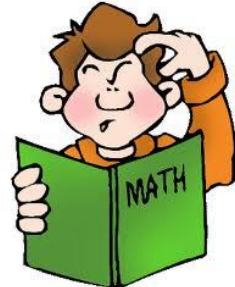


## A Level Maths Preparation

One of the most important things if you are to succeed at A Level Maths is to ensure you understand all the **algebra** you have met at GCSE. The purpose of this task is to check your understanding, and also to see if you can understand why students struggle with some of the higher level GCSE algebra concepts.


### The Task

- Choose **three** of the questions on the back of this sheet
- Create a PowerPoint that explains:
  - 1) How to do the question
  - 2) Any notes and comments that might be helpful to someone struggling with the question
  - 3) Common mistakes that people may make when answering a question like this
- Make sure you have one slide for each question – so your completed presentation will be three slides long



### How you will be marked

- You will be judged on:
  - How clearly you present your answer
  - How useful your notes are
  - How well you can anticipate what difficulties people may have
  - The overall quality and clarity of your presentation
  - The amount of effort you have put in
- Have your PowerPoints ready for the first lesson of term, and your teacher will tell you which email address to send it to

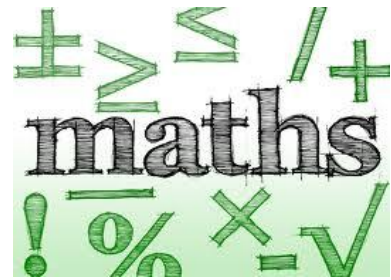
I <sup>2</sup>  
Maths

☺ Good luck! ☺

Choose any 3 of the following questions:

Solve  $\frac{y}{2} - \frac{y-1}{3} = 2$

Make  $T$  the subject of the formula  $W = \sqrt{\frac{3T+7}{2T}}$



The cost of sweets is £2 per kg. The cost of chocolate is £5 per kg.

Jim buys  $x$  kg of sweets and  $y$  kg of chocolate.

He buys at least 2 kg of sweets.

He buys at least 3 kg of chocolate.

He spends at most £20.

- a Write down 3 inequalities in  $x$  and/or  $y$ .
- b Draw a suitable graph and show, by shading, the region that satisfies all 3 inequalities.

Write  $4x^2 + 24x$  in the form  $a(x+p)^2 + q$ . State the values of  $a$ ,  $p$  and  $q$ .

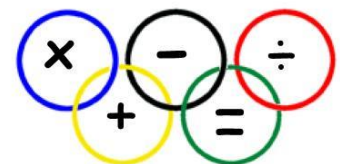
Show that any straight line that passes through the point  $(1, 2)$  must intersect the curve with equation  $x^2 + y^2 = 16$  at two points.

June 2006

- a Show that the equation  $\frac{5}{x+2} = \frac{4-3x}{x-1}$  can be rearranged to give  $3x^2 + 7x - 13 = 0$ .
- b Solve  $3x^2 + 7x - 13 = 0$ .  
Give your solutions correct to 2 decimal places.

Solve these simultaneous equations.

- a  $2x + 3y = 10$   
 $3x + 5y = 16$
- b  $5x + 4y = 8$   
 $2x - 3y = -6$



$3 \times \sqrt{27} = 3^n$  Find the value of  $n$ .

Calculate  $\frac{1}{\sqrt{2}+1} + \frac{1}{\sqrt{3}+\sqrt{2}} + \frac{1}{\sqrt{4}+\sqrt{3}} + \dots + \frac{1}{10+\sqrt{99}}$

Show that  $25 - \frac{(x-8)^2}{4} = \frac{(2+x)(18-x)}{4}$

Prove that  $(3n+1)^2 - (3n-1)^2$  is a multiple of 4, for all positive integer values of  $n$ .