AQA GCSE Physics 9-1 Required Practicals Revision Booklet

Name_____

Paper 1 – 22nd May 2019	Specific Heat Capacity	Investigation to determine the specific heat capacity of one or more materials. The investigation will involve linking the decrease of one energy store (or work done) to the increase in temperature and subsequent increase in thermal energy stored.
	Thermal Insulation	Investigate the effectiveness of different materials as thermal insulators and the factors that may affect the thermal insulation properties of a material.
	Resistance	Use circuit diagrams to set up and check appropriate circuits to investigate the factors affecting the resistance of an electrical circuit. This should include: the length of a wire (at constant temperature); combinations of resistors in series and parallel.
	I-V characteristics	Use circuit diagrams to construct appropriate circuits to investigate the I-V characteristics of a variety of circuit elements including a filament lamp, a diode and a resistor at constant temperature.
	Density	Use appropriate apparatus to make and record the measurements needed to determine the densities of regular and irregular solid objects and liquids. Volume should be determined from the dimensions of regularly shaped objects and by a displacement technique for irregularly shaped objects. Dimensions to be measured using appropriate apparatus such as a ruler, micrometre or Vernier callipers.
Paper 2 – 14th June 2019	Force and Extension	Investigate the relationship between force and extension for a spring.
	Acceleration	Investigate the effect of varying the force on the acceleration of an object of constant mass and the effect of varying the mass of an object on the acceleration produced by a constant force.
	Waves	Make observations to identify the suitability of apparatus to measure the frequency, wavelength and speed of waves in a ripple tank and waves in a solid and take appropriate measurements.
	Light	Investigate the reflection of light by different types of surface and the refraction of light by different substances.
	Radiation and Absorption	Investigate how the amount of infrared radiation absorbed or radiated by a surface depends on the nature of that surface.

Go to http://tiny.cc/sapa and click on **GCSE AQA Physics 9-1**
and then on **Required Practical Video Links**

Some of the practicals have several videos with varying methods.
Watch them all and choose the one that is easiest to follow.
Make some rough notes and diagrams that cover:

- Variables
- Step by step method
- Labelled diagram of the set up
- Measuring instruments needed
- Measurements to make
- How to process the results
- Safety Precautions

Use your notes to complete the tables for each of the 10 required practicals.
The tables are general so you may not need to use all the rows in every table.

Practicals 1-5 may be tested on paper 1 and practicals 6-10 on paper 2.

Sample Questions

Density
A student wants to calculate the density of a lump of rock and a metal cube.
Describe the methods that the student should use to calculate the densities of the two objects.

Refraction
Describe an investigation into how the angle of incidence and angle of refraction are related for the refraction of light at an air to glass boundary. Your answer should consider any cause of inaccuracy in the data. A labelled diagram may be drawn as part of your answer.

Specific Heat Capacity
Describe how to determine the specific heat capacity of a metal such as copper. Include a labelled diagram showing how the apparatus is set up. Suggest why the result could have a value greater than expected.

Acceleration
A teacher is demonstrating how the acceleration of a trolley depends on the force applied to the trolley. She uses a sloping runway and a trolley. Write a list of the other equipment the teacher will need for the demonstration. Describe a method she could use for the demonstration. Suggest why the teacher kept the same trolley for all the demonstrations.

Radiation and Absorption
Describe how you would investigate the effect of surface colour on the emission of infra-red radiation from a hot object. Include how you would make the investigation fair and how you would determine if the results were reliable. Suggest a suitable resolution of each of the measuring instruments used.

Specific Heat Capacity – Paper 1

Independent Variable(s) The one you vary.	Dependent Variable(s) The one you measure.	Control Variables Kept the same for a fair test.

Method	Step 1		Diagram of set up.
	Step 2		
	Step 3		
	Step 4		
	Step 5		
	Step 6		
	Step 7		

Measurement	Instrument Used	How Instrument is used / How to minimise errors

Equations / Calculations used to process results	Safety Precautions

Thermal Insulation – Paper 1

Independent Variable(s) The one you vary.	Dependent Variable(s) The one you measure.	Control Variables Kept the same for a fair test.

