

Plan of Work Physics

Grade 7

For examination 2024



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Introduction

Prescribed textbooks:

- Science Grade 7 [code: MIE]

Reference book:

- Discovering science

Students are STRONGLY advised to look for this reference book and to make judicious use of it.

Recommended prior knowledge

Learners beginning this course are expected to have knowledge of the following topics:

	Topic
1	Arithmetic
2	Mensuration
3	Solar system
4	Energy

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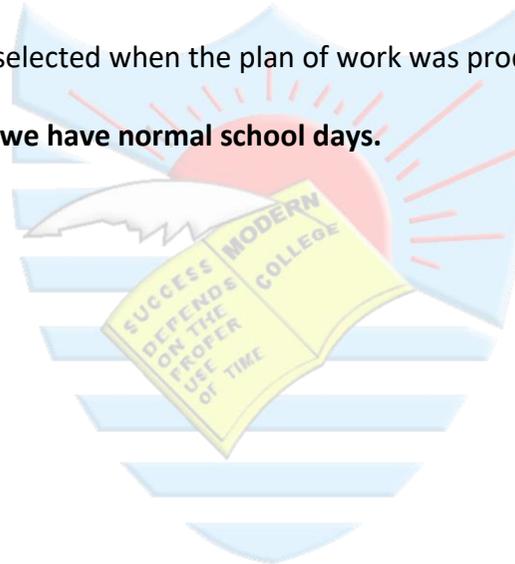
Electricity

Websites and videos

This plan of work includes website links providing direct access to internet resources. Modern College is not responsible for the accuracy or content of information contained in these sites. The inclusion of a link to an external website should not be understood to be an endorsement of that website or the site's owners (or their products/services).

The website pages referenced in this plan of work were selected when the plan of work was produced. Other aspects of the sites were not checked and only the particular resources are recommended.

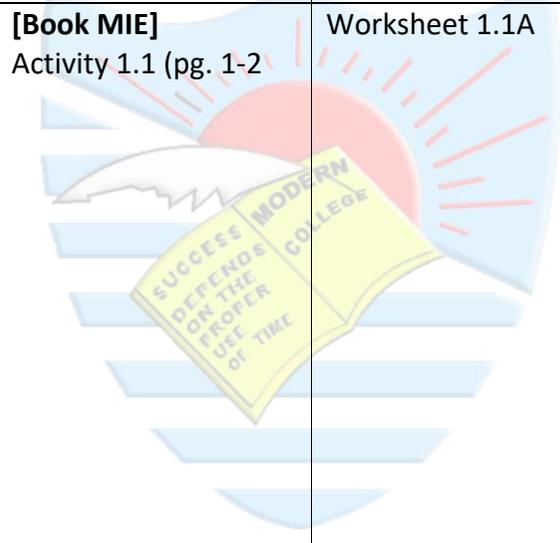
The objectives set in this plan of work are achievable if we have normal school days.



FIRST TERM [11/01/2024 – 05/04/2024]

Topic 1: Measurement

1.1 Physical Quantities and SI Unit

Learning Objectives	Worked Examples	Classwork & Homework	Extra Work	Resources
<p>Students should be able to:</p> <p>a) Define a physical quantity</p> <p>b) List the following physical quantities such as length, volume, mass, area, time and temperature</p> <p>c) State that a physical quantity is represented by a magnitude and a unit</p> <p>d) Importance of SI units</p> <p>e) Define a fundamental quantity</p> <p>f) List the 7 fundamental quantities such as length, mass, time, temperature, electric current, amount of substance and luminous intensity and their respective fundamental units</p>	<p>[Book MIE] Activity 1.1 (pg. 1-2)</p> 	Worksheet 1.1A	Worksheet 1.1B	<ul style="list-style-type: none"> What are Physical Quantities? <p>https://www.youtube.com/watch?v=yldFcm5oVmA</p>
<p>g) Understand the following prefixes such as kilo, deci, centi, milli</p>	Worksheet 1.1C	Worksheet 1.1D	Worksheet 1.1E	<ul style="list-style-type: none"> Metric Prefixes <p>https://www.youtube.com/watch?v=kAApDwKM2f4</p>

