

Revision Sheets

AQA GSCE Trilogy Physics Paper 1 Higher

Name:

Class:



10 Minutes on....

Energy Stores
and Systems

Key Term	Definition
System	

Energy Store	Description
Magnetic	
Internal	
Chemical	
Kinetic	
Electrostatic	
Elastic Potential	
Gravitational Potential	
Nuclear	

10 Minutes on....

Kinetic Energy 1

Key Term	Definition
Kinetic Energy	

Quantity	Symbol	Unit
Kinetic Energy		
Mass		
Speed		

Identify the equation that links kinetic energy, mass and speed.

Calculate kinetic energy when...	Mass is 67kg and speed is 5m/s	Mass is 1.2kg and speed is 25m/s	Mass is 57g and speed is 2.5m/s	Mass is 850g and speed is 5m/s
Convert Units				
Write down the formula to be used.				
Substitute Values				
Do the Maths				
Round and add units.				

10 Minutes on....

Kinetic Energy 2

Calculate mass when...	Speed is 5m/s and K.E is 82J	Speed is 5m/s and K.E is 2.5KJ	Speed is 8m/s and K.E is 7.1KJ	Speed is 12.5m/s and K.E is 17KJ
Convert Units				
Write down the formula to be used.				
Substitute Values				
Rearrange				
Answer				
Round and add units.				

Calculate speed when...	K.E is 82J and mass is 1.2kg	K.E is 2.5KJ and mass is 3kg	K.E is 8.1kJ and mass is 18kg	K.E is 90J and mass is 541g
Convert Units				
Write down the formula to be used.				
Substitute Values				
Rearrange				
Answer				
Round and add units.				

10 Minutes on....

Elastic Potential Energy 1

Key Term	Definition
Elastic Potential	

Quantity	Symbol	Unit
Elastic Potential Energy		
Spring Constant		
Extension		

Identify the equation that links elastic potential, extension and spring constant.

Calculate elastic potential energy when...	Spring constant is 2N/m and extension is 3.2m	Spring constant is 7.8N/m and extension is 4.2m	Spring constant is 2N/m and extension is 38cm	Spring constant is 122N/m and extension is 98mm
Convert Units				
Write down the formula to be used.				
Substitute Values				
Do the Maths				
Round and add units.				

10 Minutes on....

Elastic Potential Energy 2

Calculate spring constant when...	E.P.E is 100J and extension is 1.2m	E.P.E is 100J and extension is 32cm	E.P.E is 1.8kJ and extension is 2.8m	E.P.E is 1.9KJ and extension is 92cm
Convert Units				
Write down the formula.				
Substitute Values				
Rearrange				
Answer				
Round and add units.				

Calculate extension when...	E.P.E is 100J and spring constant is 2N/m	E.P.E is 1.02kJ and spring constant is 8N/m	E.P.E is 2.8kJ and spring constant is 3.1N/m	E.P.E is 0.72kJ and spring constant is 2N/m
Convert Units				
Write down the formula.				
Substitute Values				
Rearrange				
Answer				
Round and add units.				

10 Minutes on....

Gravitational Potential Energy 1

Key Term	Definition
Gravitational Potential	

Quantity	Symbol	Unit
Gravitational Potential Energy		
Mass		
Gravitational Field Strength		
Height		

Identify the equation that links gravitational potential energy, gravitational field strength and height.

Calculate g.p.e when...	Mass is 67kg, gravitational field strength is 9.8 and height is 2.8m.	Mass is 15kg, gravitational field strength is 9.8 and height is 56cm.	Mass is 525g, gravitational field strength is 9.8 and height is 71m.	Mass is 871g, gravitational field strength is 9.8 and height is 121cm.
Convert Units				
Write down the formula to be used.				
Substitute Values				
Do the Maths				
Round and add units.				

