GRADE:8	SUBJECT: SCIENCE	DATE:MARCH
WORKSHEET NUMBER: 1	WORKSHEET: GENERAL	
INSTRUCTION (IF ANY):		

Q1. You are a news reporter and you have to report on a serious accident that happened on a major road. The accident involved a truck carrying concentrated acid. The emergency services attended the accident and dealt with the spill of acid

Before you write your report, answer the following questions.

1. Why is the acid spill so dangerous?

2. What would happen if other people drove their car through the acid spill?

3. What must the emergency services do to the spilt acid?

Q2. Use your scientific knowledge to correct the following statement.

1. An electromagnet is a permanent magnet.

2. Access of oxygen in the air results in global warming.

3. An element is made up of different types of atom

4. Solubility of a substance increases with fall in temperature.

5. Gases have a definite volume.

Q3. . Waste water should be treated before it is released into water. Justify the statement.

Q4. . Why rainbow is always found after heavy rain?

Q6. . . A train travels between two stations that are 250 kms apart. It takes five hours. What is the average speed of the train in kms per hour? Show your working. .

GRADE: 8(STAGE 9)	SUBJECT: SCIENCE	DATE:4 APRIL
WORKSHEET NUMBER: 1	WORKSHEET TOPIC: PHOTOSYNTHESIS AND PLANT GROWTH	
INSTRUCTION (IF ANY):	Refer unit 1 of stage 8	

LEARNING OBJECTIVES:

Define and describe photosynthesis and use the word equation: Review the work on photosynthesis and the transport of water and mineral salts in plants in stage 8

LEAF: How it is adapted to perform photosynthesis.

The leaf is a thin, broad, flat and green part of plant which is attached to the stem or branch. Leaves of different plants have different shapes and sizes but generally all are thin and broad so that light can penetrate and reach to the complete leaf, but all of them have the same basic structure.

The broad green part of the leaf is called lamina (leaf blade) the thin stock with which leaf is attached to the stem(branch) is called petiole. There is a mid-rib in the centre through which many veins spread out to all the parts of the leaf. There are minute pores on the surface of leaf called stomata, which are so small that we cannot see them with naked eyes. The stomata allow the gases to move in and out of the leaf. The leaves of plants contain a green coloured pigment called chlorophyll. Chlorophyll imparts green colour to the leaves and can also absorb (or trap) energy from sunlight.

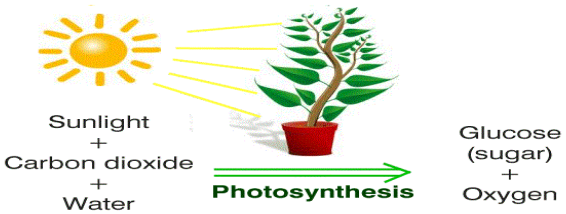
The leaves of plants have three main function:

I. The leaves make food for the plant (by photosynthesis)
II. The leaves get rid of excess water from the plant (through transpiration)
III. The leaves carry out the process of respiration (production of energy from food):

Photosynthesis

In photosynthesis the green leaves of plant combine carbon dioxide and water in the presence of sunlight to make food and oxygen gas.

Word equation:



Chemical equation: $6CO_2 + 6H_2O \xrightarrow{\text{Sunlight energy}} C_6H_{12}O_6 + 6O_2$

Carbon dioxide gas needed for making food is taken by the leaves from air and water is carried into leaves from soil to the stem. Sunlight provides the energy for making food chlorophyll present in the

green leaves helps in trapping energy from light. The end product formed that is oxygen goes into the air. The simplest food prepared by the leaves by photosynthesis is glucose. Some the glucose is converted into starch and stored as food in various parts of the plant. We can now define photosynthesis as follows: the process by which green plants use sunlight to make food from carbon dioxide and water is called photosynthesis.

The term photosynthesis means making things with light.

Answer the following questions:

Q1. Why do photosynthesis only takes place inside chloroplast?

Q2. In what form is the food stored in plants?

Q3. How is leaf adapted to perform photosynthesis? Explain.

Q4. Define photosynthesis and write its chemical and word equation.

Q5. Activity

Objective: Investigate the effect of light on growing plants .

Material required: Quickly germinating seeds

Method: Set up some quickly germinating seeds and leave them in dark to observe the effects. Some should be set up in light as a comparision

Record your observation and write conclusion.

ENERGY TRANSFER :The photosynthesis reaction needs a supply of energy to make it happen. This energy comes from light. During photosynthesis, the plant's leaves absorb the energy of light. The energy is stored in the glucose that is made. The glucose is a store of chemical potential energy.

STORING CARBOHYDRATES: Glucose is a sugar. Sugars belong to a group of chemicals called carbohydrates. Plants usually make much more glucose than they need to use immediately. They store some of it to use later. But they do not store it as glucose. Glucose is soluble in water, which makes it difficult to store inside a cell. Instead, the plant changes some of the glucose into a different kind of carbohydrate – starch. A starch molecule is made of thousands of glucose molecules linked together in a long chain. Starch molecules are too big to dissolve in water. They stay as insoluble grains, inside the chloroplasts in the plant cell.

Photosynthesis happens inside the chloroplasts in a palisade cell like this one.

cell wall

cell surface membrane

cytoplasm

nucleus chloroplast containing chlorophyll vacuole.

Cambridge Assessment International Education	SANSKAR SCHOOL The Revival of Tradition	INTERNATIONAL SCHOOL AWARD 2016-2019
GRADE: 8	SUBJECT:SCIENCE	DATE:APRIL 11
WORKSHEET NUMBER: 3	WORKSHEET TOPIC:PLANT GROWTH AND SEXUAL REPRODUCTION	
INSTRUCTION (IF ANY):	BASED ON UNIT 1	

1. READ THE EXPERIMENT DONE BY YUSEF AND ANSWER THE QUESTION.

Yousef did an experiment to find out how giving plants different amounts of water affected their growth.

Yousef sowed (planted) nine seeds, each in separate pots. He poured 20 cm^3 of water into each pot, to encourage the seeds to germinate. He left all the pots in the same place in the lab.

When all the seeds had germinated, Yousef separated the pots into three groups, with three pots in each group. Each day, for seven days, he added a measured volume of water to each pot.

Yousef measured the height of each seedling on day **1** and day **7**. These are his results.

Group	Seedling	Height of seedling / mm		Increase in height / mm
		Day 1	Day 7	
A no water	1	6.0	6.5	0.5
	2	5.5	6.0	0.5
	3	5.5	6.0	0.5
B 2 cm^3 water	4	5.5	7.5	2.0
	5	6.0	8.0	2.0
	6	6.0	8.5	2.5
C 5 cm^3 water	7	6.0	9.5	
	8	5.5	9.5	
	9	6.0	10.0	

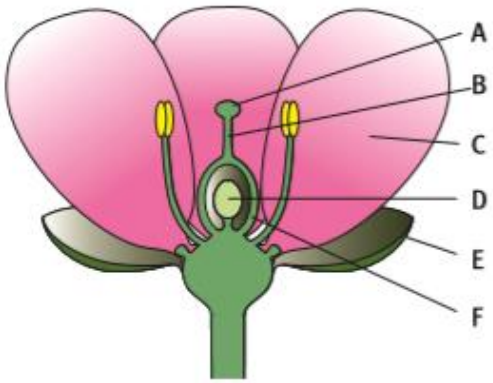
a Calculate the increase in height for each of the seedlings 7, 8 and 9.
b Calculate the mean increase in height for each group of seedlings.
c On graph paper, draw a bar chart to show Yousef's results. Put volume of water on the *x*-axis, and mean increase in height on the *y*-axis.
d Write a conclusion that Yousef could make from his results.

Questions

1 Where are the female gametes found in a flower?
2 Where are the male gametes found in a flower?
3 Explain why plants need help to get their male gametes to their female gametes.
4 The table shows two differences between insect-pollinated and wind-pollinated flowers. Suggest reasons for these differences.

Insect-pollinated flowers	Wind-pollinated flowers
brightly coloured	not brightly coloured
have spiky or sticky pollen	have smooth pollen

The diagram shows a flower.



a Name the parts labelled **A** and **B**.
b Give the letter of the part that attracts insects to the flower.
c Explain why it is useful to the plant to attract insects to its flowers.
d Give the letter of the part of the flower that will develop into a seed.

The photograph shows a fruit which has been cut in half.

a Explain how you can tell that this is a fruit.
b Name the part of a flower from which a fruit develops.

GRADE: 8	SUBJECT: SCIENCE	DATE: APRIL 18
WORKSHEET NUMBER: 4	WORKSHEET TOPIC: UNIT 4 MATERIAL PROPERTIES	
INSTRUCTION (IF ANY):	Watch the video on following link, read the content of the lesson and answer the questions.	

https://youtu.be/-0xxEWd9utc

https://youtu.be/TBrJt-5LHgQ

LEARNING OBJECTIVES

1. Describe the structure of an atom and learn about the methods and discoveries of Rutherford.
2. Compare the structure of the first 20 elements of the periodic table.
3. Describe trends, groups and periods.
4. Talk about the contribution of scientists.

Q1. Make a table of the composition of atoms and electronic configuration of first 20 elements.

GRADE: 8	SUBJECT: SCIENCE	DATE: APRIL27
WORKSHEET NUMBER: 5	WORKSHEET TOPIC :UNIT 4:ATOMIC STRUCTURE	
INSTRUCTION (IF ANY):	Watch the videos and read the content to answer the questions	

LINK FOR VIDEOS:

https://youtu.be/PahP56xv3jo

https://youtu.be/1StzvGFX4_c

4.1 STRUCTURE OF ATOM

Atoms

In Stage **8** you learnt that **atoms** are so small that you cannot see them without using the most powerful microscopes yet invented. The word 'atom' comes from a Greek word that means 'cannot be split'.

All the atoms in a particular element are the same. Different elements have different atoms. For example the atoms in sodium are all the same as one another. They are different from the atoms in potassium.

What is an atom like?

