Physics Homework Year 10 into 11

In your final exams, you will be given exam questions on the required practicals so you need to understand what they are.

Overall, there are 10 Physics required practicals that you need to know.

To be well prepared you need to have a thorough understanding of each one, so the earlier you start learning about them, the better you will do in your GCSE Science subjects.

A key point is to understand the independent variable, the dependent variable and the control variables for each required practical.

During this year you will have carried out or have had demonstrated to you, approximately half of the required practicals and these are:

Physics

- Specific heat capacity
- Thermal insulation
- Resistance
- I-V characteristics
- Density

Your Homework

Use your checklists in your books (P1) and watch videos on free science lessons.co.uk relating to the required practical's covered this year.

Write a full method for each one, which includes describing the variables.

Learn about each required practical ready for exam questions on them.

How will you be assessed on this homework?

You will sit a progress check (6 mark question) in the first two weeks of September on this topic.

Useful links:

This is information from the exam board about the required practicals.

https://filestore.aqa.org.uk/resources/physics/AQA-8463-PRACTICALS-HB.PDF

Specific heat capacity
https://www.youtube.com/watch?v=HAPmwu7byGM

Thermal insulation
https://www.youtube.com/watch?v=lLH45loyPUA

Resistance
https://www.youtube.com/watch?v=YsZeZotYVag

I-V characteristics
https://www.youtube.com/watch?v=A1SyKvdHoqY

Density

https://www.youtube.com/watch?v=ScXOp8Zph28

Other useful information to learn

Learning the equations off by heart now, will help you enormously next year. Start with the ones you have covered now.

Flip cards are useful for this.

Equation number	Word equation	Symbol equation
1	weight = mass × gravitational field strength g	$W = mg$
2	work done = force × distance along the line of action of the force	$W = Fs$
3	force applied to a spring = spring constant × extension	$F = ke$
4	moment of a force = force × distance normal to direction of force	$M = Fd$
5	$pressure = \frac{force\ normal\ to\ a\ surface}{area\ of\ that\ surface}$	$p = \frac{F}{A}$
6	distance travelled = speed × time	$s = vt$
7	$acceleration = \frac{change\ in\ velocity}{time\ taken}$	$a = \frac{\Delta v}{t}$
8	resultant force = mass × acceleration	$F = ma$
9 HT	momentum = mass × velocity	$p = mv$
10	kinetic energy = 0.5 × mass × (speed)^2	$E_k = \frac{1}{2}mv^2$
11	gravitational potential energy = mass × gravitational field strength (g) × height	$E_p = mgh$
12	$power = \frac{energy\ transferred}{time}$	$P = \frac{E}{t}$
13	$power = \frac{work\ done}{time}$	$P = \frac{W}{t}$
14	$efficiecy = \frac{useful\ output\ energy\ transfer}{total\ input\ energy\ transfer}$	
15	$efficiecy = \frac{total\ power\ output}{total\ power\ input}$	
16	wave speed = frequency × wavelength	$v = f\lambda$
17	charge flow = current × time	$Q = It$
18	potential difference = current × resistance	$V = IR$
19	power = potential difference × current	$P = VI$

20	power = (current)^2 × resistance	$P = I^2 R$
21	energy transferred = power × time	$E = P\,t$
22	energy transferred = charge flow × potential difference	$E = Q\,V$
23	$density = \frac{mass}{volume}$	$\rho = \frac{m}{V}$

GCSE Science / Physics

Physics Equations and Units

Symbol	Quantity	Unit	*Unit name*
F	(resultant) force	**N**	*newtons*
W	weight		
M	moment of a force	**N m**	*newton metres*
g	gravitational field strength	**N/kg**	*newtons per kilogram*
m	mass	**kg**	*kilograms*
v	velocity/speed OR wave speed	**m/s**	*metres per second*
p	momentum	**kg m/s**	*kilograms metres per second*
a	acceleration	**m/s^2**	*metres per second squared*
t	time	**s**	*seconds*
T	period		
f	frequency	**Hz**	*hertz*
k	spring constant	**N/m**	*newtons per metre*
e	extension	**m**	*metres*
s	distance		
h	height		
l	length		
λ	wavelength		

A	area	**m^2**	*metres squared*
p	pressure	**N/m^2** **Pa**	*newtons per metre squared* *OR pascals*
V	volume	**m^3**	*metres cubed*
ρ	density	**kg/m^3**	*kilograms per metre cubed*
W	work done	**J**	*joules*
E	energy transferred		
E_e	elastic potential energy		
E_k	kinetic energy		
E_p	(gravitational) potential energy		
P	power	**W**	*watts*
c	specific heat capacity	**J/kg°C**	*joules per kilogram degrees celsius*
L	specific latent heat	**J/kg**	*joules per kilogram*
	efficiency	**% or decimal**	
Q	charge	**C**	*coulombs*
I	current	**A**	*amps*
V	potential difference (voltage)	**V**	*volts*
R	resistance	**Ω**	*ohms*
B	magnetic flux density	**T**	*tesla*

Remember:

- Most units are upper case (e.g. T, J, N, A…) – you must write them like this, you won't get the mark if you use lower case for these.
- Work done is another way of saying energy transferred.