PLAN DE RECUPERACIÓN DE SEPTIEMBRE

CURSO ACADÉMICO: 2020/21

FECHA INFORME	28.06.2021	**CURSO**	2	**GRUPO**	**2ª**	**TUTOR/ A**	**VICTOR JOSÉ BOTIA**
ALUMNO							

1. Materias que el alumno tiene pendientes para recuperar en la convocatoria de septiembre:

Áreas	Fecha de examen	Hora
RECUPERACIÓN DE FÍSICA Y QUÍMICA 2ºESO	03/09/2021	9H

2. Plan de recuperación:

MATERIA:	FÍSICA Y QUÍMICA
PROFESOR:	KAY GEORGINA BOOD
CONTENIDOS A TRABAJAR:	
THE SCIENTIFIC ENTERPRISE MATTER THE STATES OF MATTER ATOMS ELEMENTS AND COMPOUNDS CHEMICAL CHANGES IN MATTER FORCES MAGNETISM INTRODUCTION TO ELECTRICITY	
ACTIVIDADES A REALIZAR:	
COMPLETAR EL DOCUMENTO ADJUNTADO Y PREPARAR PARA EL EXAMÉN. HAY 9 ACTIVIDADES VARIADAS INCLUYENDO UNA PRESENTACIÓN.	
OBSERVACIONES:	
Utiliza el libro para completar las actividades. También utilizar las presentaciones y videos que están en GOOGLE CLASSROOM. Good Luck!!!!	

Physics and Chemistry

2º ESO // Summer Activities

1ST September 2021.

Please present the following completed activities.

How to prepare.

Use the information in the book to study the units:

You can prepare a mind-map or write short notes to help you remember the information.

Here you have got 9 activities to complete. They will also help you to prepare for the exam.

Enjoy your summer, but please study. It is very important.

Good Luck.

Kay.

Activity 1

Prepare a powerpoint presentation about the impact of carbon dioxide or a different greenhouse gas that we have studied on the environment. Email the presentation to me please.

1. Choose a contaminant (eg, carbon dioxide,methane...)
2. Describe why this contaminant is a problem.
3. Describe the main cause of this contaminant.
4. Describe the main effects of this contaminant on the environment.
5. Talk about what you and society can do to reduce the effects of this contaminant.

Remember to be clear.

Use simple language and your own words. Try to use as many photos as necessary to help your explanations.

Activity 2

Read the following articles about ´The Ozone Layer´ and answer the following questions.

Ozone Layer Depletion

What is ozone?

Ozone is a gas made up of molecules. The molecular formula is O_3 and each molecule contains 3 atoms of oxygen. Ozone is formed when sunlight reacts with oxygen molecules (O_2) and breaks them up into individual atoms. These individual atoms then combine with O_2 molecules and make O_3.

What is the ozone layer?

High up in the Earth's atmosphere, in the stratosphere, there is a high concentration of ozone molecules. This part of the atmosphere is called the ozone layer. Ozone is formed in the atmosphere from oxygen molecules.

Why is the ozone layer important?

Ozone molecules in the atmosphere protect us from the rays of the sun. These molecules are good at absorbing ultraviolet rays that can cause sunburn and skin cancer.

How is the ozone layer getting damaged?

Certain types of molecules can cause a chemical reaction when they react with ozone molecules. This causes the ozone to break up and become unable to absorb ultraviolet light. The main molecules that are destroying the ozone layer are called chlorofluorocarbons (CFCs).

Chlorofluorocarbons (CFCs)

Chlorofluorocarbons are a group of chemicals made up of chlorine, fluorine and carbon. They were first used as refrigerants to keep things cold. A lot of people considered CFCs as miracle chemicals.

Eventually, they were used in a variety of products including air conditioners, spray cans, fire extinguishers, and in manufacturing foams.

Unfortunately, CFCs can travel up into the Earth's atmosphere and the ozone layer. They then destroy ozone molecules and make the ozone layer thinner or deplete it.

CFCs get banned

In 1974 scientists discovered the link between the depletion of the ozone layer and CFCs. CFCs started to be regulated. In 1987 a treaty called the Montreal Protocol was made to try and stop the manufacture and use of CFCs throughout the world. CFCs were to be completely eliminated in developing countries before the year 2000.

A hole in the ozone over the Antarctic affects on health

Because CFCs last so long, the ozone layer will continue to get thinner for some time in the future. This will cause an increase in the risk of sunburn and skin cancer. Skin cancer can be very dangerous. For this reason you should always wear sunscreen to protect your skin when you are outside in the sun for a long time. Strong ultraviolet rays can also damage your eyes. You can protect them by wearing sunglasses.

What can we do about it?

We cannot do much about the CFCs that were released before to the ban, but there are some things we can do: If you have an old refrigerator made before 1995 it probably uses refrigerant made from CFCs. Get a new refrigerator and make sure that you dispose the old one.

