

Physics 1 Revision Check List

Topic	Tick	Tick	Tick
1. Generating Electricity			
a) I can think of 2 or 3 advantages & disadvantages of using different energy sources such as solar, fossil fuels etc			
b) I can appreciate the costs for building (commissioning) and dismantling (decommissioning) power stations			
c) I know that for small renewable power stations planning permission is sought from the local council, and for large ones the government or Welsh Assembly			
2. Transmission of Electricity			
a) I know that the National Grid is network of cables connecting power stations to homes, factories, hospitals etc			
b) I know that ICT is used by the National Grid to monitor power demand together with info on weather forecasts and TV schedules			
c) I know why electricity is transmitted at very high voltages (to prevent energy losses)			
d) I know that the voltage is changed by transformers and that step-up transformers increase the voltage (and lower the current) and step-down do the opposite (decrease the voltage and increase the current)			
e) I can select and use the equation power(W)=voltage(V) x current(A) to find the power			
f) I can use the equation to find voltage or current			
3. Heating and the Home			
a) I know that energy is measured in joules			

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b) power is the number of joules transferred every second and is measured in watts			
c) I can select and use the equation energy transfer(J)=power(W) x time(s) to find the energy transferred			
d) I can use the equation to find the power or the time			
e) I can change W to kW (there are a 1000W in a kW)			
f) I can work out the cost of using electrical items by selecting and using units used=power(kW) x time(h) and cost=units used x cost per unit			
g) I can compare the costs of using different sources of energy in the home such as gas, coal, electricity			
h) I can consider the cost effectiveness of using solar and wind energy in the home and think about the fuel saving and payback time			
4. Energy, Temperature and Transfer of Heat Energy			
a) I can answer questions about experiments to investigate conduction, convection and radiation			
b) I can use data from experiments to compare the different methods			
c) I know how insulators reduce the amount of heat lost by these different methods			
d) I know how the colour of a surface affects how much heat radiation is absorbed or emitted (black absorbs/emits more heat radiation than shiny)			
e) I know the different ways to insulate a house			
f) I can compare data on the cost effectiveness of the different methods (which give the greatest savings for the least cost)			
5. Energy Efficiency			
a) I know that greater efficiency means more energy is being transferred into a useful			

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form			
b) I can select and use the equation efficiency = $\frac{\text{useful energy transfer}}{\text{total energy input}} \times 100\%$			
c) I can use the equation to find out the amount of useful energy transfer			
d) I can compare the efficiency of using 2 different methods to do the same job eg., compare a kettle with a pan to boil water			
6. Characteristics of Waves			
a) I know what wavelength and amplitude are and can find them on diagrams			
b) I know what frequency and speed are			
c) I can select and use the equation wave speed(m/s)=wavelength(m) × frequency(Hz) to find the wave speed			
d) I can use the equation to find wavelength or frequency			
e) I can select and use the equation speed(m/s) = $\frac{\text{distance(m)}}{\text{time(s)}}$			
f) I can use the equation to find distance or time			
Electro-magnetic Spectrum			
a) I know the order from high frequency (short wavelength) to low frequency (long wavelength) is gamma rays, x-rays, ultra-violet, visible, infra-red, microwaves and radio waves			
b) I know that they all travel at the speed of light in a vacuum (nothing) 300 000 000m/s			
c) I know the uses for each part of the spectrum			
d) I known that the higher the frequency of the waves the more ionising they are and			

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the more damage they do to cells (ultra-violet, x-ray and gamma ray)			
e) I know what the critical angle is and how to measure it from a diagram			
f) I know what total internal reflection is and can explain how it is used in fibre optics			
g) I can compare the use of microwaves (geosynchronous satellites) and infra-red (optical fibres) in long distance communication			
h) I am aware of the possibility of health risks with the long term use of mobile phones			
i) I am aware of the planning requirements for mobile phone masts especially near schools, hospitals and in areas of outstanding beauty			
8. Solar System			
a) I know that the Solar system formed from a large cloud of gas and dust (mostly hydrogen and helium), that the planets and the Sun were formed as gravity pulled together the larger clumps of dust and gas			
b) I know the order of the planets, Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune and Pluto (Pluto is now classed as a minor planet)			
c) I know there are other objects found in our solar system, namely comets, moons and asteroids			
d) I can interpret data on the planets and others such as asteroids and moons			
e) I know that Mercury, Venus, Earth and Mars are the inner rocky planets			
f) I know that Jupiter, Saturn, Uranus and Neptune are called the outer gas planets			
g) I know that gravity makes the planets orbit the Sun and the moons orbit the planets			
h) I know that as comets approach the Sun they speed up because their elliptical orbit makes them travel closer			
i) I know that the radiation pressure of the sun's rays of light cause the material evaporating from the comet to form a tail that always goes away from the sun, this			

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means that as the comet moves towards the Sun its tail is behind it, as it moves away from the Sun its tail is in front of it			
j) I know that computers can be used to compare images of the night sky to see if there are moving objects such as asteroids or comets			
9. Stars			
a) I know that how the Sun gives out its energy was once thought to be by chemical reactions like burning but that when fossils were discovered they knew Earth must be much, much older, and that the Sun would have run out of fuel a long time ago,			
b) I know that the modern view is that the Sun's energy is released because of nuclear fusion reactions taking place in which new elements such as helium and carbon are formed			
c) I know that stars are formed when gas (hydrogen) and dust are pulled together by gravity, heat up and nuclear fusion begins, releasing light and heat energy			
d) I know that in nuclear fusion reactions inside stars elements in the periodic table up to and including iron are formed			
e) I know that heavier elements are formed by supernova explosions, and that the presence of these heavier elements such as gold and uranium on Earth mean that our solar system has been formed from the dust and gas left over from an earlier larger star that exploded in just such a way			
f) I know that our Sun is in its stable stage of its life because the inward force of gravity is being balanced by the outward push caused by the very temperatures, so the size of the Sun does not change			
g) I know that when the fuel starts to run out the outward force becomes greater than the inward force and the star swells to become a red giant			

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h) I know that after swelling the star cools making the force of gravity become greater than the outward force and the star contracts to become a white dwarf			
i) I know that if the original star has is big enough (has enough mass) that the stages it goes through are Super red giant, supernova than neutron star (or if really large a black hole)			
10. Universe			
a) I know that the light from distant galaxies when dispersed to form a spectrum shows that the wavelengths have been moved towards the red end of the spectrum, and that this is called red shift			
b) I know that red shift is caused by the galaxy moving away from us and that the further away a galaxy is the greater the red shift and the faster the galaxy is moving away from Earth			
c) I know that evidence from red shift tells us that the universe is expanding and that the universe must have started from a very small point 12-15 thousand years ago in what is now called the Big Bang			