



Ballymena Academy Physics

Year 10 Revision Checklist

Summer 2017



Please ensure you bring the following items with you on the day of the exam:

- Pen(s) and pencil(s).
- 30cm ruler
- Scientific Calculator



The following is a list of topics which will be examined:

(Please refer to the individual pupil guides for a full list of learning outcomes and VLE for revision questions on each topic).

Assume all parts will be covered unless mentioned below.

Year 8: Density Topic

<i>Objective/ Learning outcome.</i>	<i>Notes to help with learning.</i>
Be able to define density	Density is "the mass in grams per cm ³ "
Know the units of density	Units of Density is g/cm³ (or kg/m³)
Know the equation for Density	Density = Mass / Volume
Be able to rearrange this equation to calculate mass or volume	Mass = Density x Volume Volume = Mass / Density
Understand why objects float or sink in water	Float if density < 1g/cm ³ Sink if density > 1g/cm ³

Year 8: Energy Topic

<i>Objective/ Learning outcome.</i>	<i>Notes to help with learning.</i>
List the 8 types (forms) of energy	Electrical, Light, Heat, Kinetic, Gravitational PE, Elastic PE, Sound & Chemical
Recall the Unit for Energy	Energy is measured in Joules
State the principle of conservation of energy	"Energy cannot be created or destroyed but can be changed from one form to another"
Understand what a TRANSDUCER is	A device which changes energy from one form to another
Be able to describe energy changes within transducers	e.g. Battery chemical → electrical Microphone sound → electrical
Define the terms RENEWABLE and NON-RENEWABLE	RENEWABLE = "Resources which can be replaced within a human life time" NON-RENEWABLE = "Resources which cannot be replaced within a human lifetime" i.e. finite resources which will run out.
Classify energy resources as renewable or non-renewable	Renewable: Solar, Wind, Geothermal, Tidal, Wave, Biomass (including some types of wood) Non-renewable: Fossil Fuels (oil, coal & gas), nuclear

Year 9: Earth and Space Topic

Note: A knowledge of Phases of the Moon is not required

<i>Objective/ Learning outcome.</i>	<i>Notes to help with learning.</i>
Understand the structure of the Universe. Place objects in ascending order.	Moon→Planets→Stars→ Solar-Systems→Galaxies→ The Universe
Define the following terms: <ul style="list-style-type: none"> • Moon • Planet • Solar system • Galaxy • Universe 	<ul style="list-style-type: none"> • Rocky object which orbits a planet • Object which orbits a star • (1) star, planets, moons, asteroids etc. • Huge collection of (billions of) solar systems • All of space, containing billions of galaxies
Recall the structure of our solar system	1 star (the Sun), 8 major planets, numerous dwarf planets, moon, millions of asteroids and comets.
Recall the order of the planets from the Sun	Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune.
Understand why Pluto is no-longer classified as a planet.	Now a dwarf planet, Pluto is not big enough to be considered a planet. There are lots of other similar objects recently discovered in the solar system.
Define the term “ day ”	“Time it takes for a planet to spin once about its axis” Earth day = 24 hours
Define the term “ year ”	“Time it takes for a planet to orbit once about its star” Earth year = 365 days
Explain why the Earth experiences seasons	The Earth orbits the Sun and the Earth’s axis is tilted.
Be able to identify which hemisphere is in which season	Northern hemisphere tilted towards the Sun = Summer etc.

Year 9: Heat Transfer

<i>Objective/ Learning outcome.</i>	<i>Notes to help with learning.</i>
Explain simply the difference between temperature and heat	Heat is a form of energy, measured in joules. Temperature is a measure of how hot or cold something is, measured in °C.
Know some typical temperatures of everyday things.	Boiling and freezing point of water, body temperature, room temperature etc.
Be able to state the 3 main methods of Heat Transfer.	CONDUCTION, CONVECTION and RADIATION.
Name the process by which heat energy is transferred in solids	CONDUCTION.
State the difference between a thermal conductor and an insulator	Conductor – easily allows Heat energy to pass through it. Insulator does not.
Recall an experiment to compare the rate of heat travel by conduction in solids	Metal rods in hot water.
Recall experiments to investigate if conduction occurs in liquids and gases	Ice at the bottom of a test tube of water heated at the top. Cardboard tube held horizontally with thermometers at open and closed end.
List examples of thermal conductors and insulators	e.g. Most metals – good conductors. Air, water, plastic & glass poor conductors (good insulators)
Name the main process by which heat energy is transferred in a liquid	CONVECTION
Name the processes by which heat energy is transferred in a gas	CONVECTION and RADIATION
Carry out experiments to show how heat travels by convection in liquids and gases	Potassium permanganate in water (liquid) Smoke box experiment for gas.
Explain why heat radiation can travel through a vacuum	It is a wave of energy (like light).
Carry out an experiment to show which surfaces are good absorbers of heat radiation	Metal discs painted, dull black, shiny black, dull silver and shiny silver.
State which surfaces are the best absorbers of heat radiation	Dull Black – best absorber Shiny Silver – worst absorber.
State and explain practical applications of good and bad absorbers of heat radiation	Good – solar panels

	Bad – Silver suits worn by firemen.
Carry out an experiment to show which surfaces are good emitters of heat radiation	Leslie cube.
State which surfaces are the best emitters of heat radiation	Dull Black – best emitter. Shiny Silver – worst emitter.
State and explain practical applications of good and bad emitters of heat radiation	Good – wood burning stove (dull black). Bad – Silver teapots.
State how a thermos flask reduces heat loss by conduction, convection and radiation	Conduction – plastic base. Convection – vacuum. Radiation – shiny silver surfaces.
Describe ways in which heat loss can be reduced in homes	Insulation in roof space and walls. Double glazing, curtains and carpets etc.

