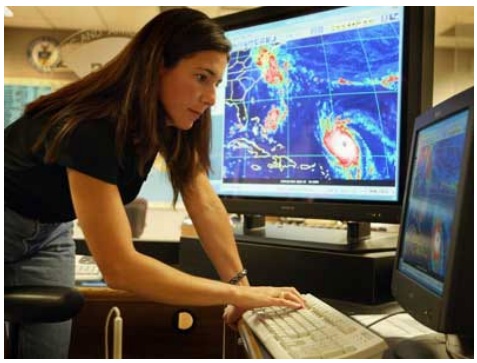
Launchpad homework PHYSICS

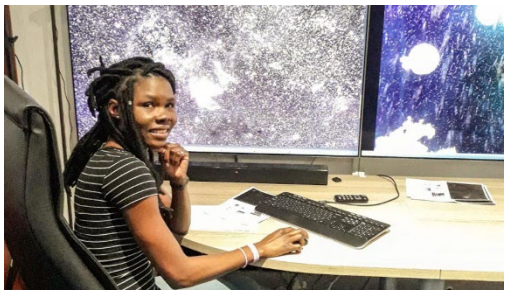
Task 1:

Research a career associated with physics and create a poster or factfile about it. Your research could include (but is not limited to!):

- What the career involves
- What qualifications / routes will get you in to that career
- The possible salary range in the career
- How physics is used in that career area



Try to think outside the box with the career you research – there are a lot of cool physics jobs out there!



Task 2:

Take pictures to document physics phenomena you see in every day life over the summer break. Write a short paragraph for each picture outlining what the physics phenomenon is that you're taking a picture of, and a brief summary of how it is caused.

Minimum 4 images, maximum 10. To be uploaded to Google Classroom when the course starts

Skills

Task 3: Rearranging Equations

Complete the table below rearranging each equation to make the specified variable the subject. Don't panic if you see symbols you're unfamiliar with!

Equation	Rearrange Equation
$y = mx + c$	c =
$V = IR$	R =
$F = \frac{\Delta(mv)}{\Delta t}$	Δt =
$F = m\omega^2 r$	ω =
$T = 2\pi\sqrt{\frac{l}{g}}$	g =
$T = 2\pi\sqrt{\frac{m}{k}}$	m =
$g = -\frac{GM}{r^2}$	r =
$F = \frac{Qq}{4\pi\varepsilon_0 r^2}$	q =
$C = \frac{Q}{V}$	V =
$\varepsilon = N\frac{\Delta\phi}{\Delta t}$	N =
$\frac{N_S}{N_P} = \frac{V_S}{V_P}$	V_p =
$pV = nRT$	R =
$Q = mc\Delta T$	c =

Skills	Task 4: Prefixes

In Physics we have to deal with quantities from the very large to the very small. A prefix is something that goes in front of a unit and acts as a multiplier. This sheet will give you practice at converting figures between prefixes.

a) Make flashcards to memorise these prefixes. You will be expected to know them!

Symbol	Name	Multiplier
P	peta	$x10^{15}$
T	tera	$x10^{12}$
G	giga	$x10^{9}$
M	mega	$x10^{6}$
k	kilo	$x10^{3}$
m	milli	$x10^{-3}$
µ	micro	$x10^{-6}$
n	nano	$x10^{-9}$
p	pico	$x10^{-12}$
f	femto	$x10^{-15}$

b) Convert the following quantities into regular numbers

1) 3.5mA
2) 150GHz
3) 75kW
4) 150nm
5) 12µg

c) Convert the following currents into the prefix indicated. To do this, you will need to **divide** by the multiplier!

A	mA	µA	nA	kA
0.000000678				
3.56				
0.00092				

Skills	Task 5: Significant Figures

For each value state how many significant figures it is stated to.

Value	Sig Figs	Value	Sig Figs	Value	Sig Figs	Value	Sig Figs
2		1066		1800.45		0.07	
2.0		82.42		2.483×10^4		69324.8	
2.00		750000		2.483		0.0063	
0.136		310		5906.4291		9.81×10^4	
0.34		3.10×10^2		200000		6717	
54.1		3.1×10^2		12.711		0.91	

*Calculate the **mean** of the values below then write the answer to the appropriate number of significant figures. This should be the **smallest** number of significant figures in your values. For example, if you have two values to 3sf and the third has 2sf, your mean should be written to 2sf*

Value 1	Value 2	Value 3	Mean Value	Mean to correct sig figs
1	1	2		
435	299	4130		
500	600	900		
3.038	4.925	3.6		
720	498	168		
1655	2996	140		
0.230	925.8	56300		
26017	19.1	0.186		
2238	80.1324	1.427		
9160.97	2011	34		
62.99	127.416	326.19		
155.56	11.97	1.4		
3.64	3.763	700653		
72.38	511.5	2670887		
1.787	8.00×10^2	110.4		

Skills	Task 6: Revision of GCSE content

All students will take an exam based on GCSE content at the start of the course. The topics and revision links are below.

Students who achieved a grade 6 in physics or combined science must pass an entrance exam based on this content to continue on the course.

Physics Entrance Exam Topic List

- Practical skills
- Series circuits
- Particle model (including internal energy, specific heat capacity, specific latent heat)
- Forces, momentum, acceleration and motion
- Electromagnetism and the motor effect

You will be provided an equation sheet, you do not need to memorise any equations.

All content based on COMBINED SCIENCE (no triple only content)

Resources to help you revise:

Physics and Maths Tutor: Free revision notes and practise past paper questions grouped by topic

https://www.physicsandmathstutor.com/physics-revision/gcse-aqa/

BBC bitesize: Free revision notes and quiz questions (scroll down to physics topics)

https://www.bbc.co.uk/bitesize/examspecs/z8r997h

Save My Exams: Some free access, some parts paywalled

https://www.savemyexams.com/gcse/physics/aqa/18/revision-notes/