Painsley Catholic College

Physics - Transition for Applied Science

Get ready for Applied Science!
A guide to help you get ready for your Physics topics in AQA applied science.
For any extra information please contact Miss Bradley,
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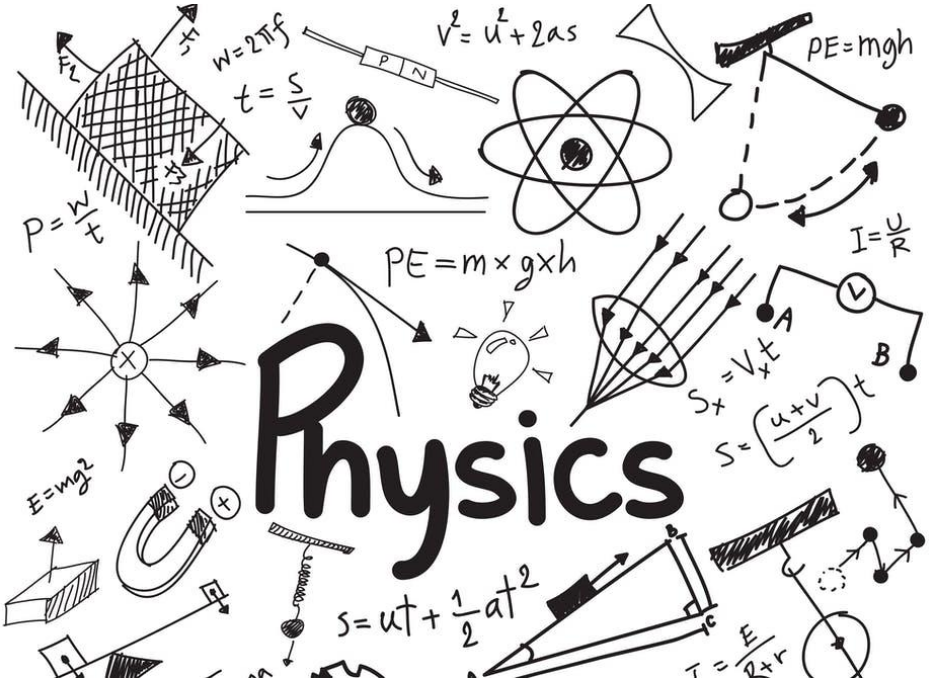
Specification link : https://www.aqa.org.uk/subjects/science/applied-general/science

What is included:

- Week 5 – Standard form, symbols and prefixes and rearranging formulae (30 mins)
- Week 5 - tasks 1-3 (2.5 hours)
- Week 6 – Scientific and investigative skills (10 minutes)
- Week 6 – task 1(2 hours 50 minutes)



Week 5 – Standard form, symbols and prefixes and rearranging formulae (30 mins)

At A level quantity will be written in standard form, and it is expected that your answers will be too. This means answers should be written as ….x 10^{y}. E.g. for an answer of 1200kg we would write 1.2 x 10^{3}kg. For more information visit:

www.bbc.co.uk/education/guides/zc2hsbk/revision

Task 1: (1 hour) complete the questions below

1. Write 2530 in standard form.
2. Write 280 in standard form.
3. Write 0.77 in standard form.
4. Write 0.0091 in standard form.
5. Write 1 872 000 in standard form.
6. Write 12.2 in standard form.
7. Write 2.4 x 10^{2} as a normal number.
8. Write 3.505 x 10^{1} as a normal number.
9. Write 8.31 x 10^{6} as a normal number.
10. Write 6.002 x 10^{2} as a normal number.
11. Write 1.5 x 10^{-4} as a normal number.
12. Write 4.3 x 10^{3} as a normal number.

Unlike GCSE, you need to remember all symbols, units and prefixes.

https://www.youtube.com/watch?v=xTgRCJQ6w48

Prefix	Symbol	Power of ten
Nano	n	x 10^{-9}
Micro	μ	x 10^{-6}
Milli	m	x 10^{-3}
Centi	c	x 10^{-2}
Kilo	k	x 10^{3}
Mega	M	x 10^{6}
Giga	G	x 10^{9}

Week 5 and Week 6 – Applied Science Transition work.

Below is a list of quantities you may have already come across and will be using during your Applied Science course.

Quantity	Symbol	Unit
Velocity	v	ms^{-1}
Acceleration	a	ms^{-2}
Time	t	S
Force	F	N
Resistance	R	Ω
Potential difference	V	V
Current	I	A
Energy	E or W	J
Pressure	P	Pa
Momentum	p	$kgms^{-1}$
Power	P	W
Density	ρ	kgm^{-3}
Charge	Q	C

Task 2: (1 hour)

Using the 2 tables above, solve the following:

1. How many metres in 2.4 km?

2. How many joules in 8.1 MJ?

3. Convert 326 GW into W.

4. Convert 54 600 mm into m.

5. How many grams in 240 kg?

6. Convert 0.18 nm into m.

7. Convert 632 nm into m. Express in standard form.

8. Convert 1002 mV into V. Express in standard form.

9. How many eV in 0.511 MeV? Express in standard form.

10. How many m in 11 km? Express in standard form.

Rearranging formulae is something you will have done at GCSE and it is crucial you master it for success at A level.

For a recap of GCSE watch the following links:

www.khanacademy.org/math/algebra/one-variable-linear-equations/old-school-equations/v/solving-for-avariable

www.youtube.com/watch?v=_WWgc3ABSj4

Task 3: (30 mins) Rearrange the following:

1. GPE = m x g x h to find h

2. Q = I x t to find I

3. KE = ½ m v^2 to find m

4. KE = ½ m v^2 to find v

5. v = u + at to find u

Week 6 – Scientific and investigative skills (10 mins)

As part of your A level you will complete practical assessments as part of the coursework element of the Applied Science Course. This will require you to carry out a series of practical activities as well as planning how to do them, analysing the results and evaluating the methods. This will require you to:

- use appropriate apparatus to record a range of quantitative measurements (to include mass, time, volume, temperature, length and pH),
- use appropriate instrumentation to record quantitative measurements, such as a colorimeter or photometer, use laboratory glassware apparatus for a variety of experimental techniques to include serial dilutions, use of light microscope at high power and low power, including use of a graticule, produce scientific drawing from observation with annotations,
- use qualitative reagents to identify biological molecules, separate biological compounds using thin layer/paper chromatography or electrophoresis, safely and ethically use organisms, use microbiological aseptic techniques, including the use of agar plates and broth, safely use instruments for dissection of an animal organ, or plant organ, use sampling techniques in fieldwork.

Task: (2 hours 50 minutes)

Produce a glossary for the following key words:

accuracy, anomaly, calibration, causal link, chance, confounding variable, control experiment, control group, control variable, correlation, dependent variable, errors, evidence, fair test, hypothesis, independent variable, null hypothesis, precision, probability, protocol, random distribution, random error, raw data, reliability, reproducible, systematic error, true value, validity, zero error.