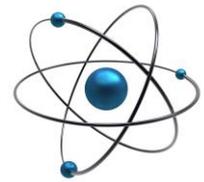




Ballymena Academy Physics

Year 10 Revision Checklist



In preparation for the Winter Examination 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 unit of density | Unit 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 |
| Measuring Density | Be able to recall a scientific method to measure the density of a solid, liquid or gas. (Refer to Pupil notes for full details). |
| 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 20000Hz |
| 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 measure 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. |
| 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 |

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>