1.2 Measurement of Length

Learning Objectives	Worked Examples	Classwork & Homework	Extra Work	Resources
<p>Students should be able to:</p> <p>a) Define length and state its units</p> <p>b) List different instruments to measure length (e.g. ruler, half-metre rule, metre rule, measuring tape)</p> <p>c) Describe that lengths can be short, long and very long</p> <p>d) Define the term light years</p> <p>e) State that light years is a unit for distance and used to express distances between the earth and the stars</p>	<p>[Book MIE]: Activity 1.2 and test yourself (pg. 2-3)</p> <p>EX: Workout MCQS 1 (pg. 29)</p> <p>EX: Short Answer Question 2 (i), (ii) (pg. 30)</p>	Worksheet 1.2A	Worksheet 1.2B	<ul style="list-style-type: none"> Physical Quantities and Measurement class-6 https://www.youtube.com/watch?v=TTKIDueyI_U How to Measure length correctly using a Centimeter Ruler? https://www.youtube.com/watch?v=4-FaqT4hqMI
<p>f) Recall and use the conversion factors</p> <p>(i) 1 cm = 10 mm</p> <p>(ii) 1 m = 100 cm</p> <p>(iii) 1 m = 1000 mm</p> <p>(iv) 1 km = 1000 m</p>	<p>EX: Short Answer Question 1 (a), (b)</p>	Worksheet 1.2C	Worksheet 1.2D	<ul style="list-style-type: none"> Maths Help - Converting Units of Length https://www.youtube.com/watch?v=KfofCCmURol

1.3 Measurement of Volume

Learning Objectives	Worked Examples	Classwork & Homework	Extra Work	Resources
<p>Students should be able to:</p> <p>a) Define volume and state its units</p> <p>b) Recall and use formulas to calculate volume of regular solids such as a cube and a cuboid</p>	<p>[Book MIE]:</p> <p>EX: Short Answer Questions</p> <p>4 (pg. 31)</p>	Worksheet 1.3A	Worksheet 1.3B	<ul style="list-style-type: none"> MEASUREMENT OF VOLUME https://www.youtube.com/watch?v=QJGyDGWQgcI Volume of a cuboid and cube GCSE Maths - Volumes of Cubes and Cuboids #110 - YouTube
<p>c) List the different instruments to measure volume of liquids such as a measuring cylinder, a graduated conical flask, a burette and a pipette</p> <p>d) Explain that the volume of a liquid is read at the bottom of the meniscus in a measuring cylinder</p>	<p>EX: Workout MCQS</p> <p>2, 3 (pg. 29)</p> <p>EX: Short Answer Questions</p> <p>5 (a) (pg. 31)</p>	Worksheet 1.3C	Worksheet 1.3D	<ul style="list-style-type: none"> How to Read a Graduated Cylinder. How to Read a Graduated Cylinder. - YouTube
<p>e) Describe an experiment to determine the volume of an irregular solid such as a piece of stone using the displacement method</p> <p>f) State the precautions taken with the displacement method</p>	<p>Activity 1.11 (pg. 13-14)</p> <p>EX: Short Answer Questions</p> <p>5 (b) (pg. 32)</p>	Worksheet 1.3E	Worksheet 1.3F	<ul style="list-style-type: none"> MEASUREMENT OF VOLUME Determining Volume by Displacement https://www.youtube.com/watch?v=hbHh8Bt4UUA

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1.4 Measurement of Area

Learning Objectives	Worked Examples	Classwork & Homework	Extra Work	Resources
<p>Students should be able to:</p> <p>a) Define area and state its units</p> <p>b) Recall and use the conversion factor $1 \text{ cm}^2 = 100 \text{ mm}^2$</p> <p>c) Recall and use formulas to calculate area of regular shaped solids such as a square, a rectangle and a triangle</p>	<p>[Book MIE]: Test Yourself (pg.6) Activity 1.4 (pg. 6-7)</p> <p>EX: Short Answer Questions 1 (f), 3 (pg. 31)</p>	Worksheet 1.4A	Worksheet 1.4B	<ul style="list-style-type: none"> Math Antics – Area <p>https://www.youtube.com/watch?v=xCdxURXMdFY</p>

1.5 Measurement of Mass

Learning Objectives	Worked Examples	Classwork & Homework	Extra Work	Resources
<p>Students should be able to:</p> <p>a) Define mass and state its units</p> <p>b) State that mass can be smaller or bigger</p> <p>c) List the different instruments to measure mass such as beam balance, top-pan balance and electronic balance</p>	<p>[Book MIE]: Activity 1.16 (pg. 20) Activity 1.18 (pg. 21)</p> <p>EX: Workout MCQS 4, 8 (pg. 29)</p>	Worksheet 1.5A	Worksheet 15B	<ul style="list-style-type: none"> Measuring Mass with Electronic Balance https://www.youtube.com/watch?v=NayQou_jjew
<p>d) Recall and use the conversion factors</p> <p>(i) 1 kg = 1000 g</p> <p>(ii) 1 g = 1000 mg</p> <p>(iii) 1 kg = 1000000 mg</p>	<p>EX: Workout MCQS 8 (pg. 29)</p> <p>EX: Short Answer Questions 1 (c), (d) (pg.30)</p>	Worksheet 1.5C	Worksheet 1.5D	<ul style="list-style-type: none"> 43 Converting Units of Mass https://www.youtube.com/watch?v=fw-hiaZ5ovM