Questions

1. What is the chemical formula for ozone?
2. How is ozone formed?
3. Where is the ozone layer found in the atmosphere?
4. Why are ozone molecules important?
5. How do the ozone molecules become damaged?
6. What is one of the main causes of the hole in the ozone layer?
7. What chemical elements make up chlorofluorocarbons?
8. CFCs were used to make what products?
9. What was the Montreal Treaty?

10. In what year were CFCs banned?

11. What are the effects of a hole in the ozone layer?

12. What are the effects of strong ultraviolet rays?

13. How can you protect your skin from strong ultraviolet rays?

14. How can we reduce the effects of CFCs?

Activity 3

Solids, Liquids and Gases

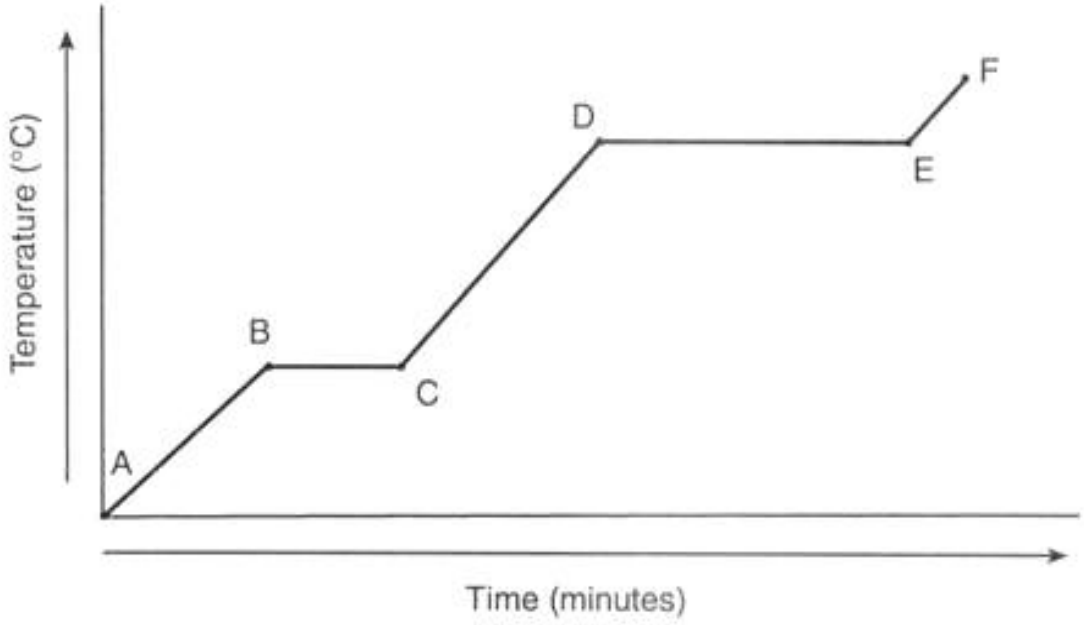
1. Draw a model to represent the molecules in a solid, a liquid and a gas.
2. Describe the movement of the molecules in each state.
3. Give an example of where you would find a substance in each of the different states of matter.

The molecules in a solid....	**The molecules in a liquid.....**	**The molecules in a gas....**
Example:	**Example:**	**Example:**

Activity 4 – States of matter

When we heat or cool a substance we can change the state of that substance. Look at the graph below to see what happens to a substance as we increase the temperature over time.

The Heating Curve of a Substance



This is a graph showing what happens when a solid substance is heated over time. When the temperature is measured, it normally increases but, at certain points it does not change.

By answering these questions we will think about what is happening at those points and what they can tell us.

1. Label the sections on the graph where the substance is a solid, liquid and a gas.

2. Describe what is happening between each of the points:

   i) A-B?

   ii) B-C?

   iii) C-D?

   iv) D-E?

   v) E-F?

3. Describe the way that the ***particles*** are ***arranged and behaving*** between A-B?

4. What happens to them between points B-C?

5 What happens to them after point C?

Activity 5 - Mixtures

1. Look at the following photos.

Write down if you can see a homogeneous system or a heterogeneous system.

Explain your answer.

2. In a glass of Fanta there are two main components. Write down the name of the solute and the name of the solvent.

3. Write down the name of the separation method necessary to separate the 2 components.

4. If there are 33g of sugar in a 330mL can of Fanta, what is the concentration of the sugar content in this drink? Remember to use the correct units.