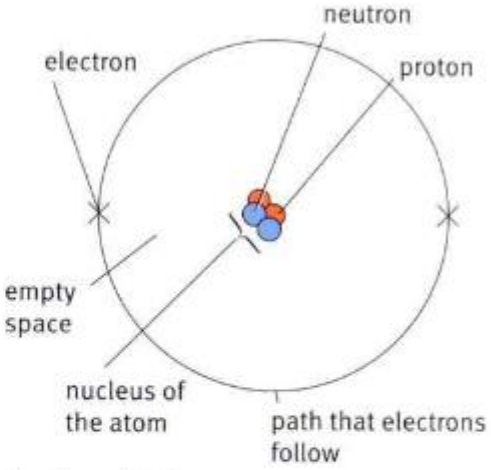
Scientists have discovered that atoms are made up of even smaller particles. Atoms are made up of three kinds of particles: **protons**, **neutrons** and **electrons**.

These particles are arranged in a similar way in every atom.

The protons and neutrons are grouped closely together in the centre of the atom. They form the **nucleus** of the atom. (Take care not to confuse the nucleus of a cell with the nucleus of an atom!)

The electrons move around the nucleus.

The three different particles in an atom have different properties.



An atom of helium.

- Protons and neutrons have much more mass than electrons. In fact, electrons have almost no mass at all.
- Protons have a positive electrical **charge**.
- Neutrons have no electrical charge.
- Electrons have a negative electrical charge.

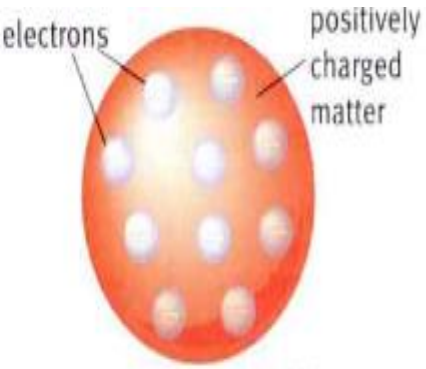
There is a lot of empty space between the parts of the atom. This space really is completely empty – there is nothing in it at all.

Questions

1 Which particle in an atom has a positive electrical charge?
2 Which of the three particles that make up an atom has the smallest mass?
3 Which particles make up the nucleus of an atom?
4 The size of the negative charge of an electron is exactly the same as the size of the positive charge of a proton. What is the overall charge of the helium atom shown in the diagram?

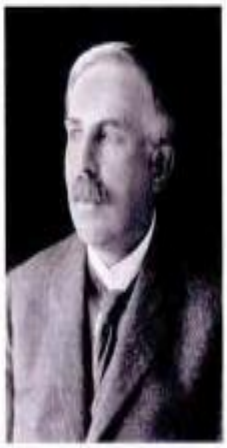
HOW DID SCIENTIST COME UP WITH THIS MODEL OF THE ATOM

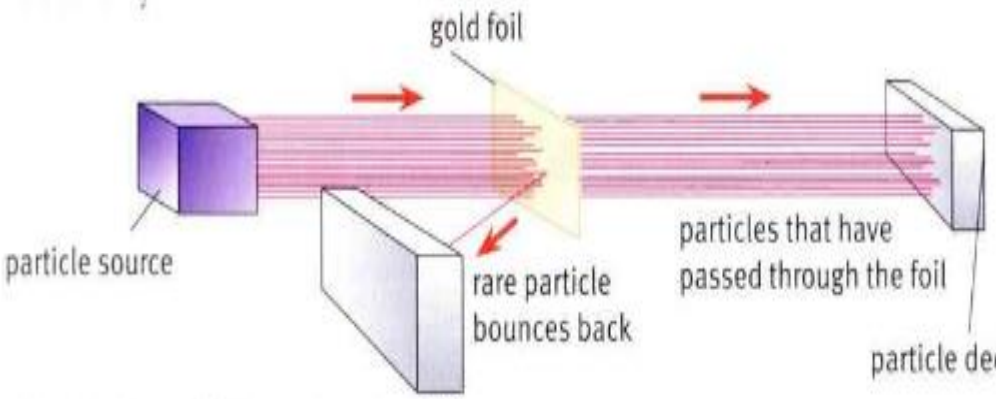
One of Thompson's research students originally came from New Zealand. His name was Ernest Rutherford. Rutherford discovered the proton in 1909 and the nucleus in 1911. Rutherford's most famous experiment was the gold foil experiment.



Thompson's model of the atom.

In this experiment Rutherford fired fast-moving particles – smaller than an atom – at very thin gold foil. Most of the particles passed straight through the foil. Only a few of these particles (about 1 in 8000) were deflected in various directions. ('Deflected' means that their direction was changed.) This led Rutherford to have the idea that gold atoms must be mostly empty space, with their particles packed into a dense nucleus at the centre. This helped to move towards the model of the atom we use today.


Ernest Rutherford.



Rutherford's gold foil experiment.

James Chadwick worked with Rutherford and Thompson. In 1932, he proved that neutrons exist.

The stories of these men show how scientists from all over the world work together and develop their ideas. Each scientist builds on the discoveries of others. These scientists won Nobel prizes for their work. Their experiments and ideas have helped us to understand the structure of the atom.

There is still a lot that we do not know about atoms. Scientists continue to work to improve our understanding of the structure of the atom. For example, scientists from all over the world are using the Large Hadron Collider in Switzerland to further understand the structure of matter.


Tunnel in the Large Hadron Collider.

4.2MORE ABOUT THE STRUCTURE OF ATOM

Different sorts of atoms

In Stage **8** you learnt about the first 20 elements and their symbols in the **Periodic Table**. Now you will learn more about the structure of the atoms of these elements.

metals
non-metals

1 H hydrogen 1 — atomic number
mass number

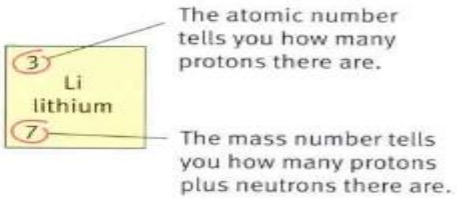
																	2 He helium 4
3 Li lithium 7	4 Be beryllium 9											5 B boron 11	6 C carbon 12	7 N nitrogen 14	8 O oxygen 16	9 F fluorine 19	10 Ne neon 20
11 Na sodium 23	12 Mg magnesium 24											13 Al aluminium 27	14 Si silicon 28	15 P phosphorus 31	16 S sulfur 32	17 Cl chlorine 35	18 Ar argon 40
19 K potassium 39	20 Ca calcium 40																

- The atoms of the elements increase in mass as you progress from left to right and downwards in the Periodic Table. For example, an atom of hydrogen has less mass than an atom of sodium.
- Each element has an **atomic number**. This tells you how many protons it contains. The atomic number increases by one with every element.
- Each element has a **mass number**. This tells you how many protons and neutrons each atom in the element has in total.
- Protons have a **positive charge**. Electrons have a **negative charge**.
- An atom has no overall charge, because the number of protons is the same as the number of electrons.

Let's take lithium as an example.

- Atomic number = 3
- Mass number = 7
- Number of protons = 3
- Number of electrons = 3
- Number of neutrons = ?

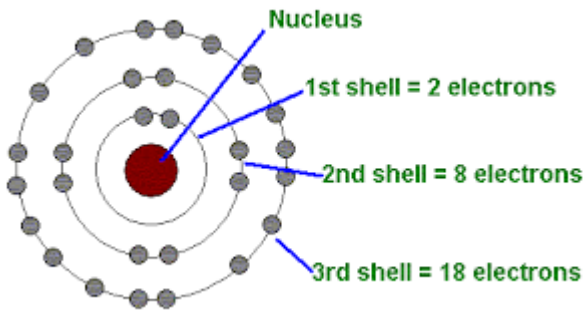
The mass number tells you that for lithium the number of protons and neutrons is seven. We know there are three protons so we can work out that there are four neutrons.



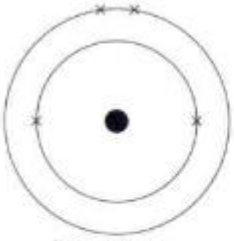
ARRANGING THE ELECTRONS

The electrons are arranged in electron shells or orbits around the nucleus . This is the electronic structure.

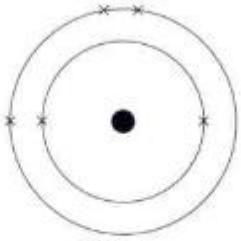
The frist shell has only room for two electrons. The thrid and second shells each have room for up to Eight electrons . A DANISH scientist called Niels Bohr frist had the idea that the electrons move in different Shells around the nucleuos . He was awarded a Noble prize for his work.



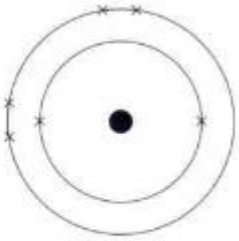
Look carefully at the diagrams as the atoms get bigger.



Beryllium.



Boron.



Carbon.

The arrangement of electrons in an atom is often written as numbers. For example, the electron arrangement for an atom of boron can be written as 2,3. This means there are two electrons in the first shell and three in the next shell. The first shell always fills up before electrons go into the second shell.

Questions

1 How many electrons are there in an atom of carbon?
2 How many protons are there in an atom of beryllium?

You will need to look at the Periodic Table to answer the following questions.

A+I 3 How many neutrons are there in an atom of boron?
A+I 4 Draw a diagram to show the structure of an atom of magnesium.
A+I 5 What is the name of the element that has electrons arranged 2,8,2?
A+I 6 Draw a labelled atomic diagram of the element fluorine.

Cambridge Assessment International Education	SANSKAR SCHOOL The Revival of Tradition	
GRADE: 8	SUBJECT: SCIENCE	DATE:APRIL29
WORKSHEET NUMBER: 6	WORKSHEET TOPIC:UNIT 4 :TRENDS OF PERIODIC TABLE	
INSTRUCTION (IF ANY):	WATCH VIDEO AND READ THE GIVEN CONTENT	

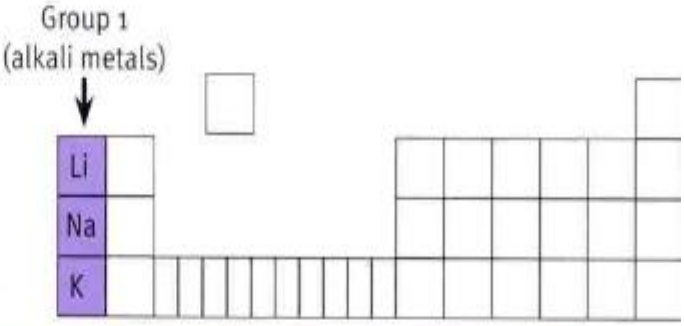
https://youtu.be/bKKJkxqIg94 :LINK

4.3 TRENDS IN GROUPS 1

Groups in the Periodic Table

In Stage **8** you learnt that the columns in the Periodic Table are called groups. The first group, also known as the **alkali metals**, includes the elements lithium, sodium and potassium. These elements have some properties in common.