1.6 Measurement of Time

Learning Objectives	Worked Examples	Classwork & Homework	Extra Work	Resources
<p>Students should be able to:</p> <p>a) State time can be measured in seconds, minutes, hours, days, weeks, months, years, decades and centuries</p> <p>b) Recall and use the conversion factors</p> <p>(i) 1 min = 60 s</p> <p>(ii) 1 hr = 60 min</p> <p>(iii) 1 hr = 3600 s</p>	<p>[Book MIE]: Test Yourself (pg. 15)</p> <p>EX: Workout MCQS</p> <p>5 (pg. 29)</p>	Worksheet 1.6A	Worksheet 1.6B	<ul style="list-style-type: none"> 42. Converting Units of Time https://www.youtube.com/watch?v=5QKozjpoFIIs
<p>c) List the different instruments to measure time such as pendulum clock, a clock, a watch, a stopwatch, a stop clock</p> <p>d) Reading analogue and digital stopwatches</p>	<p>Activity 1.13 (pg. 17)</p> <p>EX: Short Answer Questions</p> <p>6 (pg. 32)</p>	Worksheet 1.6C	Worksheet 1.6D	<ul style="list-style-type: none"> Taking Reading from a Stopwatch Introduction to Physics https://www.youtube.com/watch?v=Ym2aiQqyGPA C1 L9 Reading Stopwatch https://www.youtube.com/watch?v=60gO0rNUqbK
<p>e) Define a simple pendulum</p> <p>f) Define oscillation and identify one oscillation</p>	<p>Activity 1.14 (pg. 18)</p> <p>Activity 1.15 (pg. 19)</p> <p>EX: Workout MCQS</p>	Worksheet 1.6E	Worksheet 1.6F	<ul style="list-style-type: none"> Time Period of Simple Pendulum Time period of a pendulum depends on

g) Define time period h) Calculate time period of a simple pendulum i) Describe an experiment to determine the time period of a simple pendulum	9 (pg. 30)			its length Oscillation Physics - YouTube
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1.7 Measurement of Temperature

Learning Objectives	Worked Examples	Classwork & Homework	Extra Work	Resources
<p>Students should be able to:</p> <p>a) Define temperature and state its units</p> <p>b) State that a thermometer is used to measure Temperature</p> <p>c) List the different types of thermometers such as a liquid-in-glass thermometer and a digital thermometer</p> <p>d) List the two thermometric liquids used in a liquid-in-glass thermometer such as alcohol and mercury</p> <p>e) Explain that the temperature is read at the top of the meniscus in a liquid-in-glass thermometer</p> <p>f) State that the temperature of the sun is measured from colours of light it gives out</p>	<p>[Book MIE]: EX: Workout MCQS 5, 6 (pg. 29)</p>	Worksheet 1.7A	Worksheet 1.7B	<ul style="list-style-type: none"> Science - What is temperature and how to measure it – English https://www.youtube.com/watch?v=J157oziu3zQ Reading thermometers in Celsius https://www.youtube.com/watch?v=P9exaQs3I1Q

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March Assessment

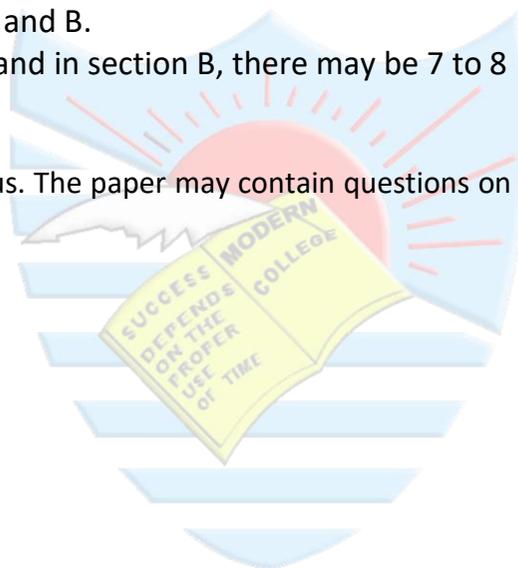
Time Allocation	Type	Maximum Mark
45 minutes	Mcqs and structured questions	50

The exam paper consists of section A and section B.