10 Minutes on....

Gravitational Potential Energy 2

For each of the questions below gravitational field strength is 9.81N/kg

Calculate mass when...	G.P.E is 100J and height is 1.2m	G.P.E is 100J and height is 32cm	G.P.E is 1.8kJ and height is 14cm	G.P.E is 0.19KJ and extension is 12cm
Convert Units				
Write down the formula.				
Substitute Values				
Rearrange				
Answer				
Round and add units.				

Calculate height when...	GPE is 800J and mass is 67kg	GPE is 2.1kJ and mass is 93kg	GPE is 123J and mass is 12g	GPE is 0.91kJ and mass is 850g
Convert Units				
Write down the formula.				
Substitute Values				
Rearrange				
Answer				
Round and add units.				

10 Minutes on....

Energy Changes in Systems 1

Key Term	Definition
Specific Heat Capacity	

Quantity	Symbol	Unit
Change in Thermal Energy		
Mass		
Specific Heat Capacity		
Temperature Change		

Identify the equation that links change in thermal energy, mass, specific heat capacity and temperature change.

Calculate change in thermal energy when...	Mass is 67kg, SHC is 2J/kg°C and $\Delta\theta$ is 3.1°C	Mass is 15kg, SHC is 7.1J/kg°C and $\Delta\theta$ is 2.9°C	Mass is 525g, SHC is 2J/kg°C and $\Delta\theta$ is 17°C	Mass is 871g, SHC is 2J/kg°C and the temperature raises by 11°C
Convert Units				
Write down the formula.				
Substitute Values				
Do the Maths				
Round and add units.				

10 Minutes on....

Energy Changes in Systems 2

For each of the questions below the substance is water with a specific heat capacity of $4182\text{J/kg}^\circ\text{C}$.

Calculate mass when...	ΔE is 100J and $\Delta\theta$ is 12°C	ΔE is 1.2kJ and $\Delta\theta$ is 9°C	ΔE is 0.91kJ and $\Delta\theta$ is 12°C	ΔE is 1.50kJ and $\Delta\theta$ is 17.8°C
Convert Units				
Write down the formula.				
Substitute Values				
Rearrange				
Answer				
Round and add units.				

Calculate temp change when...	ΔE is 100J and mass is 67kg.	ΔE is 120J and mass is 31kg.	ΔE is 1.2kJ and mass is 2kg.	ΔE is 1.8kJ and mass is 51g.
Convert Units				
Write down the formula.				
Substitute Values				
Rearrange				
Answer				
Round and add units.				

10 Minutes on....

Specific Heat Capacity RP

Construct a method to determine the specific heat capacity of a material. Use the space below to draw a diagram of how equipment would be set up.

10 Minutes on....

Power 1

Key Term	Definition
Power	

Quantity	Symbol	Unit
Power		
Energy Transferred		
Time		
Work Done		

Identify the equation that links energy transferred, power and time.

Identify the equation that links power, time and work done.

Calculate the power when...	120J of energy is transferred in 30s	1kJ of work is done in 300s	351J of energy is transferred in 1 minute	2.5kJ of work is done in 10 minutes
Convert Units				
Write down the formula.				
Substitute Values				
Do the Maths				
Round and add units.				

10 Minutes on....

Power 2

Calculate work done when...	Power is 100W and time is 30s	Power is 250W and time is 1min	Power is 1.2kW and the time is 45s	Power is 1.4kW and the time is 3mins
Convert Units				
Write down the formula.				
Substitute Values				
Rearrange				
Answer				
Round and add units.				

Calculate time when...	Power is 55W and work done is 30J.	Power is 120W and energy transferred is 2.1kJ	Power is 85W and energy transferred is 1.2kJ	Power is 1.2kW and energy transferred is 1kJ
Convert Units				
Write down the formula.				
Substitute Values				
Rearrange				
Answer				
Round and add units.				

10 Minutes on....

Energy Transfers in A System

Key Term	Definition
Wasted Energy	

Describe the law for the conservation of energy.

Method Of Reducing Unwanted Energy Transfers	Description
Lubrication	
Thermal Insulation	

Describe the relationship between thermal conductivity and the rate of conduction.

Describe how the rate of cooling of a building is affected by the thickness and thermal conductivity of its walls.