Year 9: Sound

<i>Objective/ Learning outcome.</i>	<i>Notes to help with learning.</i>
Recall what causes sounds	Sounds are caused by vibrations
Explain what the Frequency of a sound is.	Frequency = Pitch Long object vibrates with low frequency
Recall the unit for Frequency	Frequency is measured in Hertz (Hz)
Explain what the amplitude of a sound is.	Amplitude = “Loudness” of sound
Identify type of sound from a CRO	Waves close together = High Frequency Tall waves = Large Amplitude
State the range of Human Hearing	Humans can generally hear sounds from 20Hz to 20 000Hz
Understand what can affect the ability to hear high frequency sounds.	Age: older people can't hear up to 20000Hz Behaviour: listening to loud music can lower the upper limit.

Year 10: Forces

<i>Objective/ Learning outcome.</i>	<i>Notes to help with learning.</i>
Recall what a Force is	A Push or a Pull
Recall the effects of a Force	Change the speed, shape, direction of an object or make it spin.
Recall the unit for Force	Newton (N)
Understand the difference between mass and weight	Mass is amount of matter measured in Kg Weight is Force of gravity acting on a mass measured in Newtons.
Recall the equation for Weight	Weight = Mass x Gravity
Be able to rearrange this equation to calculate mass or gravity	Mass = Weight / Gravity Gravity = Weight/ Mass
State what Friction is	A Force which opposes motion
List ways Friction can be reduced	Polishing, rolling, cushion of air, oiling etc.
List situations where friction is useful	Grip on boots, tread on car tyres, brakes on bikes etc.
List situations where friction is a nuisance	Slows objects down e.g. air resistance on cars etc.
State Hooke's Law	"The extension of a spring is directly proportional to the applied load provided the elastic limit has not been exceeded"
Carry out an experiment to investigate Hooke's Law	Weight on a spring, measure extension. Plot and interpret a graph of Force (Weight) against Extension

Year 10: Pressure

<i>Objective/ Learning outcome.</i>	<i>Notes to help with learning.</i>
Recall what factors affect Pressure	Force and Area
Recall the equation for Pressure	Pressure = Force / Area
Be able to rearrange this equation to calculate Area or Force	Force = Pressure x Area Area = Force / Pressure
State the Units for Pressure	N/cm ² N/m ² (also known as Pascal i.e. 1Pa = 1 N/m²)

Year 10: Speed

<i>Objective/ Learning outcome.</i>	<i>Notes to help with learning.</i>
Recall what factors affect Speed	Distance and Time
Recall the equation for Speed	Speed = Distance / Time
Be able to rearrange this equation to calculate Distance or Time	Distance = Speed x Time Time = Distance / Speed
State the Units for Speed	m/s km/h
Interpret motion graphs	Draw and explain Distance Vs Time graphs

Year 10: Electricity

<i>Objective/ Learning outcome.</i>	<i>Notes to help with learning.</i>
Recall the symbols used in electrical circuits	Switch, Cell, (Battery), bulb, resistor, Ammeter
Explain the difference between a series and parallel circuit	Series = only one path for electricity to flow. Parallel = more than one path
Be able to calculate current in both series and parallel circuits	Current is same at all points in series circuit. Current in the main part of a parallel circuit = sum of current in the branches.
Understand the effect of switches in circuits.	A closed path is need for current to flow. Does a switch stop current flowing to certain parts of the circuit? Is there a short circuit?

Magnetism

<i>Objective/ Learning outcome.</i>	<i>Notes to help with learning.</i>
State three magnetic materials.	Iron, nickel and cobalt
Be able to identify magnetic materials, non-magnetic materials and magnets	Use a magnet
State how like poles and unlike poles behave when brought together.	Opposites attract, like repel
Explain what is meant by an electromagnet.	A material that becomes a magnet when current flows through it
State three factors that affect the strength of an electromagnet.	Current, coils, core
List three uses of electromagnets.	Scrap yard magnet, speakers, electric bell
Label the parts of an electric bell and explain how it works.	Know diagram and explain how it works

Year 10: Light and Shadows

<i>Objective/ Learning outcome.</i>	<i>Notes to help with learning.</i>
State the name given to objects that produce light + examples	Luminous e.g. sun, fire, torch
State the name given to objects that reflect light + examples	Non-luminous e.g. moon, planet, mirror, table
State how light travels.	In straight lines
Name 2 different types of shadow.	Umbra and penumbra
State 2 differences between the types of shadow.	Umbra – perfectly dark, sharp edge Penumbra – not perfectly dark, blurry edge
Draw a ray diagram to show how shadows are produced using a point source.	Use a pencil and ruler and put arrows on rays
Draw a ray diagram to show how shadows are produced using an extended source.	Use a pencil and ruler and put arrows on rays

Year 10: Reflection and Refraction

<i>Objective/ Learning outcome.</i>	<i>Notes to help with learning.</i>
State the law of reflection.	Angle of incidence = angle of reflection
Draw a ray diagram to show how a light ray is reflected off 1 mirror and 2 mirrors	Use a pencil and ruler and put arrows on rays

GRAPHS

- Picking good scales for x and y-axis to use 2/3 of the page
- Putting a title on the graph
- Labelling the x and y-axis including units e.g. distance / m or force / N
- Plotting points correctly and drawing a best fit line

Please refer to the VLE for a collection of resources to support your revision including revision questions!



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Your progress 

General

Welcome to Year 10 Physics!!!

Here you will find resources, websites, games and quizzes that will help you with your understanding and revision of the topics you learn in Year 10 physics.

 Welcome to Physics!

Below is a link to the vle

<http://ballymenaacademy2.wholeschoolvle.com>