All questions should be answered in both sections A and B.

In section A, there are 10 multiple choice questions and in section B, there may be 7 to 8 structured questions. Calculators are **not allowed**.

Candidates are expected to cover the PROPOSED syllabus. The paper may contain questions on any part of the syllabus and questions will not necessarily be restricted to a single topic.



SECOND TERM [22/04/2024 – 19/07/2024]

Topic 2: Solar System

Learning Objectives	Worked Examples	Classwork & Homework	Extra Work	Resources
<p>Students should be able to:</p> <p>a) Demonstrate understanding of our solar system, with reference to the sun, the planets, planetary satellites, comets and asteroids</p> <p>b) Discuss a simple model of the solar system (2D and 3D)</p> <p>c) Draw a labelled diagram of our solar system (Sun and the planets)</p> <p>d) Recognise planets in terms of their appearance, relative position and size</p>	<p>[Book MIE]: Activity 5.1 (pg. 130-131) Activity 5.4 (pg. 136)</p>	<p>[Book MIE]: Activity 5.3 (pg. 135) EX: Workout MCQS 1 (a) – (e) and (g)-(o) (pg. 156-157) EX: Structured Questions 2, 4, 5, 6 (pg. 158-159)</p>	Worksheet 2.1A	<ul style="list-style-type: none"> The Solar System- Asteroids, Meteors and Comets https://www.youtube.com/watch?v=eCUnq5V14P4 Dwarf Planet Compilation/Solar System Dwarf Planet/Dwarf Planets for Kids https://www.youtube.com/watch?v=D-1Bcgn18DU How to make 3D Solar System Project for Kids https://www.youtube.com/watch?v=Cxv_kxq5vlg
<p>e) State the basic characteristics of planets in terms of their composition, period of orbit</p>	Activity 5.5 (pg. 138)	EX: Structured Questions 3 (pg. 158)	Worksheet 2.1B	<ul style="list-style-type: none"> Learning About The Planets in Our Solar System

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around the sun, and any other specific characteristics

- f) Recognise the earth as the only planet supporting life
- g) Recognise how the sun has made life possible on earth

<https://www.youtube.com/watch?v=jEXWxNbpTzU>

- Solar System planets Interesting Facts for Kids

<https://www.youtube.com/watch?v=xKKzIoJgMSQ>



Topic 3: Energy

Learning Objectives	Worked Examples	Classwork & Homework	Extra Work	Resources
<p>Students should be able to:</p> <ul style="list-style-type: none"> a) Define the energy and state its SI unit b) List the different forms of energy and suitable examples where these are found c) State the law of conservation of energy d) Describe the transformation of energy in various examples from daily life with reference to the law of conservation of energy 	<p>[Book MIE]: Activity 5.6 (pg. 141-142) Activity 5.7(a) (pg. 143-144) Activity 5.7(b) (pg. 144-145) Activity 5.8 (a), (b) (pg. 145-147)</p>	<p>[Book MIE]: EX: Workout MCQS (q), (s) (pg. 157) EX: Structured Questions 8 (pg. 160)</p>	Worksheet 3.1A	<ul style="list-style-type: none"> • Types of Energy and Energy Transformation (Grade 7) https://www.youtube.com/watch?v=d22Qg-Y3gXE • Energy Transformations https://www.youtube.com/watch?v=iLjPxooXB4Y
<ul style="list-style-type: none"> e) Recognise that energy sources are classified as being renewable or non-renewable f) Discuss the implications of too much reliance on fossil fuels g) Describe different alternatives for sustainable production of energy including solar, wind, hydroelectric and biomass fuel 	Activity 5.9 (pg. 149-151)	<p>[Book MIE]: EX: Workout MCQS (p), (r), (t-v) (pg. 157-158) EX: Structured Questions 9, 10 (pg. 160)</p>	Worksheet 3.1B	<ul style="list-style-type: none"> • Different Sources of Energy, Using Energy Responsibly, Educational Video for Kids https://www.youtube.com/watch?v=wMOpMka6PJI • Renewable Resources