10 Minutes on....

Efficiency

Key Term	Definition
Efficiency	

Describe how to calculate efficiency.

Calculate the efficiency when...	A TV transfers 58W of the 75W supplied.	1kJ of energy is supplied and 200J of energy is transferred usefully.	1.2kJ of energy is supplied and 250J of energy is transferred usefully.	A hairdryer transfers 71W of the 211W supplied.
Convert Units				
Write down the formula.				
Substitute Values				
Do the Maths				
Round and add units.				

10 Minutes on....

Energy
Resources

Key Term	Definition
Renewable	
Non-Renewable	
Fossil Fuel	
Nuclear Fuel	
Biofuel	
Hydroelectricity	
Geothermal	

Renewable Energy Resource	Non-Renewable Energy Resources

Describe uses that we have for energy resource.

10 Minutes on....

Non-Renewable
Energy Resources

Key Term	Definition
Non-Renewable	
Fossil Fuel	
Nuclear Fuel	

Energy Resource	Advantages	Disadvantages
Fossil Fuels		
Nuclear Fuel		

10 Minutes on....

Renewable Energy
Resources

Key Term	Definition
Renewable	

Energy Resource	Advantages	Disadvantages
Biofuel		
Wind		
Hydroelectricity		
Geothermal		
Tidal		
Solar		
Water Waves		

10 Minutes on....

Standard Circuit
Diagram Symbols

Component	Symbol	Component	Symbol
Open Switch		LED	
Closed Switch		Lamp	
Cell		Fuse	
Battery		Voltmeter	
Diode		Ammeter	
Resistor		Thermistor	
Variable Resistor		LDR	

10 Minutes on....

Electrical
Charge 1

Key Term	Definition
Electric Current	

Quantity	Symbol	Unit
Charge Flow		
Current		
Time		

Identify the equation that links charge flow, current and time.

Calculate charge flow when ...	There is a 3A current for 30s	There is a 1.5A current for 2mins	There is a 500mA current for 30s	There is a 5A current for 1 minute
Convert Units				
Write down the formula.				
Substitute Values				
Do the Maths				
Round and add units.				

10 Minutes on....

Electrical Charge 2

Calculate current when...	Charge flow is 125C for 12s	Charge flow is 0.2C for 3mins	Charge flow is 0.5C for 25s	Charge flow is 0.2C for 10mins
Convert Units				
Write down the formula.				
Substitute Values				
Rearrange				
Answer				
Round and add units.				

Calculate time when...	Charge flow is 125C and current is 2A	Charge flow is 80C and current is 4A	Charge flow is 900C and current is 900mA	Charge flow is 450C and current is 500mA
Convert Units				
Write down the formula.				
Substitute Values				
Rearrange				
Answer				
Round and add units.				

10 Minutes on....

Current, Resistance and Potential Difference 1

Key Term	Definition
Electric Current	

Quantity	Symbol	Unit
Potential Diff		
Current		
Resistance		

Identify the equation that links current, potential difference and resistance.

Calculate potential difference when ...	Current is 3A and the resistance is 2Ω	Current is 1.5A and resistance is 10Ω	Current is 10A and the resistance is 2Ω	Current is 500mA and the resistance is 12Ω
Convert Units				
Write down the formula.				
Substitute Values				
Do the Maths				
Round and add units.				

10 Minutes on....

Current, Resistance and Potential Difference 1

Calculate current when...	Potential difference is 7V and resistance is 2Ω	Potential difference is 17V and resistance is 12Ω	Potential difference is 3.5V and resistance is 17Ω	Potential difference is 2V and resistance is 2Ω
Convert Units				
Write down the formula.				
Substitute Values				
Rearrange				
Answer				
Round and add units.				

Calculate resistance when	Potential difference is 7V and current is 2A	Potential difference is 17V and current is 3.5A	Potential difference is 12V and current is 750mA	Potential difference is 7V and current is 200mA
Convert Units				
Write down the formula.				
Substitute Values				
Rearrange				
Answer				
Round and add units.				