Activity 6 - Density

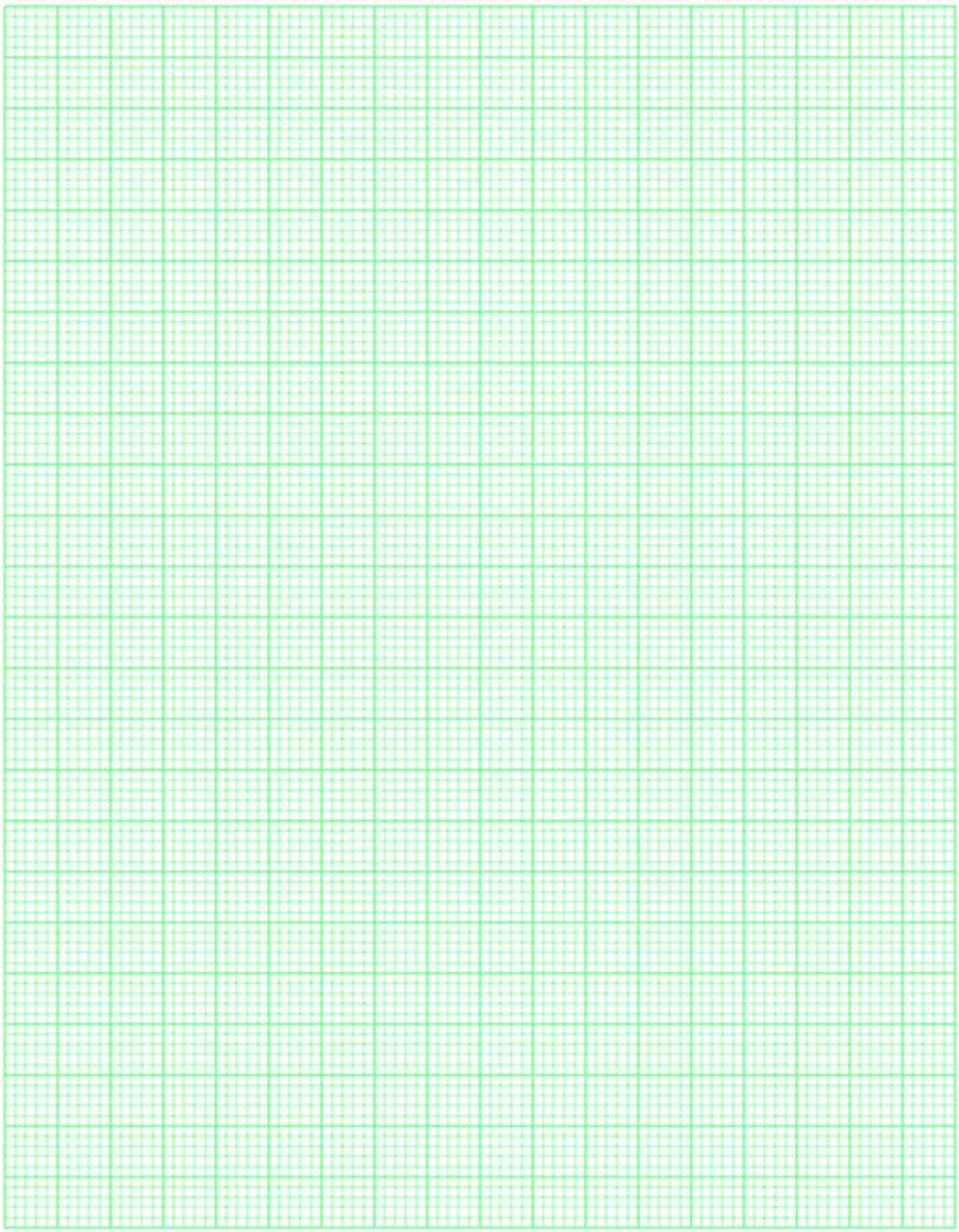
1. Calculate the density of material A and B.

Material	Mass(g)	Volume (cm^3)	Density (g/cm^3)
Material A	45.6	50	
Material B	703.5	50	
Water	--	--	1.0

2. Which material (A or B) will float in water?

3. In this table you have got 4 different materials and their densities.
   Plot a graph showing the density of each material:
   Remember to use a ruler and label the graph correctly.

Matter	Density (g/cm^3)
Gold	19.4
Iron	7.8
Aluminum	2.7
Wood	0.7



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Activity 7 – Chemical Reactions

1. For the following reaction write down the procedure to carry out the experiment.

   Materials: vinegar, sodium bicarbonate, measuring scales, flask, spatula, balloon.

	1. 2. 3. 4. 5.

2. What are the chemical reactants in the reactions? (1p)

3. Why does the balloon inflate in his reaction? (1p)

4. Circle the correct answer:
   a. The weight of the reactants should be **the same as/less than/more than** the weight of the products. (0.5p)

5. Complete the spaces in this sentence which states the Law of Conservation of Mass (1.5p):

In a chemical reaction, matter is neither c_____ or d_____, it is only t_____. The sum of the masses of the reactants is equal to the sum of the masses of the products.