The table below contains data about three of the metals in Group 1.



Element	Atomic number	Mass number	Melting point / °C	Boiling point / °C
lithium, Li	3	7	180	1360
sodium, Na	11	23	98	900
potassium, K	19	39	63	777

As you can see, the atomic number increases as you go down the group. The mass number also increases as you go down the group. These increasing numbers show you that the size of the atom is increasing.

When you look at the melting points you can see that they go down as you go down the group. The next metal down in the group is rubidium. We can predict it would have a melting point lower than 63 °C.

Questions

A+I

1 Where in the Periodic Table do you find the metals?
2 What is the trend shown in the boiling points of Group 1 elements?
3 What prediction can you make about the boiling point of rubidium?
4 How many more electrons than lithium does an atom of sodium have?

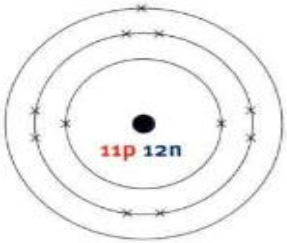
The structure of the Group 1 elements

Lithium has an atomic number of 3 and a mass number of 7. This atom contains three protons, 3 electrons and 4 neutrons. The electrons are arranged as 2,1. This arrangement of electrons is known as the **electronic structure**.

Sodium has an atomic number of 11 and a mass number of 23. This atom contains 11 protons, 11 electrons and 12 neutrons. The electrons are arranged as 2,8,1.

Potassium has an atomic number of 19 and a mass number of 39.
This atom contains 19 protons, 19 electrons and 20 neutrons.
The electrons are arranged as 2,8,8,1.

Lithium atom.



Sodium atom.

Potassium atom.

Questions

A+I **5** What happens to the size of the atoms as you go down this group?

6 What similarity is there in the structure of these atoms? (**Hint**: look at the electron shell arrangements.)

A+I **7** Suggest why this group of metals is called Group 1.

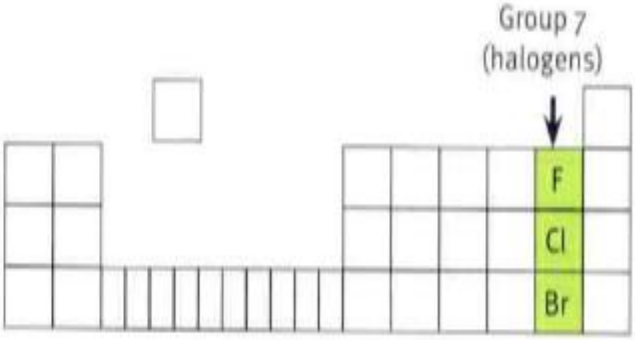
A+I **8** What are the trends in the structure and behaviour of these elements in Group 1?

4.4 TRENDS IN SOME OTHER GROUPS

Group 7 – the halogens

The group you are going to look at next is Group 7. This group is sometimes called the **halogens**. The group includes fluorine, chlorine and bromine.

The elements in Group 7 have a number of properties in common. The first two elements are gases at room temperature and bromine is a liquid. The most reactive of these elements is fluorine, then chlorine. Bromine is the least reactive of the three.



Element	Atomic number	Electronic structure	Mass number	Colour	Melting point / °C	Boiling point / °C
fluorine, F	9	2,7	19	pale yellow	−220	−188
chlorine, Cl	17	2,8,7	35	yellowish green	−101	−34
bromine, Br	35	2,8,18,7	80	brown	−7	59

Questions

A+I 1 Are the halogens metals or non-metals?
A+I 2 What is the trend (pattern) in melting points of this group?
A+I 3 What is the trend in boiling points in this group?
A+I 4 What is the trend in colour in this group?
A+I 5 What would you predict about the boiling and melting points of iodine, the next element in this group?
A+I 6 Would you expect iodine to be more or less reactive than bromine?

The structure of fluorine and chlorine atoms.

Fluorine has an atomic number of 9 and a mass number of 19. This atom contains 9 protons, 9 electrons and 10 neutrons. The electrons are arranged as 2,7.

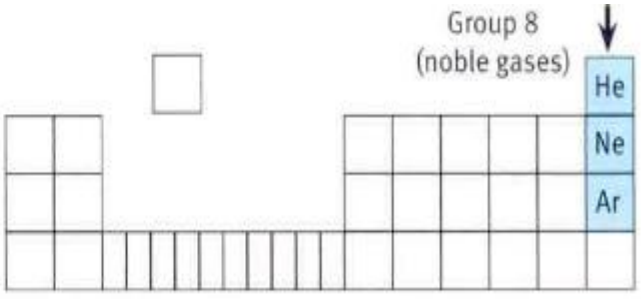
Chlorine has an atomic number of 17 and a mass number of 35. This atom contains 17 protons, 17 electrons and 18 neutrons. The electrons are arranged as 2,8,7.

Questions

+I 7 What happens to the size of the atoms as you go down this group?
+I 8 What similarity is there in the structure of these atoms? (**Hint**: look at the electron shell arrangements.)

Group 8 – the noble gases

Group 8 includes the elements helium, neon and argon. They are all gases. They are **inert** (unreactive) and do not form compounds. They are called **noble gases**.



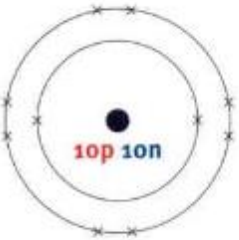
Element	Atomic number	Electronic structure	Mass number	Melting point / °C	Boiling point / °C
helium, He	2	2	4	−270	−269
neon, Ne	10	2,8	20	−249	−246
argon, Ar	18	2,8,8	40	−189	−186

Helium has an atomic number of 2 and a mass number of 4. This atom contains 2 protons, 2 electrons and 2 neutrons. The electrons are arranged with 2 in the first shell. The shell is full.

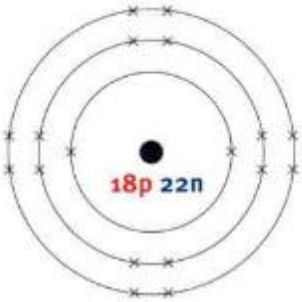
Neon has an atomic number of 10 and a mass number of 20. This atom contains 10 protons, 10 electrons and 10 neutrons. The electrons are arranged with 2 in the first shell and 8 in the second shell. The outer shell is full.

Argon has an atomic number of 18 and a mass number of 40. This atom contains 18 protons, 18 electrons and 22 neutrons. The electrons are arranged with 2 in the first shell and 8 in the second and third shells. The outer shell is full.

Helium.



Neon.



Argon.

Questions

A+I **10** What trend in melting points can be seen in Group 8?
A+I **11** What happens to the size of the atoms as you go down Group 8?
A+I **12** What similarity is there in the structure of these atoms?
13 Suggest why this group is called Group 8.

END OF UNIT QUESTIONS

4.1 The table shows some information about four elements. These elements are from the same group in the Periodic Table. They are given in the same order as in the Periodic Table.

Element	Melting point / °C	Boiling point / °C	Reaction with water
lithium	180	1342	Fizzes (gives off bubbles of gas) and gives off heat
sodium		883	
potassium	63		Fizzes and gives off so much heat it catches fire
rubidium	39	688	Explodes with such force that the container cracks

There is a trend in the melting and boiling points of these elements. Use the trend to predict the following:

a the melting point of sodium [1]

b the boiling point of potassium. [1]

c The elements all react with water to produce a gas.
Name the gas. [1]

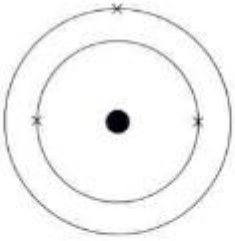
d Use the information about the reaction with water to predict the reaction between sodium and water. [1]

e The following are the mass numbers of the four elements in the table above. They represent the relative size of the atoms.

23 **7** **39** **85**

Match the numbers with the elements. [1]

f Lithium has 2 electron shells. The electronic structure is 2,1. This can be seen in the diagram below.

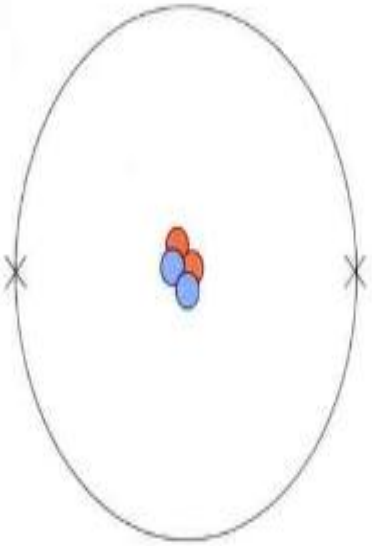


Sodium has the electronic structure 2,8,1. Draw a similar diagram to show the electronic structure of sodium [3]

4.2 Many scientists contributed to the model of the atom that is shown in the diagram below.

a Copy the diagram and label it using the following words:

electron **nucleus** **proton** **neutron**



[4]

Name the particle that:

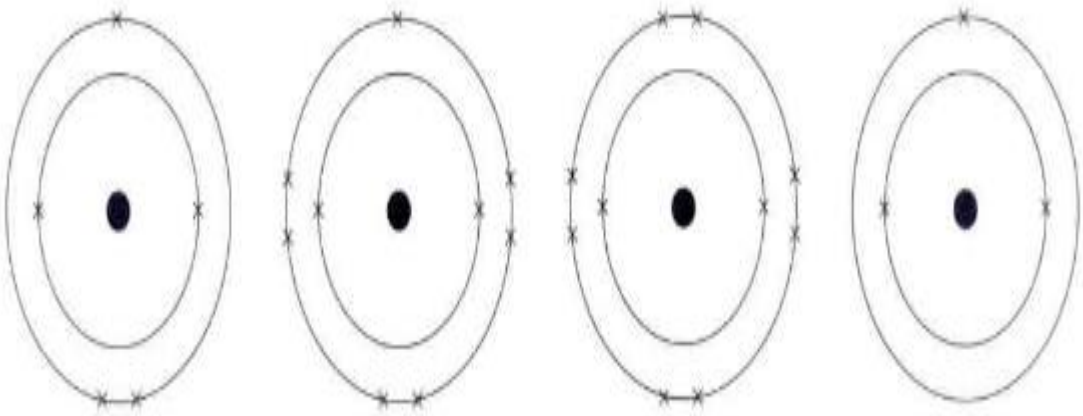
b has a positive charge [1]

c has no charge [1]

d has the least mass [1]

e is present in the same numbers as the protons in an atom. [1]

4.3 **a** Neon is a noble gas. It has the electronic structure 2,8.
Which of the diagrams, **A**, **B**, **C** or **D**, shows the electronic structure of neon?



b How many protons does the atom of neon have?