10 Minutes on....

Resistance of a Wire RP

Construct a method to investigate the relationship between the length of a wire and its resistance. Use the space below to draw a diagram of how equipment would be set up.

10 Minutes on....

Resistors

Describe the relationship between current and potential difference through an ohmic conductor. Construct an I-V graph to model this.

Construct an I-V graph for a filament lamp.

Construct an I-V graph for a diode.

Component	Description of when Resistance Changes	Use
Thermistor		
LDR		

10 Minutes on....

I-V Characteristics

1 RP

Construct a method to investigate the IV Characteristics of a resistor. Use the space below to draw a diagram of how equipment would be set up.

10 Minutes on....

I-V Characteristics

2 RP

Construct a method to investigate the IV Characteristics of a filament lamp. Use the space below to draw a diagram of how equipment would be set up.

10 Minutes on....

I-V Characteristics

3 RP

Construct a method to investigate the IV Characteristics of a diode. Use the space below to draw a diagram of how equipment would be set up.

10 Minutes on....

Series and Parallel
Circuits

Circuit	Series	Parallel
Description		
Diagram		
Current Through The Component		
Potential Difference and Components		
Resistance and Components		

10 Minutes on....

Direct and
Alternating Current

Key Term	Definition	Example of Source
Direct Current		
Alternating Current		

Identify the frequency and voltage of mains electricity.

Explain the difference between direct and alternating potential difference.

10 Minutes on....

Mains Electricity

Wire	Colour	Description	Potential Difference
Live Wire			
Neutral Wire			
Earth Wire			

Explain why a live wire may be dangerous even when a switch is open.

Explain why it is dangerous if a live wire and earth wire are connected.

10 Minutes on....

Power 3

Key Term	Definition
Power	

Quantity	Symbol	Unit
Potential Diff		
Current		
Resistance		
Power		

Identify the equation that links current, potential difference and power

Identify the equation that links current, power and resistance.

Calculate power when ...	Current is 3A and the P.D is 2V	Current is 1.5A and resistance is 10Ω	Current is 100mA and the P.D is 12V	Current is 500mA and the resistance is 12Ω
Convert Units				
Write down the formula.				
Substitute Values				
Do the Maths				
Round and add units.				

10 Minutes on....

Power 4

Calculate P.D when...	Power is 25W and current is 5A	Power is 0.25kW and current is 40A	Power is 2W and current is 750mA	Power is 0.75kW and current is 10A
Convert Units				
Write down the formula.				
Substitute Values				
Rearrange				
Answer				
Round and add units.				

Calculate current when...	Potential difference is 7V and power is 75W	Power is 100W and resistance is 5Ω	Power is 2.8KW and resistance is 10Ω	Power is 3.2KW and resistance is 25Ω
Convert Units				
Write down the formula.				
Substitute Values				
Rearrange				
Answer				
Round and add units.				

10 Minutes on....

Energy Transfers in Appliances 1

Key Term	Definition
Electrical Appliance	

Quantity	Symbol	Unit
Potential Diff		
Energy Transferred		
Time		
Power		
Charge Flow		

Identify the equation that links energy transferred, power and time.

Identify the equation that links charge flow, energy transferred and potential difference

Calculate energy transferred when..	Power is 60W and times is 3s.	Charge flow is 12C and potential difference is 3V	Power is 12W and the time is 1 minute.	Charge flow is 25C and potential difference is 1.5V
Convert Units				
Write down the formula.				
Substitute Values				
Do the Maths				
Round and add units.				

10 Minutes on....

Energy Transfers in Appliances 2

Calculate power when...	120J of energy is transferred in 30s	225J of energy is transferred in 2 mins	1.8kJ of energy is transferred in 45s	2.5kJ of energy is transferred in 10min
Convert Units				
Write down the formula.				
Substitute Values				
Rearrange				
Answer				
Round and add units.				

