ B. Mercury ☐ C. Pluto

8. Which planet takes the longest to orbit the Sun?

☐ A. Neptune ☐ B. Jupiter ☐ C. Pluto

9. Which planet has a day that is longer than its year?

☐ A. Venus ☐ B. Mercury ☐ C. Mars

10. Which planet is tilted on its side, making it unique in the Solar System?

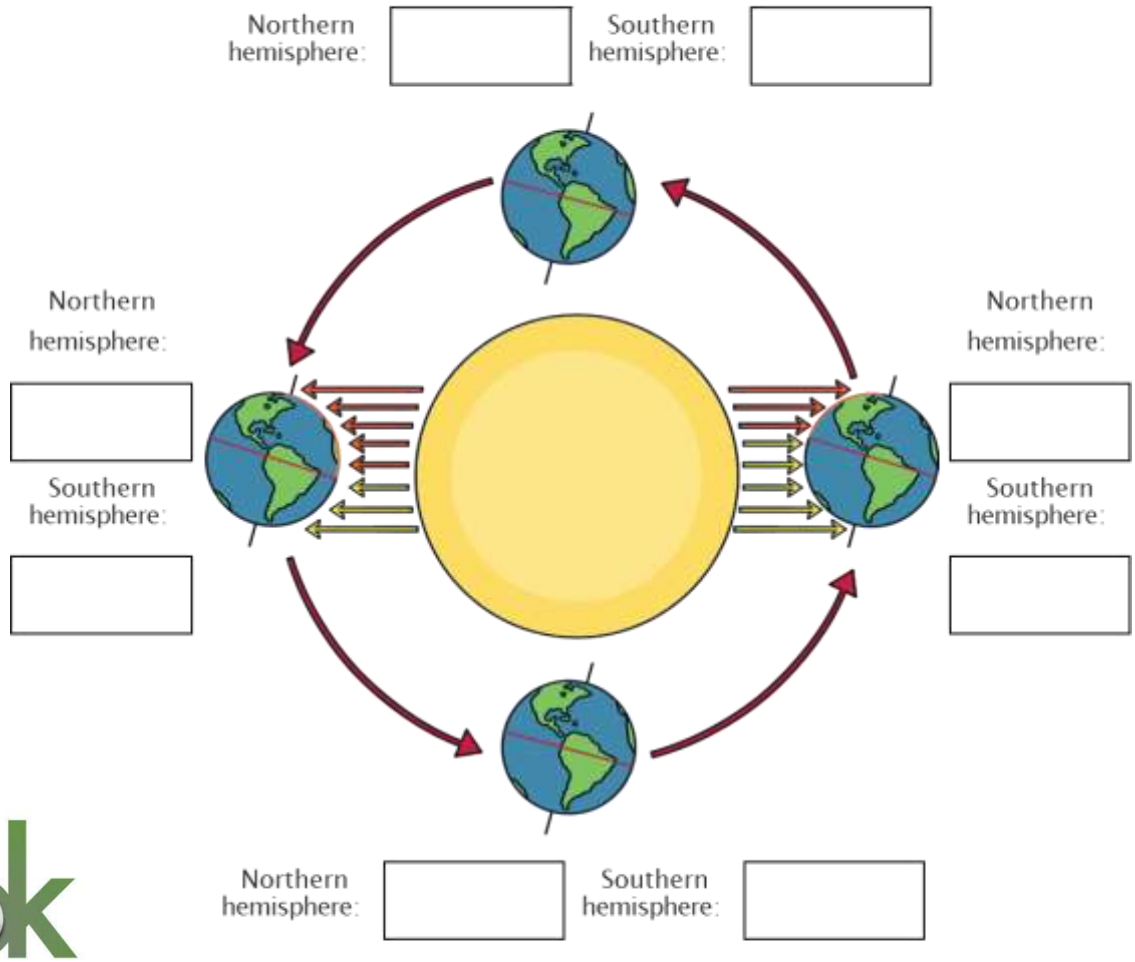
☐ A. Jupiter ☐ B. Uranus ☐ C. Neptune

11. Which planet is the hottest in the Solar System?

☐ A. Mercury ☐ B. Venus ☐ C. Earth

HW12

Label the diagram with the seasons of each hemisphere at the different stages of the Earth's orbit.



Look

spring
summer

spring
summer

autumn
winter

autumn
winter

Homework 13: Seneca Learning

Log in to Seneca Learning and click on the assignments tab. Complete the assignment called:

Week 13 – Physics Misconceptions

Record the percentage you achieve on the assignment below:

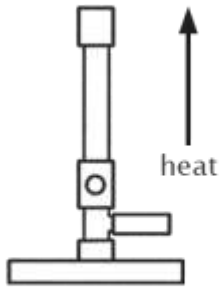
_____ %

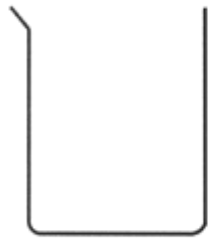
Remember – you can redo the assignment if you want to improve your score!

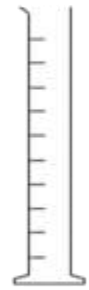
HW12 + 13

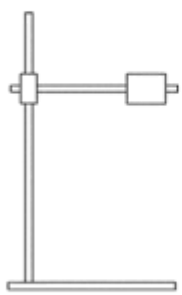
Homework 14: Equipment and Variables

Give the name of each piece of equipment from the scientific drawing.









xxxxxxxxxxxxxx

HW14

Variables are things that change in an investigation.

The **independent variable** is the variable that you change or select the values for.

The **dependent variable** is the variable that is measured for each change of the independent variable.

A **control variable** is one that may, in addition to the independent variable, affect the outcome of the investigation and therefore must be kept constant.

Example

A student investigated whether the height a ball bounces depends on the ball's circumference.

The independent variable is the circumference of the ball – this is what they will change.

The dependent variable is the height the ball bounces – this is what they will measure for each change in the circumference.

Two examples of control variables are the material the balls are made of and the surface the balls are bounced on. If these change, they may impact the results, so they need to be kept constant.

Identify the independent variable, the dependent variable and **two** control variables for each of the investigations below.

1. A student investigates how the surface material of a ramp affects how fast a toy car travels down the ramp.

   independent variable: _____ dependent variable: _____

   control variables: 1. _____ 2. _____

2. A student investigates how the light intensity affects the height that seedlings grow.

   independent variable: _____ dependent variable: _____

   control variables: 1. _____ 2. _____

3. A student investigates how the temperature affects the rate of a reaction between liquid hydrochloric acid and solid calcium carbonate.

   independent variable: _____ dependent variable: _____

   control variables: 1. _____ 2. _____