Neon is in Group 8 of the Periodic Table. Other gases in this group are helium and argon.

c The elements in Group 8 are sometimes called the noble or inert gases.
Helium has only one shell of electrons, neon has two and argon has three.
What do the shells of this group have in common?

GRADE: 8	SUBJECT: SCIENCE	DATE:MAY 21
WORKSHEET NUMBER:7	WORKSHEET TOPIC : UNIT 9:FORCES IN ACTION	
INSTRUCTION (IF ANY):	Watch the video , read the content and make notes and answer the questions given.	

DENSITY : LINK: https://youtu.be/e8U-cqozqNU

LEARNING OBJECTIVES: Determine densities of solid ,liquids and gases.

9.1 THE IDEA OF DENSITY

Your teacher might try to trick you with a question like this:
Which is heavier, a tonne of lead or a tonne of feathers?

Everyone knows that lead is heavier than feathers, but that is not the right answer. The answer is that a tonne of feathers is just as heavy as a tonne of lead.

The reason is that a tonne of anything weighs the same – it has a **mass** of one tonne, or 1000 kilograms.

Question

1 **a** The mass of an object tells us how much matter it is made of. What is the unit of mass?
b Which has more mass, 1 kg of water or 1 kg of air?

1 tonne of feathers will balance 1 tonne of lead.

Taking up space

The reason we can easily be tricked by the question about lead and feathers is that we know that feathers are 'lighter' than lead. But what does this mean?

If you look at the picture above, you will see that one tonne of feathers occupies much more space than one tonne of lead. One tonne of lead has the same mass as one tonne of feathers, but it is squashed into a much smaller **volume**.

If you took two identical boxes and filled one with lead and one with feathers, the box full of lead would be much heavier than the box of feathers. There would be much more mass squashed into the volume of the box.


Feathers are lighter than lead.

Comparing materials

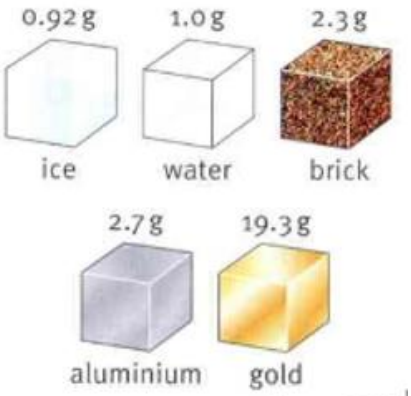
In science, we don't say that lead is heavier than feathers. We say that lead has a greater **density** than feathers.

The density of a material tells us the mass of 1 cubic centimetre (1 cm^3) of the material. This is like a fair test, a way of comparing two materials. For each material we find the mass of 1 cm^3.

A 'heavier' material is more dense than a 'lighter' material. It has a greater density. In the picture, each cube has a volume of 1 cm^3, but the cubes have different masses.

We state the density of a material like this:

Density of water = 1.0 g/cm^3



This tells us that 1cm^3 of water has a mass of 1.0g. The unit of density is g/cm^3. The density can also be given in kg/m^3.

Question

2 Look at the picture of different materials on the previous page.

a What is the density of gold?

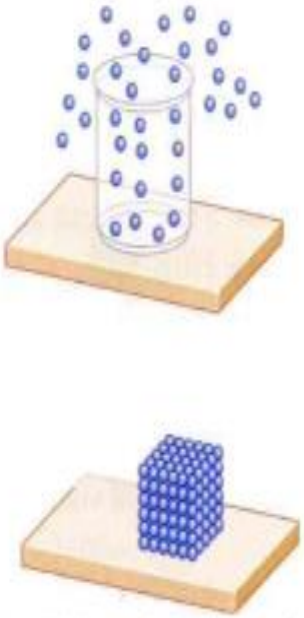
b Which is denser, water or ice?

Explaining density

Air has a very low density, about 0.0013 g/cm^3. You can understand this by thinking about the particle model of matter.

Air is a gas. Its particles are spread out, far apart from each other. There is a lot of empty space in between them. So air occupies a lot of space but its particles, which have mass, occupy only a tiny fraction of that space.

Lead is a solid. Its particles are packed closely together, and each particle has more mass than a particle of the air. This is why lead is so dense.



The particle model tells us why lead has a greater density than air.

Question

3 When water boils, it becomes steam. Its particles spread out and occupy a greater volume. Has its density increased or decreased? Explain your answer.

9.2 MEASURING DENSITY

If you want to know the density of a material, here is what you do. You take a sample of the material and measure two things:

- its mass in grams (g)
- its volume in centimetres cubed (cm^3).

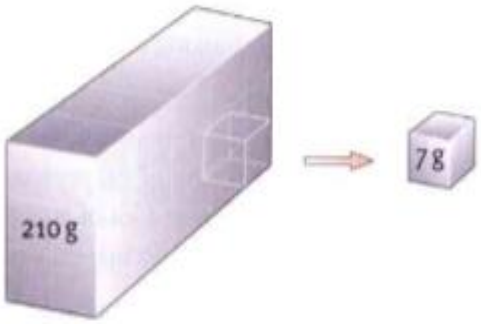
Then you calculate its density like this:

$$\text{density} = \frac{\text{mass}}{\text{volume}}$$

Example: The diagram shows a block of cast iron. Its volume is 30 cm^3 and its mass is 210 g.

$$\text{density} = \frac{\text{mass}}{\text{volume}} = \frac{210\,\text{g}}{30\,\text{cm}^3} = 7.0\,\text{g/cm}^3$$

The picture shows that we can think of the block as being made up of 30 small cubes, each of volume 1 cm^3 and mass 7.0 g.



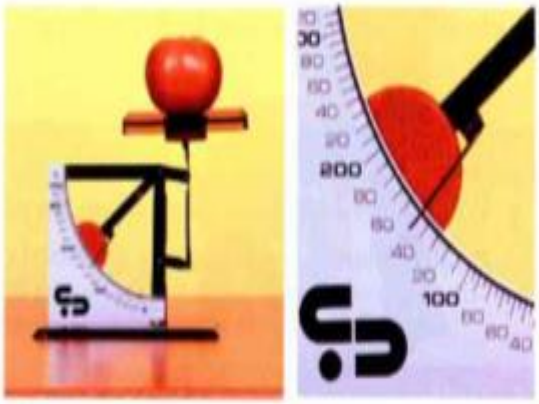
The big iron block measures 5 cm × 3 cm × 2 cm.

Measuring mass

Mass is measured using a balance. There are different designs of balance; check that the scale gives mass in grams.

Question

1 What is the mass of the tomato shown in the photograph?



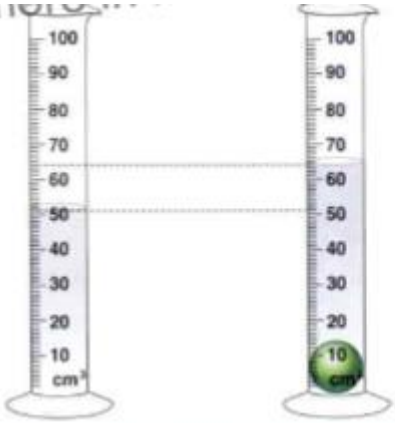
A balance like this can be used to measure mass.

Measuring volume

There are several ways to measure the volume of something. Two are shown below and one on the next page:

VOLUME=LENGTH X WIDTH X HEIGHT

Find the volume of an irregular solid object by submerging the object in water in a measuring cylinder. Calculate the increase in volume.



Question

2 Here is a description of an experiment to measure the density of salty water.

Step 1: An empty measuring cylinder was placed on an electronic balance. The reading on the balance was recorded (54.0 g).

Step 2: Salty water was poured into the measuring cylinder. The new reading on the balance was recorded (115.2 g).

Step 3: The volume of the salty water was read from the measuring cylinder (60 cm^3).

a Draw diagrams to show the three steps described above.

b Calculate the mass of salty water.

c Calculate the density of the salty water.

9.3 DENSITY CALCULATIONS

Here is the equation which is used to calculate the density of a material, written in words and in symbols:

$$\text{density} = \frac{\text{mass}}{\text{volume}}$$

$$D = \frac{M}{V}$$

where D = density, M = mass, V = volume.

Question

A*

1 A rectangular block of steel measures 4 cm × 2 cm × 1.5 cm. Its mass is 93.6 g.

a Calculate the density of steel.

b Steel is made almost entirely of iron atoms, but it is denser than iron. Suggest a reason for this.

Calculating mass

A fish tank.

We can rearrange the equation for density like this:

$$\text{mass} = \text{density} \times \text{volume}$$

$$M = D \times V$$

Example: A fish tank measures 80 cm × 20 cm × 25 cm. It is to be filled with water, density 1.0 g/cm³. Calculate the mass of water in the tank when it is full.

Step 1: Calculate the volume of the tank.

$$\text{volume} = \text{length} \times \text{width} \times \text{height} = 80 \times 20 \times 25 = 40000\,\text{cm}^3$$

Step 2: Calculate the mass of the water.

$$\text{mass} = \text{density} \times \text{volume} = 40000 \times 1.0 = 40000\,\text{g}$$

Question

2 A half litre bottle has a mass of 80 g. It contains 500 cm³ of liquid when full. The bottle is filled with olive oil of density = 0.90 g/cm³.

a Calculate the mass of oil in the bottle.

b Calculate the mass of the full bottle.

Calculating volume

We can rearrange the equation for density to make volume its subject, like this:

$$\text{volume} = \frac{\text{mass}}{\text{density}}$$

Example: A builder needs 20 000 kg of sand to make mortar. The sand is sold in 1 m³ bags. How many bags will he need? (The density of sand is 2500 kg/m³.)

