St Mary Redcliffe and Temple School

St Mary Redcliffe and Temple School Sixth Form

Year 11 Into Year 12 Transition Task

Subject: Physics OCR A

SMRT Sixth Form takes students from a wide range of schools who have studied a variety of GCSE syllabuses. We want to ensure that everybody is equally able to access the content of the A Level and so the following tasks give you a chance to ensure you are fully prepared.

To ensure you are ready to fully access the A Level Syllabus you should attempt these tasks:

There are 3 introduction videos you need to watch and make notes about.

Introduction to Maths for A-level Physics
www.alevelphysicsonline.com/introduction-to-maths-for-physics
Introduction to Force and Motion
https://www.alevelphysicsonline.com/introduction-to-forces
Introduction to Electricity
https://www.alevelphysicsonline.com/introduction-to-electricity

Now use the knowledge you have recapped to answer the following questions:

1. Complete the table transforming units from GCSE format to A-level format

Quantity	GCSE Format	A-level Format
Speed	m/s	
Acceleration	m/s^2	
Current	C/s	
Energy	$kg\ m^2 / s^2$	
Pressure	N / m^2	
Voltage	J / C	
Power	J / s	
Density	kg / m^3	
Gravitational Field Strength	N / kg	
Electric field strength	V / m	
Momentum per unit volume	$kg / m^2 / s$	
Specific Heat Capacity	J / kg / °C	

2. Round the following values to the required number of significant figures

   a. The mass of a sample is 0.004567 kg.
   Give your answer to 2 significant figures.

   b. A car travels at a speed of 123.456 m/s.
   Round this speed to 3 significant figures.

   c. The energy transferred is 98765 J.
   Write this value to 2 significant figures.

   d. The time taken for a reaction is 0.000789 s.
   Give your answer to 3 significant figures.

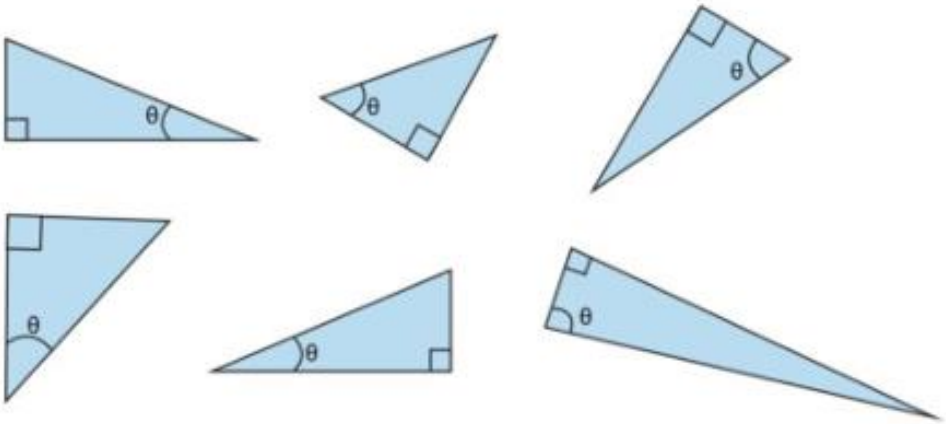
   e. A force of 0.05678 N is applied.
   Round this to 2 significant figures.

   f. The volume of a gas is 345.67 cm^3.
   Give your answer to 3 significant figures.

   g. The current in a circuit is 0.009876 A.
   Write this to 2 significant figures.

   h. The wavelength of light is 6.54321×10^{-7} m.
   Round this to 3 significant figures.

3. Label the sides opposite, adjacent and hypotenuse in each of the right-angle triangles.

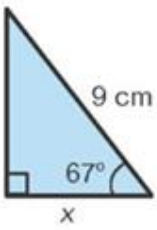


4. Calculate the mixing length x

1)

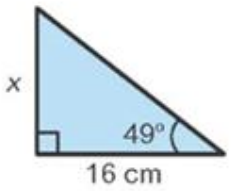
x = _____

2)



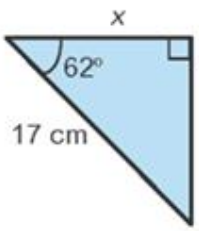
x = _____

3)



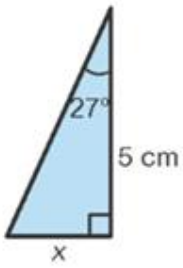
x = _____

4)



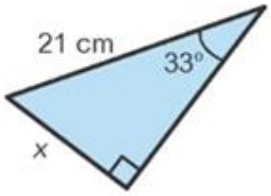
x = _____

5)



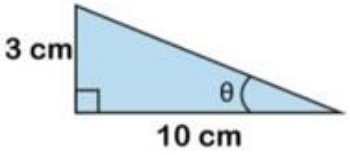
x = _____

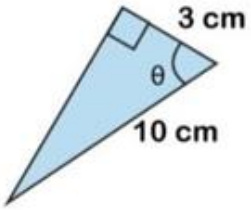
6)

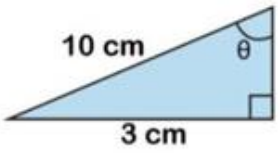


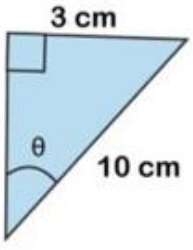
x = _____

5. Calculate the missing angle, θ, for each triangle.









6. Rearrange the following formula:

Need support?

a) Make **I** the subject

$V = IR$

b) Make **d** the subject

$W = Fd$

c) Make ***u*** the subject

$v = u + at$

d) Make ***m*** the subject

$F = ma$

e) Make ***v*** the subject

$KE = \frac{1}{2}mv^2$

f) Make ***t*** the subject

$s = \frac{1}{2}at^2$

g) Make ***n*** the subject

$pV = nRT$

h) Make ***k*** the subject

$f = \frac{1}{2\pi}\sqrt{\frac{k}{m}}$

i) Make ***a*** the subject

$v = \sqrt{u^2 + 2as}$

Important information regarding the entry requirements for A level Physics

The entry requirement to study A Level Physics are:

- 65 in Combined Science and a 6 in Maths

OR

- A 6 in Separate Physics and a 6 in Maths

What if I fall just short of this requirement?

In the unfortunate scenario that your grade awards are just short of these entry requirements (e.g. you are awarded a 55 in Combined Science or a 5 in Separate Physics/Maths) then you will be required to pass a 1-hour entrance test to gain acceptance onto the course.

The questions in the test will be common GCSE exam style questions and will require you to complete tasks such as using formula to calculate quantities, defining quantities and writing explanations.

Should you need to do this test it is important that you prepare thoroughly, and it is suggested that you treat it like a normal GCSE assessment (don't forget to practice those past paper questions). The material chosen for the test is common to all exam boards so you can use your revision resources from the last two years.

Below is a list of the topics that you would need to revise to be fully prepared for the test:

1. Forces and Motion
    a. Velocity-time graphs
    b. Resultant forces
    c. Kinetic and gravitational potential energy
    d. Momentum
2. Electrical Circuits
    a. Series and parallel circuits
    b. Resistance
    c. Ohm's law
3. Wave properties
4. Maths skills
    a. Selecting and rearranging equations
    b. Calculating the gradient of a line
    c. Calculating a mean average
    d. Plotting data on a graph