Calculate P.D when...	Charge flow is 30C and 120J of energy is transferred.	Charge flow is 44C and 1.95kJ of energy is transferred.	Charge flow is 12C and 44J of energy is transferred.	Charge flow is 120C and 2.5kJ of energy is transferred.
Convert Units				
Write down the formula.				
Substitute Values				
Rearrange				
Answer				
Round and add units.				

10 Minutes on....

National Grid

Key Term	Definition
National Grid	
Step-Up Transformer	
Step-Down Transformer	

Explain how transfers are used in the National Grid.

[illegible]

10 Minutes on....

Density of
Materials 1

Key Term	Definition
Density	

Quantity	Symbol	Unit
Density		
Mass		
Volume		

Identify the equation that links density, mass and volume.

Calculate density when..	Mass is 2kg and volume is 3m ³	Mass is 150g and volume is 0.1m ³	Mass is 1kg and volume is 0.2m ³	Mass is 1500g and volume is 0.12m ³
Convert Units				
Write down the formula.				
Substitute Values				
Do the Maths				
Round and add units.				

10 Minutes on....

Density of Materials 2

Calculate mass when...	There is 0.1m^3 of a material with a density of 1.5kg/m^3	There is 0.2m^3 of a material with a density of 4kg/m^3	There is 0.005m^3 of a material with a density of 3.7kg/m^3	There is 0.001m^3 of a material with a density of 17kg/m^3
Convert Units				
Write down the formula.				
Substitute Values				
Rearrange				
Answer				
Round and add units.				

Calculate volume when...	There is 37kg of a material with a density of 1.5kg/m^3	There is 250g of a material with a density of 17kg/m^3	There is 5g of a material with a density of 2.8kg/m^3	There is 1800g of a material with a density of 0.8kg/m^3
Convert Units				
Write down the formula.				
Substitute Values				
Rearrange				
Answer				
Round and add units.				

10 Minutes on....

Determining Density 1 RP

Construct a method to determine the density of a regular shaped object. Use the space below to draw a diagram of how equipment would be set up.

10 Minutes on....

Determining Density 2 RP

Construct a method to determine the density of an irregular shaped object. Use the space below to draw a diagram of how equipment would be set up.

10 Minutes on....

Changes of State

Key Term	Definition
Melt	
Freeze	
Boil	
Evaporate	
Condense	
Sublimate	

Construct a diagram to model state changes.

Describe what happens to mass when an object changes state.

Compare state changes and chemical changes.

10 Minutes on....

Internal Energy

Key Term	Definition
Internal Energy	

Describe what makes up the internal energy of a system.

Explain what happens when a system is heated.

10 Minutes on....

Energy Changes in Systems 3

Key Term	Definition
Specific Heat Capacity	

Quantity	Symbol	Unit
Change in Thermal Energy		
Mass		
Specific Heat Capacity		
Temperature Change		

Identify the equation that links change in thermal energy, mass, specific heat capacity and temperature change.

Calculate change in thermal energy when...	Mass is 17kg, SHC is 3J/kg°C and $\Delta\theta$ is 2.1°C	Mass is 15kg, SHC is 7.1J/kg°C and $\Delta\theta$ is 3.8°C	Mass is 425g, SHC is 3J/kg°C and $\Delta\theta$ is 21°C	Mass is 831g, SHC is 3J/kg°C and the temperature raises by 0.1°C
Convert Units				
Write down the formula.				
Substitute Values				
Do the Maths				
Round and add units.				

10 Minutes on....

Energy Changes in Systems 4

For each of the questions below the substance is aluminium with a specific heat capacity of $900\text{J/kg}^\circ\text{C}$.

Calculate mass when...	ΔE is 100J and $\Delta\theta$ is 15°C	ΔE is 1.4kJ and $\Delta\theta$ is 9°C	ΔE is 0.72kJ and $\Delta\theta$ is 12°C	ΔE is 1.50kJ and $\Delta\theta$ is 17.8°C
Convert Units				
Write down the formula.				
Substitute Values				
Rearrange				
Answer				
Round and add units.				