We need to find the volume of the sand.

$$\text{volume} = \frac{\text{mass}}{\text{density}} = \frac{20000}{2500} = 8\,\text{m}^3.$$

(Notice that, because the mass is in units of kg and the density is in kg/m³, the volume is in m³.)

Since each bag has a volume of 1 m³, he will need 8 bags.

Mixing sand, cement and water to make mortar.

Question

3 A coin has a mass of 7.0 g. It is made of a metal alloy of density 5.6 g/cm³. Calculate the volume of the coin.

SUMMARY:

Air is a gas. Gases are much less dense than solids or liquids.

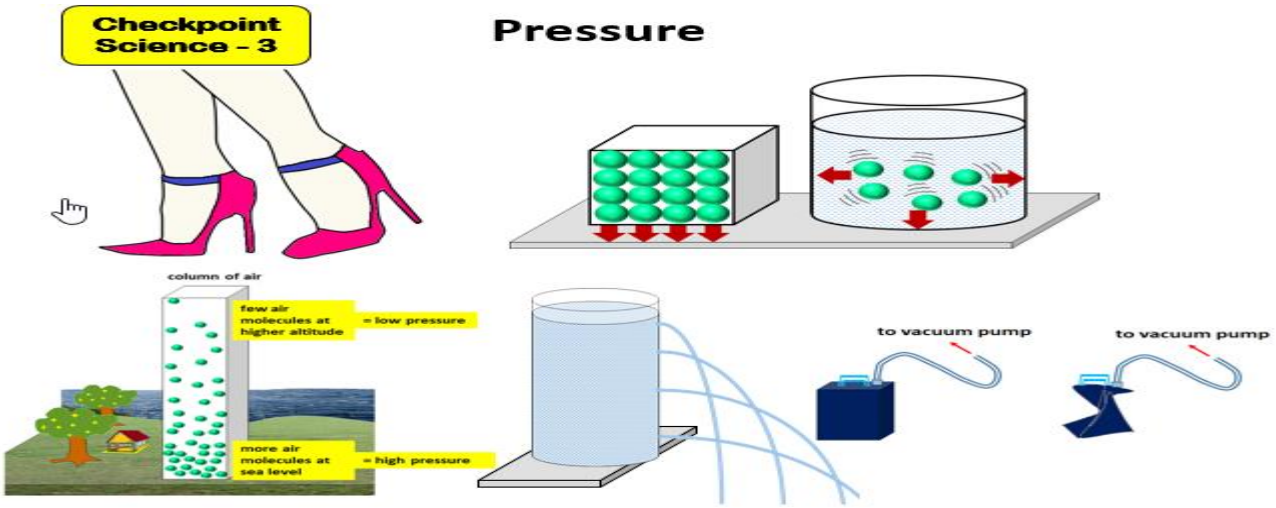
Density =mass/volume

Mass =density x volume

Volume =mass/density

GRADE: 8	SUBJECT: SCIENCE	DATE: MAY22
WORKSHEET NUMBER:8	WORKSHEET TOPIC: PRESSURE	
INSTRUCTION (IF ANY):		

LINK: https://youtu.be/zlLpKzPz84Q , https://youtu.be/Cvp6mLWbgaM



The **force acting on a unit area of a surface** is called **pressure**. The force acting normally on a surface is known as **thrust.**

Pressure depends on two factors:

1. **Force**: more the force applied, more pressure
2. **Area**: Greater the surface area on which the pressure is applied, lesser the pressure. Lesser the surface area more the pressure.

$$\text{Pressure} = \frac{\text{Force}}{\text{Area}}$$

SI unit: **pascal,** denoted by **Pa**

$$1\ \text{Pa} = \frac{1\ \text{newton}}{1\ \text{m}^2}$$

Pressure examples in daily life :

1) School bags have wider straps :

2) Sharp knife cuts better than blunt knife:

Blunt Knife: more area
Sharp knife: less area

3) Buildings have wider foundation:

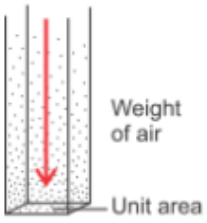
Broader foundation
Less pressure on ground

4) Easier to walk on sand with flat shoes rather then shoes with sharp heels:

The atmospheric air extends up to many kilometers above the surface of the earth. The pressure exerted by this air is known as **atmospheric pressure.**

Atmospheric pressure is the weight of air in a column of unit area.

Atmospheric pressure is measured by **Barometer.**

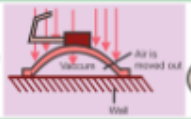


Atmospheric pressure decreases as the altitude increases.

Understanding Atmospheric pressure

1) **We get ear ache when we travel by airplane**: When the airplane lands air pressure increases, which increases pressure on eardrum causing ear pain.

2) **A rubber sucker pressed on a surface sticks to it**: When sucker is pressed air between surface and sucker moves out. Outside there is atmospheric pressure acting on it. So it sticks to the surface.

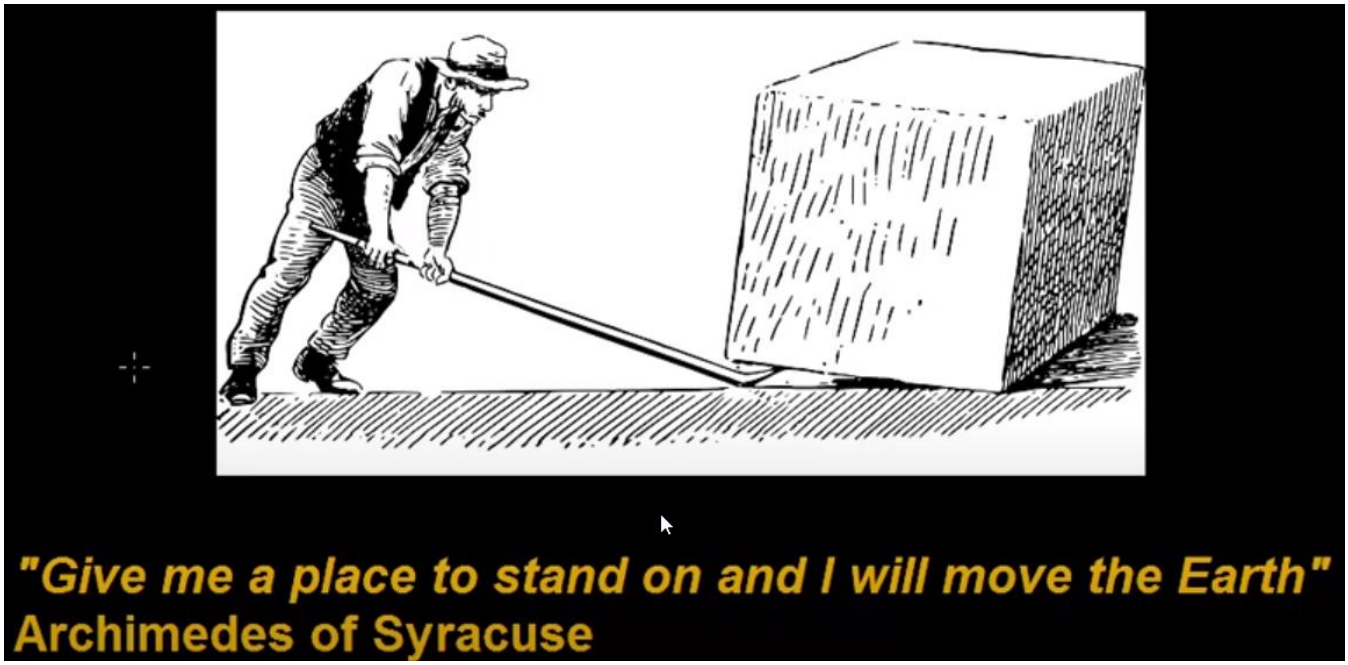


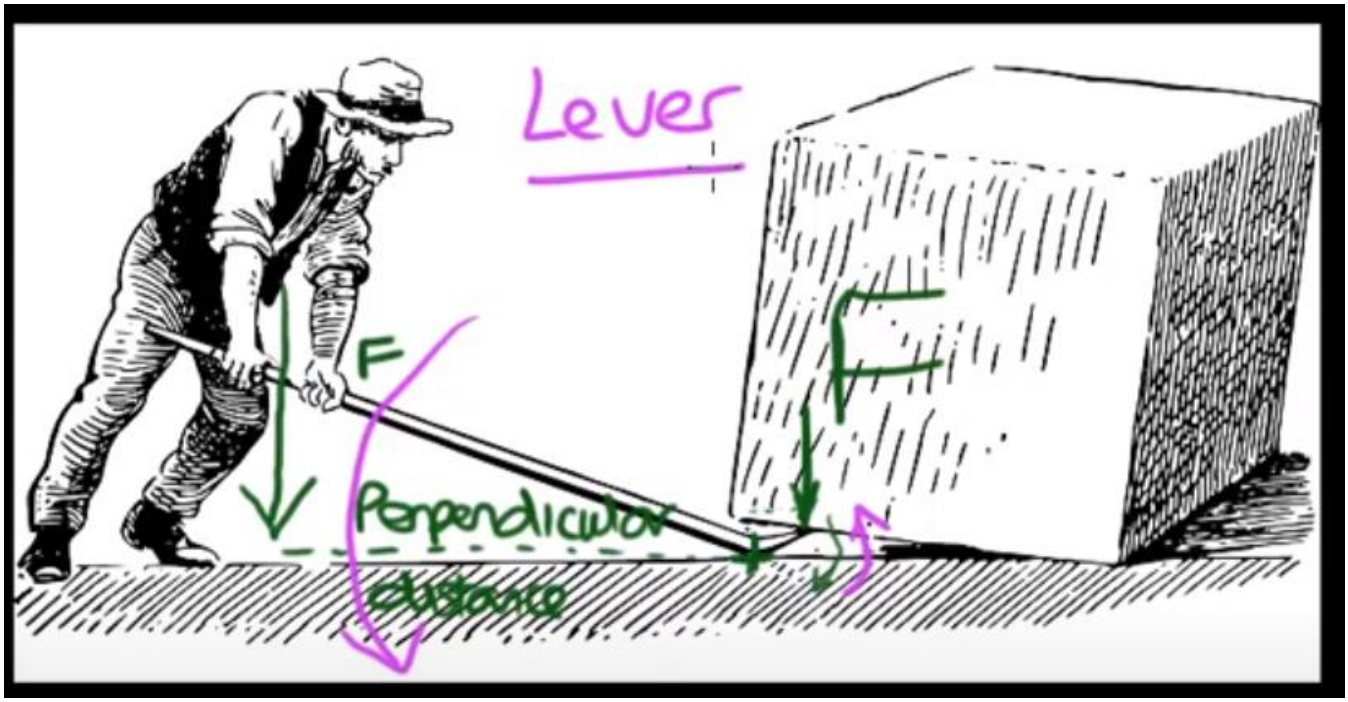
3) **When drinking with a straw, one has to suck the straw**. This causes the pressure in the straw to decrease. The external atmospheric pressure, which is greater, will then act on the surface of the water in the glass, **causing it to rise through the straw**.