July Assessment

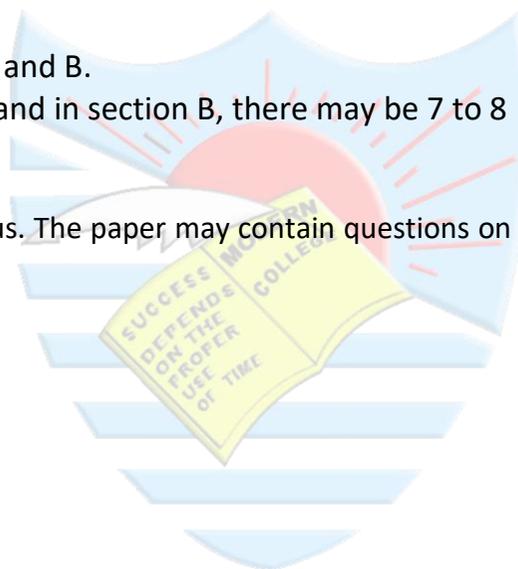
Time Allocation	Type	Maximum Mark
45 minutes	Mcqs and structured questions	50

The exam paper consists of section A and section B.

All questions should be answered in both sections A and B.

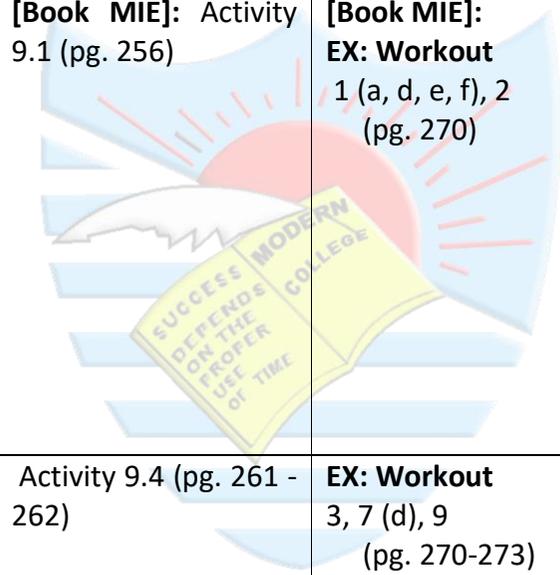
In section A, there are 10 multiple choice questions and in section B, there may be 7 to 8 structured questions. Calculators are **not allowed**.

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THIRD TERM [12/08/2024 – 30/10/2024]

Topic 4: Electricity

Learning Objectives	Worked Examples	Classwork & Homework	Extra Work	Resources
<p>Students should be able to:</p> <p>a) Discuss the importance and main uses of electricity</p> <p>b) Recognise the main parts of an electric circuit as having a source of electrical energy, connecting wires and a device to convert the electrical energy into other forms of energy</p> <p>c) Recognise some main components of electric circuits namely cells, batteries, bulbs, switches and resistors</p>	<p>[Book MIE]: Activity 9.1 (pg. 256)</p> 	<p>[Book MIE]: EX: Workout 1 (a, d, e, f), 2 (pg. 270)</p>	Worksheet 4.1A	<ul style="list-style-type: none"> Introduction to Electricity- video for kids https://www.youtube.com/watch?v=Uf76pThNXZc Electrical Circuits - Series and Parallel - For Kids https://www.youtube.com/watch?v=js7Q-r7G9ug
<p>d) Electric current always flows from positive terminal to negative terminal</p> <p>e) Draw conventional electric circuits using appropriate circuit symbol</p>	Activity 9.4 (pg. 261 - 262)	<p>EX: Workout 3, 7 (d), 9 (pg. 270-273)</p>	Worksheet 4.1B	<ul style="list-style-type: none"> Circuit diagram - Simple circuits - CBSE 7 https://www.youtube.com/watch?v=j0zf-otH3cY How to draw an Electric Circuit diagram for Kids

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				https://www.youtube.com/watch?v=taszKVykMBQ
f) Distinguish between electrical conductor and electrical insulator	Activity 9.5 (a) (pg. 262-264)	EX: Workout 1(b, c) (pg. 270-273)	Worksheet 4.1C	<ul style="list-style-type: none">Conductors and Insulators - Electricity - Science for kids https://www.youtube.com/watch?v=qIF90dhqGPY
g) Investigate the working of simple circuits	Activity 9.2 (pg. 257) Activity 9.3 (pg. 258) Activity 9.6 (pg. 265-266)	EX: Workout 4, 5, 6, 7 (a, b, c),8 (pg. 270-273)	Worksheet 4.1D	<ul style="list-style-type: none">Electrical Circuits - Series and Parallel - For Kids https://www.youtube.com/watch?v=js7Q-r7G9ug

October Examination

Time Allocation	Type	Maximum Mark
45 minutes	Mcqs and structured questions	50

The exam paper consists of section A and section B.

All questions should be answered in both sections A and B.

In section A, there are 10 multiple choice questions and in section B, there may be 7 to 8 structured questions. Calculators are **not allowed**.

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