Calculate temp change when...	ΔE is 100J and mass is 7kg.	ΔE is 1120J and mass is 3.1kg.	ΔE is 2.8kJ and mass is 2.1kg.	ΔE is 1.8kJ and mass is 51g.
Convert Units				
Write down the formula.				
Substitute Values				
Rearrange				
Answer				
Round and add units.				

10 Minutes on....

Change in State
and SLH 1

Key Term	Definition
Latent Heat	
Specific Latent Heat	
Specific Latent Heat of Fusion	
Specific Latent Heat of Vaporisation	

Quantity	Symbol	Unit
Energy		
Mass		
Specific Latent Heat		

Identify the equation that links energy for a change in state, mass and specific latent heat.

Calculate the energy to change state when...	There is 0.5kg of a material with a specific latent heat of 2J/kg	There is 2.8kg of a material with a specific latent heat of 5J/kg	There is 500g of a material with a specific latent heat of 1021J/kg	There is 52g of a material with a specific latent heat of 980J/kg
Convert Units				
Write down the formula.				
Substitute Values				
Do the Maths				
Round and add units.				

10 Minutes on....

Change in State and SLH 2

For each of the questions below the substance is aluminium with a specific heat capacity of $900\text{J/kg}^{\circ}\text{C}$.

Calculate mass when...	Energy is 100J and SLH is 900J/kg	Energy is 1kJ and SLH is 1081J/kg	Energy is 100J and SLH is 820J/kg	Energy is 7.8kJ and SLH is 501J/kg
Convert Units				
Write down the formula.				
Substitute Values				
Rearrange				
Answer				
Round and add units.				

Calculate SLH when...	The energy supplied is 1200J and the mass is 2kg.	The energy supplied is 5.5kJ and the mass is 2.2kg.	The energy supplied is 700J and the mass is 55g.	The energy supplied is 3kJ and the mass is 250g.
Convert Units				
Write down the formula.				
Substitute Values				
Rearrange				
Answer				
Round and add units.				

10 Minutes on....

Particle Motion in Gases

Explain how the motion of the molecules in a gas is related to its temperature and pressure.

Describe the relationship between the temperature of a gas and its pressure at a constant volume.

10 Minutes on....

Structure of an Atom

Radius of an Atom	
Radius of an Atoms Nucleus	

Describe the basic structure of an atom and construct a diagram.

Describe how the electron arrangements may change when radiation is absorbed.

10 Minutes on....

Mass Number, Atomic Number and Isotopes

Key Term	Definition
Mass Number	
Atomic Number	
Isotope	

Particle	Relative Charge	Relative Mass
Proton		
Neutron		
Electron		

Identify what determines the element an atom is.

Explain why atoms are neutral.

Explain how to calculate the numbers of protons neutrons and electrons when given the atomic number and mass number.

10 Minutes on....

Development of the
Model of the Atom

Compare the plum pudding and nuclear model of the atom.

Explain how the scattering experiment led to a change in the atomic model.

10 Minutes on....

Radioactive Decay and Nuclear Radiation

Key Term	Definition
Radioactive Decay	
Activity	
Count Rate	

Radiation	Symbol	Description	Range	Penetrating Power	Ionising Power
Alpha					
Beta					
Gamma					

10 Minutes on....

Nuclear Equations

Type of Radiation	Description	Symbol To Use In Nuclear Equations
Alpha		
Beta		

Construct a nuclear equation to model the alpha decay of radon-219.

Construct a nuclear equation to model the beta decay of carbon-14

Compare alpha and beta decay.

10 Minutes on....

Half Life

Key Term	Definition
Radioactive Decay	
Half Life	

Explain how to use a graph to determine half life.

Sketch a graph to model a substance that has a half life of 1 day with a start activity of 100 Bq

10 Minutes on....

Radioactive Contamination

Key Term	Definition
Radioactive Contamination	
Irradiation	

Explain the importance of peer review when studying the effects of radiation.

	Contamination	Irradiation
When It Occurs		
Does It Cause The Object To Become Radioactive?		
Stopping/Blocking Radiation.		