GRADE: 8	SUBJECT: SCIENCE	DATE: JUNE 23
WORKSHEET NUMBER:9	WORKSHEET TOPIC:UNIT9 :TURNING EFFECT OF FOFCES	
INSTRUCTION (IF ANY):	https://youtu.be/6iwZwN6wSu8 link for notes	

LINK: https://youtu.be/22VGQM1jCn8

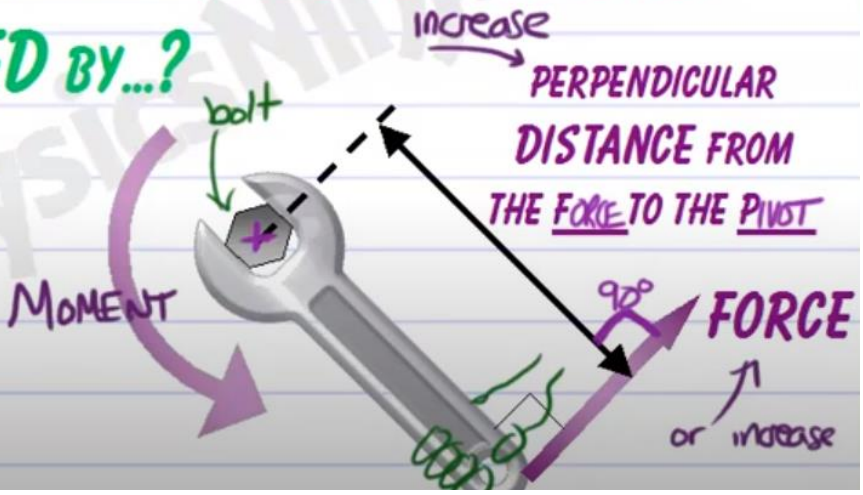
9.7 THE TURNING EFFECT OF FORCE





A FORCE CAN HAVE A TURNING EFFECT ABOUT A PIVOT CALLED A "MOMENT". THIS TURNING EFFECT CAN BE INCREASED BY...?

DESCRIBE SOME OTHER EVERYDAY EXAMPLES OF TURNING FORCES.



Moments

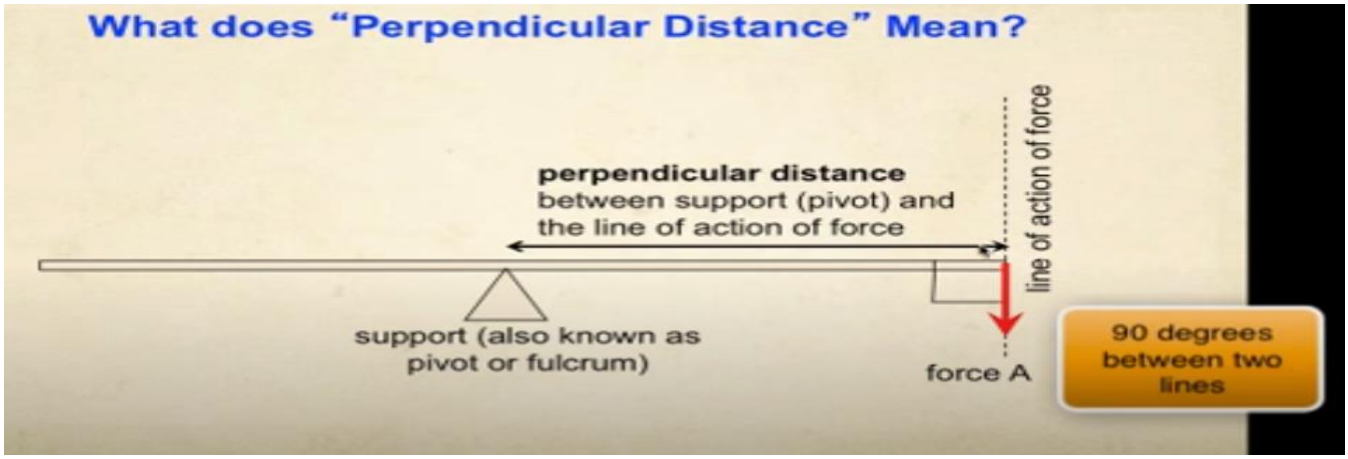
Recall

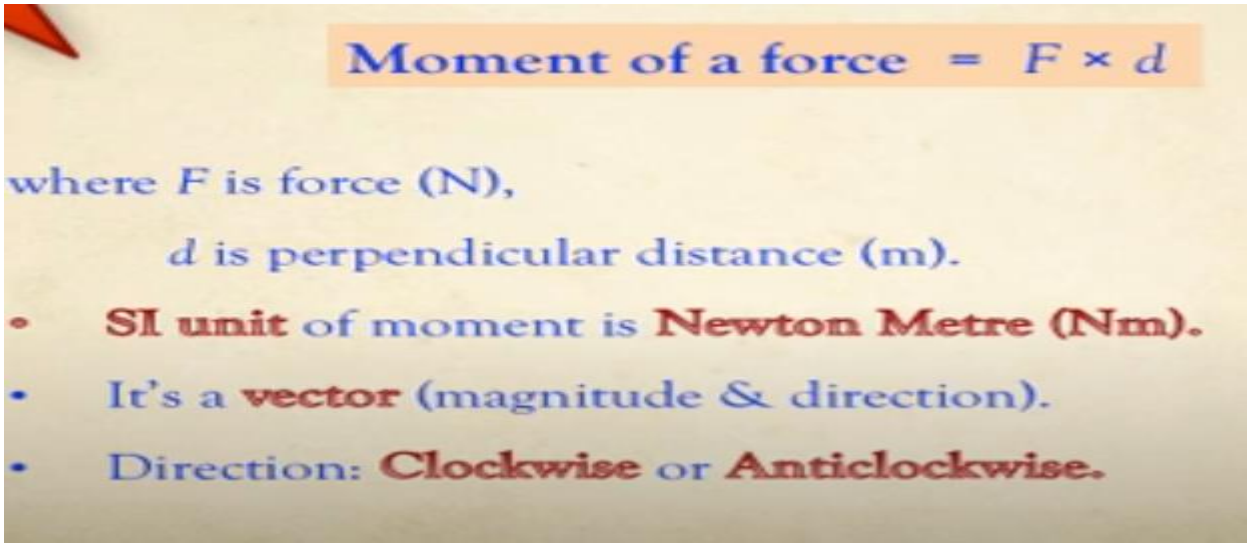
What is a *pivot*??

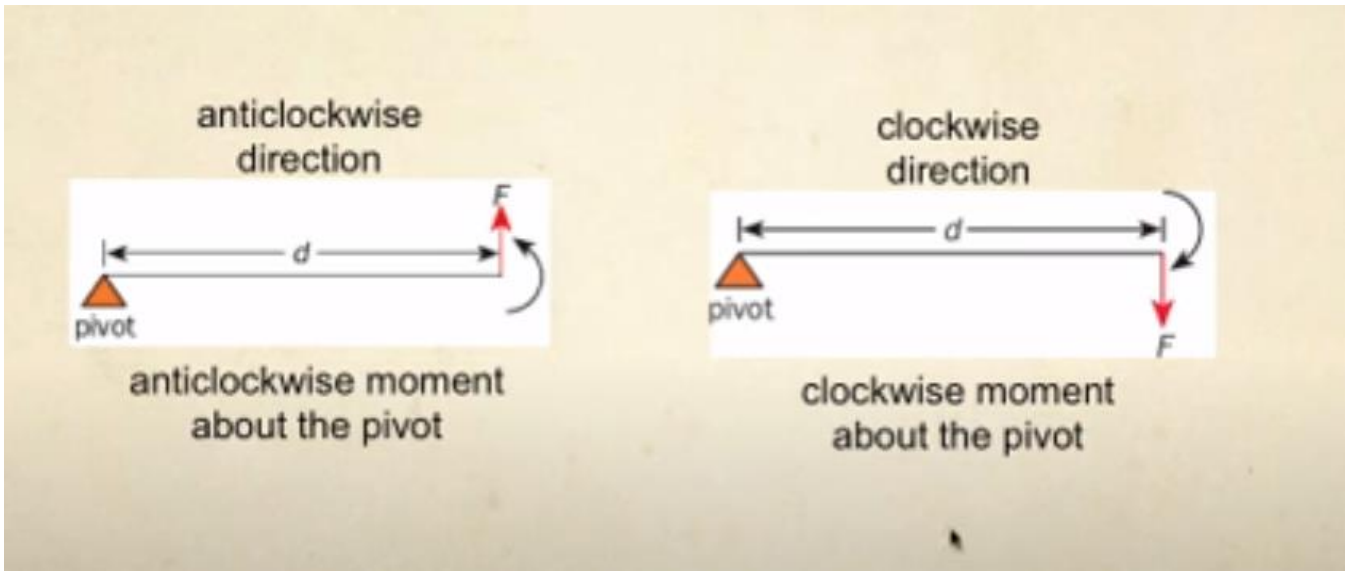
A pivot is the **point of rotation** in a lever system.

Moments of a Force

What does "Perpendicular Distance" Mean?







NOTE: Read book ,watch video, copy these notes in your notebook and do all question answers along with end of unit questions in your notebook.

UNIT 9 COMPLETED

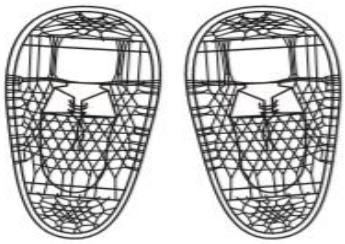
ASSIGNMENT:2

GRADE 8 UNIT 9 :FORCES IN ACTION DATE:25JUNE2020

Complete each explanation using these words.

