

A level summer home learning

Summer home learning instructions;

1) Maths test

- a. This is designed so you can prepare for the maths requirement in AS and A2 physics. You are allowed to research and take your time. Due to the nature of this task we will be expecting nearly 100% on this test. Any student who falls below expectations will be expected to attend after school maths sessions and complete a re-test.

2) Quantum physics research task,

- a. You are to research the following terms or particles, providing a definition or information on structure and classification
 - i. Proton
 - ii. Neutron
 - iii. Electron
 - iv. Muon
 - v. Pion
 - vi. Anti-proton
 - vii. Positron
 - viii. Hadron
 - ix. Baryon
 - x. Lepton

3) Electricity task, make a GCSE revision pack for electricity, include;

- a. Definitions
- b. Symbols
- c. Trends
 - i. Series and parallel
 - ii. Ohmic and non-ohmic
- d. Components
 - i. Diode
 - ii. Thermistor
 - iii. LDR
 - iv. Capacitor* (not GCSE)

This piece of work needs to be handed in the first lesson of the 2nd week back (week beginning the 14th September)

Take your time and care over it and good luck.

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NAME:

SCORE: / 38

Percentage (%):

Question 1: Re-arranging Equations

Make X the subject of the equation

a) $Y = X - 7$ [2]

b) $Y = X \div 4$ [2]

c) $Y = X^2$ [2]

d) $y = \frac{8}{x-2}$ [2]

e) $Y = \frac{1+6X}{4X}$ [2]

Question 2: Using your calculator

a) 8.3^3 to 1 d.p (2)

b) $\sqrt{24} + 5.2$ to 2sf (2)

c) $\frac{3.2+6.8}{2 \times 1.7}$ to 1 d.p (2)

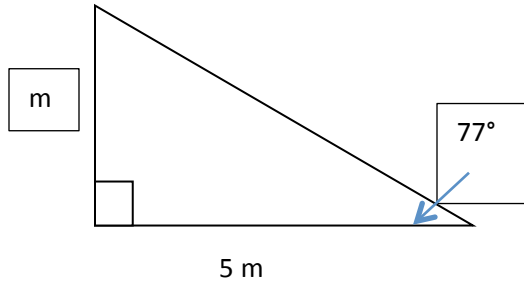
d) $\sqrt[3]{2300}$ to 3 sf (2)

e) If $m = 1.5 \times 10^5$ kg and $F = 2.1 \times 10^8$ N. What does 'a' equal if $F=ma$? (3)

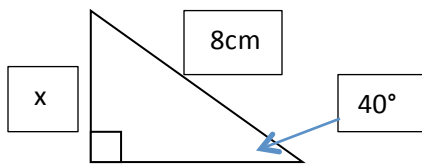
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Question 3: Trigonometry Find the missing lengths or angles (2 marks each)

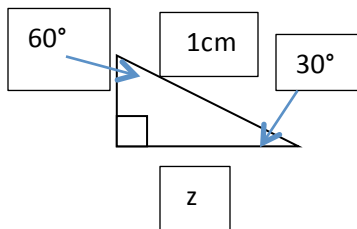
a)



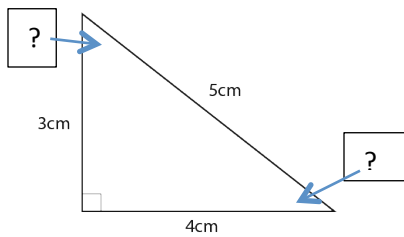
b)



c)

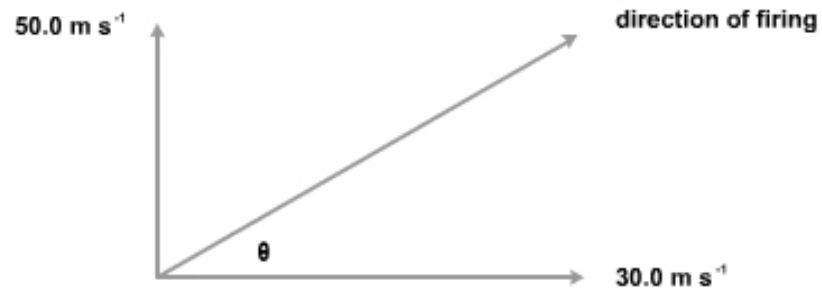


d)



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Question 4: Vectors



What is the vector
(magnitude and direction) of
the scenario in the picture?
[3]

Question 5: Logarithms and straight line graphs

A) If $N = N_0 e^{-hg}$ then using logarithms put it in to a linear equation **[2]**

B) Identify

- What would go on the Y axis? **(1)**
- What would go on the X axis? **(1)**
- What would the gradient be? **(1)**
- What would be the Y intercept? **(1)**