Method	Step 1		Diagram of set up.
	Step 2		
	Step 3		
	Step 4		
	Step 5		
	Step 6		
	Step 7		

Measurement	Instrument Used	How Instrument is used / How to minimise errors

Equations / Calculations used to process results	Safety Precautions

Resistance – Paper 1

Independent Variable(s) The one you vary.	Dependent Variable(s) The one you measure.	Control Variables Kept the same for a fair test.

Method	Step 1		Diagram of set up.
	Step 2		
	Step 3		
	Step 4		
	Step 5		
	Step 6		
	Step 7		

Measurement	Instrument Used	How Instrument is used / How to minimise errors

Equations / Calculations used to process results	Safety Precautions

Current-Voltage Characteristics – Paper 1

Independent Variable(s) The one you vary.	Dependent Variable(s) The one you measure.	Control Variables Kept the same for a fair test.

Method			
	Step 1		Diagram of set up.
	Step 2		
	Step 3		
	Step 4		
	Step 5		
	Step 6		
	Step 7		

Measurement	Instrument Used	How Instrument is used / How to minimise errors

Equations / Calculations used to process results	Safety Precautions

Density – Paper 1

Independent Variable(s) The one you vary.	Dependent Variable(s) The one you measure.	Control Variables Kept the same for a fair test.

Method			
	Step 1		Diagram of set up.
	Step 2		
	Step 3		
	Step 4		
	Step 5		
	Step 6		
	Step 7		

Measurement	Instrument Used	How Instrument is used / How to minimise errors

Equations / Calculations used to process results	Safety Precautions

Force and Extension – Paper 2

Independent Variable(s) The one you vary.	Dependent Variable(s) The one you measure.	Control Variables Kept the same for a fair test.

Method	Step 1		Diagram of set up.
	Step 2		
	Step 3		
	Step 4		
	Step 5		
	Step 6		
	Step 7		

Measurement	Instrument Used	How Instrument is used / How to minimise errors

Equations / Calculations used to process results	Safety Precautions

Acceleration – Paper 2

Independent Variable(s) The one you vary.	Dependent Variable(s) The one you measure.	Control Variables Kept the same for a fair test.

Method			Diagram of set up.
	Step 1		
	Step 2		
	Step 3		
	Step 4		
	Step 5		
	Step 6		
	Step 7		

Measurement	Instrument Used	How Instrument is used / How to minimise errors

Equations / Calculations used to process results	Safety Precautions

Waves – Paper 2

Independent Variable(s) The one you vary.	Dependent Variable(s) The one you measure.	Control Variables Kept the same for a fair test.

Method	Step 1		Diagram of set up.
	Step 2		
	Step 3		
	Step 4		
	Step 5		
	Step 6		
	Step 7		

Measurement	Instrument Used	How Instrument is used / How to minimise errors

Equations / Calculations used to process results	Safety Precautions

Light – Paper 2

Independent Variable(s) The one you vary.	Dependent Variable(s) The one you measure.	Control Variables Kept the same for a fair test.

Method	Step 1		Diagram of set up.
	Step 2		
	Step 3		
	Step 4		
	Step 5		
	Step 6		
	Step 7		

Measurement	Instrument Used	How Instrument is used / How to minimise errors

Equations / Calculations used to process results	Safety Precautions

Radiation and Absorption – Paper 2

Independent Variable(s) The one you vary.	Dependent Variable(s) The one you measure.	Control Variables Kept the same for a fair test.

Method			Diagram of set up.
	Step 1		
	Step 2		
	Step 3		
	Step 4		
	Step 5		
	Step 6		
	Step 7		

Measurement	Instrument Used	How Instrument is used / How to minimise errors

Equations / Calculations used to process results	Safety Precautions