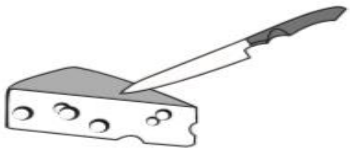
area **force** **pressure**

(a) People who walk across snow may wear snowshoes.



The person does not sink into the snow because the ..... acts on a larger ..... so that the ..... is less. [1]

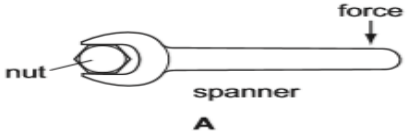
(b) A sharp knife cuts through cheese more easily than a blunt knife.



The edge of the sharp knife has a smaller ..... so the ..... acting on the knife produces a larger ..... . [1]

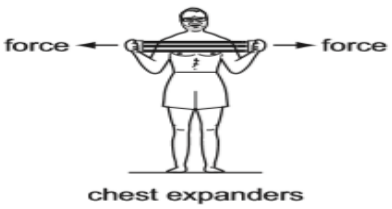
This is a question about forces.

Look at the diagrams.



A

B



C

D

E

Which diagrams show a turning force?

Choose from **A**, **B**, **C**, **D** and **E**.

..... **and** ..... [2]

GRADE: 8	SUBJECT: SCIENCE	DATE: JULY 7
WORKSHEET NUMBER:13	WORKSHEET TOPIC: UNIT 2 - ECOLOGY	
INSTRUCTION (IF ANY):	READ THE LESSON AND DO THE ANSWERS IN NOTEBOOK	

2.3 Ecology

:https://youtu.be/HxulGbCYJBs:LINK FOR VIDEO

Questions

SE 1 What was the independent variable in the ecologists' investigation?
SE 2 What were the **two** dependent variables?
SE 3 State **two** variables that the ecologists kept constant in their investigation.
SE 4 Write down any conclusions the ecologists can make from their results.
SE 5 Suggest how the ecologists could improve their experiment.

Questions

SE 6 Suggest how the students in the photographs could use the net to sample the invertebrates in the river.
SE 7 Suggest how the students could find out if there is a correlation between the number of invertebrates and the concentration of dissolved oxygen.

2.4 Food webs and energy flow

Questions

These questions are about the Southern Ocean food web. To answer them, you will need to remember what you have learnt about food chains.

1 Name the producer in the Southern Ocean food web.
2 Name **three** consumers in the food web.
3 Find a food chain with six organisms in it. (Start with the producer, and follow the arrows.) Draw your food chain.

Questions

Look at the photograph of the students studying organisms from a river.

4 What are they doing to keep safe? What else should they do?
5 Suggest how they will be able to identify the small organisms that they find.
6 If the students want to construct a food web for the river, what else will they need to find out?

Cambridge Assessment International Education	SANSKAR SCHOOL The Revival of Tradition	BRITISH INTERNATIONAL SCHOOL AWARD 2016-2019
GRADE: 8	SUBJECT:SCIENCE	DATE: JULY 9
WORKSHEET NUMBER: 14	WORKSHEET TOPIC: UNIT 2: POPULATION,POLLUTION,CONSERVATION	
INSTRUCTION (IF ANY):	DO AS DIRECTED IN CLASS	

2.6 Populations

Questions

A+I 1 Look at the graph. What can you conclude about the number of births and deaths per year between the year 1 and the year 1000?

A+I 2 Suggest reasons for the shape of the graph between 1500 and 2000.

A+I 3 There are three different lines showing the predicted population size in the future. Suggest why.

Questions

Use the food web on page **28** to answer these questions.

A+I 4 Suggest how a decrease in the population of squid and fish could affect the population of leopard seals. Explain your answer.

A+I 5 Suggest how a decrease in the population of squid and fish could affect the population of krill. Explain your answer.

6 Food supply, predators and disease affect the sizes of animal populations. Make a list of **three** factors that you think might affect the size of a plant population.

2.7 Pollution

Questions

1 What do fertilisers contain, that make plants and algae grow faster?

2 Explain why the plants die when they do not get enough light.

3 Explain why the population of bacteria in the water increases after the plants die.

A+I 4 Explain why fish die when they do not get enough oxygen.

A+I 5 Suggest what happens to the populations of birds that feed on fish.

6 Look at the satellite photograph of the Black Sea. Suggest why the algal bloom is around the edges of the sea, rather than spread all over it.

2.8 Habitat destruction

Questions

1 Explain each of these statements:
   a The growing human population on Earth is causing habitat destruction.
   b Habitat destruction can cause species to become extinct.

A+I 2 What are the producers in a coral reef?

3 Think about what you learnt about air pollution in Stage **7**. Explain what is happening to the amount of carbon dioxide in the air.

A+I 4 Think about what you learnt about the reactions between carbonates and acids in Stage **8**. Explain what might happen to the calcium carbonate in coral reefs, if the sea water becomes more acidic.

2.9 Protecting the environment

Question

A+I 1 Identify some of the countries that have **not** signed the Ramsar Convention. (You may need to use an atlas to help you.) Can you suggest why they have not signed?

Questions

You will need to think about your work on ozone depletion in Stage **7** to answer these questions.

2 What is ozone, and where is the ozone layer?

3 Why is the ozone layer important to us?

A+I 4 Look at the graph on the previous page. Suggest why CFC levels began to rise in the 1950s.

A+I 5 Suggest why the level of CFCs did not begin to fall until after 2000, even though the international treaty to reduce CFCs first came into force in 1989.

Question

A+I 6 Suggest why it has proved to be so difficult for countries to reduce their carbon dioxide emissions. (You will need to think about where the carbon dioxide comes from.)

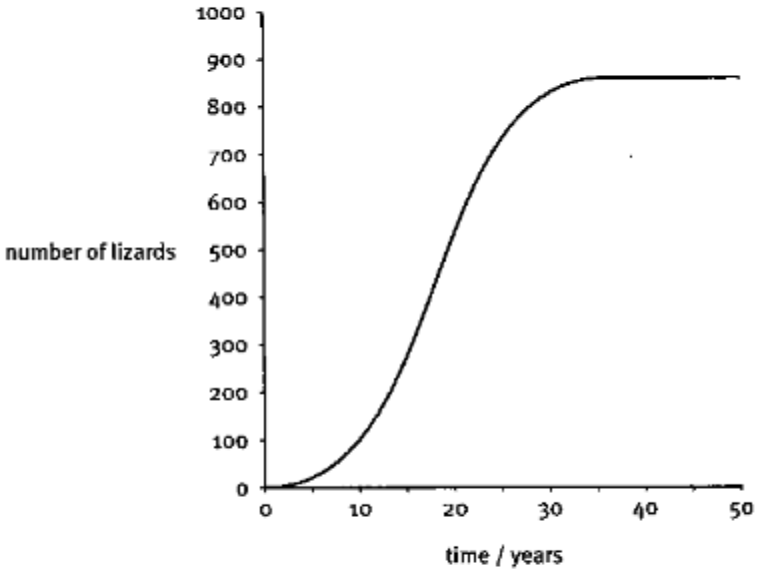
GRADE 8

ASSIGNMENT 1 14JULY2020

REVISION UNIT 2

Four lizards – two males and two females – were put onto an island where no lizards were present. The lizards ate flies and other small insects. There were buzzards and eagles on the island, which could eat lizards.

The graph shows what happened to the population of lizards over the next fifty years.



1 Explain the meaning of the term **population.**

.....

.....

2 What was the maximum population of lizards on the island?

Suggest why the lizard population eventually stopped increasing.

.....

.....

.....

.....

GRADE 8

ASSIGNMENT 2 16 JULY 2020

REVISION UNIT 9

Read each of the situations described below. For each:

- state whether it is desirable to have high pressure or low pressure
- explain why this is desirable.

Use the words **force**, **area** and **pressure** in your answers.

1 A hotel has a lounge with a wooden dance floor. A notice says that people must not wear stiletto heels.

.....

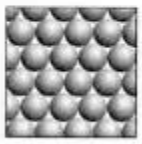
.....

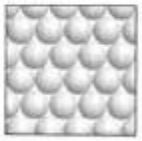
.....

.....

Gold is denser than silver. A 1 cm cube of gold has more mass than a 1 cm cube of silver.

However, if we could see the atoms of gold and silver, we would see that they are exactly the same size. A 1 cm cube of gold has the same number of atoms as a 1 cm cube of silver.

gold 

silver 

What does this tell you about the atoms of gold and silver?