Activity 8 – Forces

https://www.youtube.com/watch?v=NebWWEEtwx0

Answer the questions.

1. What can forces do to things?

2. Name one force that is discussed in the video.

3. When is friction important?

4. Give an example of air resistance.

5. What is the measurement of force?

6. Why is a parachute important?

Activity 9 - Forces

1. Look at the following pictures and indicate in which direction each object will move and calculate the overall force.

2. **Draw arrows** to indicate the forces acting on the object, Write down the names of these forces.

   a. Force 1 =
   b. Force 2 =

3. A scientist compares the speeds of 2 animals. (2p)

   a. A wolf that runs 200 metres in 12 seconds.

   b. A grey squirrel that runs 45 metres in 3.75 seconds.

   Calculate the speed of both animals and indicate which one is faster.

4. The time is takes for a car to travel from 0 to 100 km/h is important to know when you buy a car. The new BMW can go from 0 to 100 km/h in 4 seconds. Calculate the acceleration of the car. Remember to convert the speed from km/h into m/s.

5. What is the name of the instrument that we use to measure force?

The formula for Hooke´s Law is F=a.x The value of the spring constant depends on the type of material the spring is made from. F = force a = spring constant x = elongation	

A spring extends 0.10 m when a force of 20N is applied. Calculate the spring constant.

What will the new elongation of the spring be when we add a force of 40N. (1p)

6. Spring A has a spring constant of 250N/m and spring B has a spring constant of 200 N/m.

Spring A 	Spring B 

Which spring is easier to elongate? Explain why.

7. What does Hooke´s Law state?

8. Define the following materials as elastic, rigid, deformable.



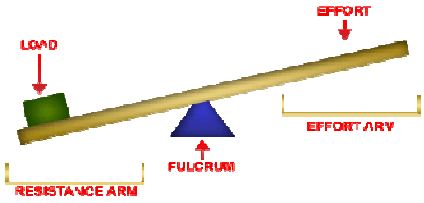
9. Using the following words to answer the following questions (recover, original, shape, force, apply).

   a. Describe the properties of a rigid material.

   b. Describe the properties of an elastic material.

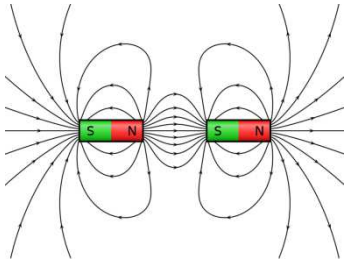
6. Give an example of a simple machine and describe how it can help us with everyday jobs. (1p)

7. The force (effort) arm of a lever is 4m long and the length of the load (resistance) arm is 1m. Calculate the force needed to lift a 1000 N load.

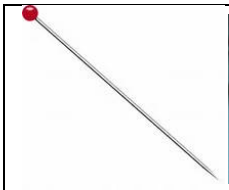


8. What happens if you hold the south pole of one magnet close to the north pole of another magnet? (0.5p)

9. Show where the magnetic fields are *strongest* on **both** magnets. (1p)



10. Describe how to make a compass with the following material.(2p)





1.

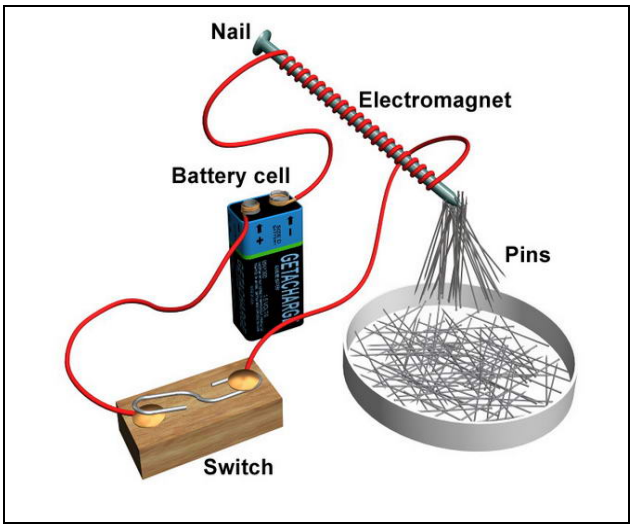
2.

3.

4.

11. How can you demonstrate that your compass works correctly? (0.5p)

12. Here you have got a photo of an experiment that we did.



a. How can the nail pick up more pins? (0.5p)

b. How can we stop producing the magnetic field around the iron nail? (0.5p)

13. What is the difference between an electromagnetic and a permanent magnet? (0.5p)

14. What can we say about electricity and magnetism in this photo? Use the verb, *cause* to help you. (1p)

15. Which part of the atom is responsible for creating a magnetic force? (0.5p)

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