

INTRODUCTION TO PHYSICS

Definition of physics

The word Physics comes from the Greek word “*Physis*” which means **nature**.

Nature is made of **matter** that interacts through **energy** exchanges.

Physics is the study of **matter** in relation to **energy**.

Physics is one of the many branches of **science**.

Science is the acquisition of knowledge about the physical world theoretically and through experiments.

Branches of physics

Physics can be categorized into the following major branches.

a) Mechanics.

This deals with bodies and mechanical properties of matter.

b) Light

Light is the form of energy that enables us to see.

In Physics we study the nature of light, its transmission and applications.

c) Heat and thermodynamics

This deals with the transfer of energy between two points due to the temperature difference between them.

In physics we deal with the transmission and applications of heat energy.

d) Waves

This deals with transmission of energy through vibrations from one point to

another without permanent displacement of the medium.

e) Electricity

This deals with;

Electrostatics: The study of electric charges at rest.

AND

Current electricity: The study of electric charges in motion.

f) Magnetism

This is the study of metals that attract or repel other metals.

g) Modern Physics

This deals with the study of atomic and nuclear physics and their applications.

h) Earth and space physics

This deals with the study of the solar system, the moon the stars, galaxies, satellites and communication systems and the universe in general.

Why we study Physics

The studying of physics will enable us to;

a) Explain the occurrence of natural phenomena like lightening, rain formation, land and sea breezes etc.

b) Harness/utilize natural resources like oil, minerals, solar energy, tidal energy etc.

c) Innovate machines that can simplify our work.

d) Develop an experimental attitude through performing experiments.

e) Develop the skills of observation, measuring and developing conclusions.

- f) get a **career** related to the world of physics and earn a living from practicing it.

Careers in Physics

A **career** refers to an individual's chosen profession or occupation.

Most careers in the science field need a foundation of physics. The following career people need physics.

- a) Teacher of physics
- b) Engineer
- c) Mechanic
- d) Doctor
- e) Astronomer
- f) Architect
- g) Radiographer

Assignment

Explain how the knowledge of Physics is applied in each of the careers mentioned above.

THE LABORATORY

A **laboratory** is a room or space used for scientific work.

It is also where scientific **apparatus** are kept.

Apparatus is equipment for scientific work.

Some of the equipment in the laboratory are delicate and others are harmful or injurious once mishandled.

The following basic rules and regulations should be adhered to for safe usage of the laboratory;

- a) Do not enter the laboratory in the absence of a teacher or laboratory assistant.
- b) Do not carry out an experiment or use any laboratory apparatus without permission or instruction from the teacher.
- c) While in the laboratory, do not play or run around.
- d) Do not eat or drink while in the laboratory.
- e) Do not take any apparatus out of the laboratory without permission from the teacher.
- f) Report any accident to the teacher or laboratory attendant immediately.
- g) In case of a fire, move out quickly in an orderly manner and assemble in one place but do not panic.

Assignment

Explain what would happen if each of the rules and regulations above are not adhered to.

REVISION QUESTIONS

SHORT RESPONSE QUESTIONS

1. One of your primary school friends has joined your school. He however has reported late and found you have already finished studying the introductory chapter to physics. Help him understand the following concepts.
 - a) Science
 - b) Physics
 - c) Apparatus
 - d) Laboratory
2. Physics is a wide field. It has several branches. State and write brief notes about the various branches of Physics.
3.
 - a) Why are there rules in the laboratory?
 - b) Explain why each of the rules mentioned above is necessary.

LONG RESPONSE QUESTIONS

4. Your School usually has careers day at the end of every first month in first term of the academic year. You have been selected from your class to give a speech on that day about Physics and the related careers.

Task

Prepare a five minute speech that you will deliver on that day. Make sure your speech is attractive and can make someone feel challenged to take up a career in Physics fields.

5. Susan is a student in senior one; she has been biased by her older sister that physics is a very hard subject and is actually useless because most of its

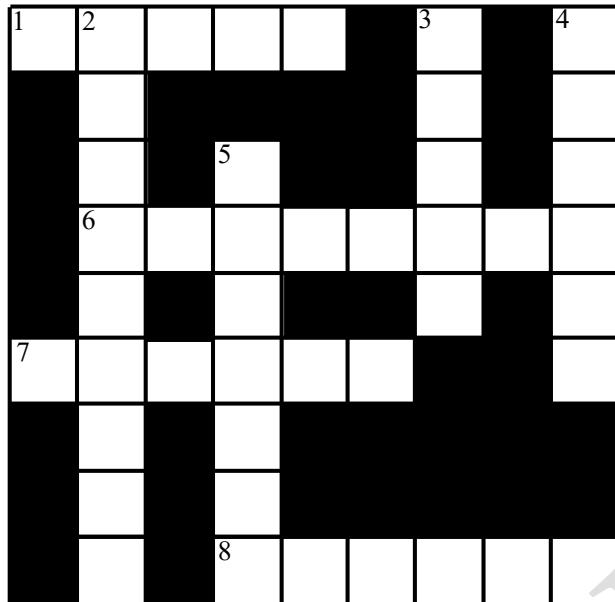
concepts are abstract. She also told her most of the physics lessons are conducted in the laboratory, a place full of hazardous chemicals and apparatus that can easily break and cause her life threatening injuries. As a result, Susan has developed a very bad attitude towards Physics and everything associated with it.

TASK

- a) Write a friendly letter to Susan explaining to her the importance of studying physics. In your letter, mention the various careers that apply physics and how they apply it.
 - b) Assume you have met Susan in person; write a dialogue between you and her about the laboratory rules and regulations. In your dialogue explain to her how observance of these rules and regulations makes the laboratory a safe learning space.
6. Due to poor laboratory practices, senior one learners often get injuries in the laboratory. Following this, a motion stating that Physics should be abolished has been moved by people who do not know about Physics. You have been chosen to enlighten the learners about the importance of Physics.
Write and present a speech on how you would defend the learning of Physics and suggest the safety

precautions to be followed while in the laboratory.

CROSS WORD PUZZLE



ACROSS

1. transfer of energy through vibrations only
6. if you involved in one, report to the teacher or laboratory attendant immediately
7. profession or occupation
8. equivalent to work

DOWN

2. for use in experiments.
3. or regulations
4. has weight and occupies space
5. learning through experimentation