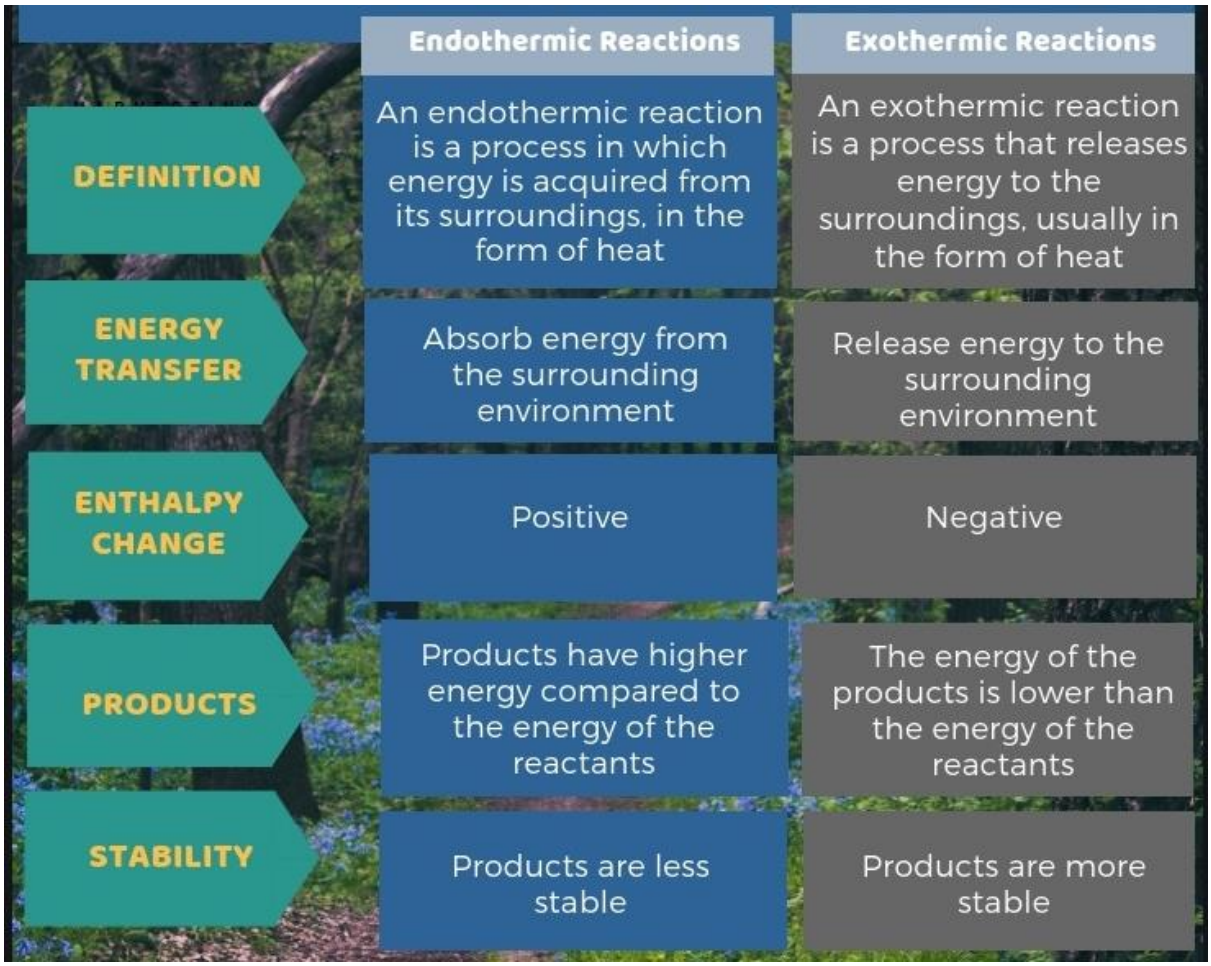
ASSIGNMENT 1

UNIT 5: LESSON 5.1, 5.2,5.3 DATE: AUGUST 4

Exothermic and Endothermic Reactions

Exothermic reaction* – *a reaction that releases energy
The reactants have more energy than the products.
Energy must be released as the products form.
The container in which an exothermic reaction is taking place will feel warm

Endothermic reaction* – *a reaction that absorbs energy. The products have more energy than the reactants.
Energy must be absorbed as the products form.
The container in which an endothermic reaction is taking place will feel cold



ENTHALPY-**Enthalpy** is a concept used in science and engineering when heat and work need to be calculated. ... When a substance changes at constant pressure, **enthalpy** tells how

much heat and work was added or removed from the substance. **Enthalpy** is similar to energy, but not the same.

Exothermic reactions	Endothermic reactions
Combustion	Thermal decomposition
Respiration	Dissolving some ionic salts in water, like ammonium chloride, potassium nitrate and copper(II) sulphate etc...
Neutralisation	Photosynthesis
Dissolving acids	Action of light on silver bromide
Dissolving alkalis	
Rusting	
Oxidation of metals	
Nuclear	

Exothermic processes	Endothermic processes
making ice cubes	melting ice cubes
formation of snow in clouds	conversion of frost to water vapor
condensation of rain from water vapor	evaporation of water
a candle flame	forming a cation from an atom in the gas phase
mixing sodium sulfite and bleach	baking bread
rusting iron	cooking an egg
burning sugar	producing sugar by photosynthesis

NOTE-WRITE THESE NOTES

ANSWERS: 5.1,5.2 AND 5.3

Unit 5 Energy changes

Topic 5.1 Burning

1 A fuel, oxygen and energy to start off the reaction.

2 An exothermic reaction is one in which more energy is given out than is put in.

3 Heat energy is given off.

4 Rusting is an oxidation reaction.

5 When copper reacts with oxygen, copper oxide is formed.

6 Chemical energy is changed into heat and light energy.

Topic 5.2 More exothermic reactions

1 Magnesium chloride and hydrogen.

2 When the fizzing stopped.

3 Noor's idea was correct because in both reactions the increase in temperature is the same.

4 Safety glasses should be worn in case the acid spills or spits into the eyes.

5 Does adding more magnesium to hydrochloric acid increase the temperature given off in the reaction?

Does adding different metals to hydrochloric acid result in a different amount of energy being given off?

Does changing the acid used in the reaction with magnesium result in a different amount of heat energy being given off?

Activity 5.2 Planning an investigation into the reaction between acid and magnesium

The plan should cover all the practical issues and safety requirements, such as an equipment list.

The variables to be changed, measured and kept the same, should all be stated. There should be an indication of repeating results and how they will ensure the results are reliable. An outline results table is also needed. There should be some indication of how the results will be presented.

A1 This should be based on the results obtained.

A2 There should be some indication of a comparison and/or discussion of the other results.

A3 Credit any sensible suggestions, such as a larger range of readings, more precise methods of measuring the variables or changes in the method. Suggestions should result from the experience of the investigation.

NOTE: RELATED TO ACTIVITY 5.2,NEED NOT TO WRITE IN NOTEBOOK BUT ONLY FOR UNDERSTANDING

Activity 5.2 Planning an investigation into the reaction between acid and magnesium

The plan for this activity should be checked carefully before students are permitted to begin.

Each group or pair will need:

SAFETY!
* hydrochloric acid, 1 mol / dm^3 or less
* magnesium ribbon
* a ruler
* a measuring cylinder
* a thermometer
* boiling tubes / test tubes or small beakers
* test tube racks, if test tubes are used
* safety glasses

If students have opted to investigate the concentration of the acid involved, you will need to provide:

* different concentrations of acid (from 0.1 mol / dm^3 to 2 mol / dm^3 would be suitable)

If students have opted to use different acids, you will need to provide:

SAFETY!
* different acids such as hydrochloric acid, sulfuric acid, nitric acid; they should all be at the same concentration – 1 mol / dm^3 or less

You need to be sure that the students are following their approved plan. If you prefer the whole class to undertake the same investigation you could use 25 cm^3 of hydrochloric acid (1 mol / dm^3) and different lengths of magnesium ribbon. You should ensure that the students do preliminary work to establish how long a length of magnesium ribbon they require to obtain a measurable temperature change. They also need to establish what increase in length is needed as the interval in the investigation. This is an important point for the students to understand. You should warn the students to take care when handling the hot solutions. Students should do an appropriate number of repeats, record the results appropriately, plot a graph of their results and discuss their findings. These could be reported back to the class in the form of a 'science conference', where each group presents their findings and justifies them. Other groups can ask questions and suggest improvements or further work.

SAFETY! **You should take care that magnesium ribbon does not leave the teaching room. Take care when handling acids.**

ASSIGNMENT 2

UNIT :5 ENERGY CHANGES DATE: AUGUST 6

ANSWERS OF CHAPTER 5.3 ,5.4 AND END OF UNIT QUESTIONS

Topic 5.3 Endothermic processes

1 Sodium hydrogencarbonate and citric acid.

2 Sodium citrate, carbon dioxide and water.

3 An endothermic reaction is one where heat energy from the environment is taken in.

4 Inside sherbet sweets there is a mixture of dry citric acid and sodium hydrogencarbonate. When you suck them, these substances dissolve in the water in your saliva, and react together. Your mouth feels cooler because this reaction is endothermic and takes energy in from its surroundings.

5 The 'fizzy feeling' is due to carbon dioxide being given off in the reaction.

6 When the ice melts no new products are formed so this is not a chemical reaction. The ice changes state.

7 Evaporation, when a liquid changes to a gas.

8 You feel cold because the water particles on your skin use energy from your skin to change to a gas and evaporate. This is an endothermic process. You lose heat energy so you feel colder.

9 When water freezes energy from the water is lost to the environment so this is an exothermic process. The particles of water in the liquid state have enough energy to move past one another. When ice is formed the particles have lost energy and can only vibrate.

Topic 5.4 Exothermic or endothermic?

1 Self-heating cans are very expensive because they have to be made so that the chemicals used to warm the food do not come into contact with it. Since the can and chemicals are only used once this also makes it expensive.

2 The can is only able to be used once because once the chemicals have reacted they cannot produce any more heat.

3 The chemical ice pack has the advantage that it can be used when you do not have access to a fridge or freezer. The disadvantage is that they are more expensive and can only be used once.

The freezer ice pack has the advantage that it is much cheaper and can be used many times. The disadvantage of this type of ice pack is that you need to have access to a fridge or freezer.

Activity 5.4 Exothermic or endothermic

A1 A polystyrene cup is used rather than a glass beaker because it is a poor conductor of heat and the contents will lose less heat energy to the environment.

A2 This will depend on the reactions you supply.

A3 This will depend on the reactions you supply.

End of unit questions

5.1 **a** magnesium ribbon placed in hydrochloric acid or burning

b sodium hydrogencarbonate added to citric acid

c decreases

d evaporation or melting ice

e exothermic [5]

5.2 **a** The more calcium you add the higher the increase in temperature. [1]

b The temperature would increase by about 5 °C. [1]

c Vishal's results

Mass of calcium added / g	Temperature change / °C
1	1
2	2
3	3
4	4

[1]

Manish's results

Mass of calcium added / g	Temperature change / °C
1	1
2	1
3	3
4	4

[1]

d

Mass of calcium added / g	Temperature change / °C Vishal's results	Temperature change / °C Manish's results	Average temperature increase / °C
1	1	1	1
2	1	2	1.5
3	3	3	3
4	4	4	4

[2]

e The variable that should go along the horizontal axis is the mass of calcium used in g. [1]

f The variable on the vertical axis should be the temperature increase in °C. [1]

g They would not be able to use these results because the volume of water used will affect the temperature increase. [2]

5.3 a The exothermic reactions are A, C and D. Reaction B is endothermic.

b The reactions where there is an increase in temperature are exothermic and those where there is a decrease in temperature are endothermic.

c Reaction D.

5.4 **a** Lisa will change the type of fuel she uses.

b The volume of water used and the time she heats it for must be kept the same.

c She must take the temperature of the water before and after she heats it. She must do this for each of the fuels she uses. The fuel that produces the largest rise in temperature is the one that gives out the most energy.

[1]

d Credit comments about handling hot equipment with care. Credit wearing safety glasses.