

Summer Assignment Y11 into Y12: Mathematics

Context:	<p><i>This task is preparation for the Mathematics AS level. You will be given a workbook called “preparation for AS/A level Mathematics” and you will re-cap knowledge for GCSE</i></p>
Task:	<p>Task 1: Preparation for AS/A level Maths</p> <ul style="list-style-type: none"> - <i>You should aim to complete this entire booklet over the course of the summer and this will be checked on your first day back. Please use MathsWatch as a resource if you are unsure or need reminding of any topics.</i> <p><i>Username: Your surname followed by first initial of your first name</i> <i>School id: globe</i> <i>Password: globe123</i></p> <p>Task 2: Presentation</p> <ul style="list-style-type: none"> • <i>Choose three of the questions on the back of this sheet</i> • <i>Create a PowerPoint that explains:</i> <ol style="list-style-type: none"> 1) <i>How to do the question</i> 2) <i>Any notes and comments that might be helpful to someone struggling with the question</i> 3) <i>Common mistakes that people may make when answering a question like this</i> • <i>Make sure you have <u>one slide for each question</u> – so your completed presentation will be three slides long</i> <p>STRETCH: <i>Complete all questions on the back of this sheet</i></p>
Resources required:	<ol style="list-style-type: none"> 1) <i>Preparation for AS/A level Mathematics Revision workbook</i> 2) <i>Worksheet with questions</i>
Expectation for completed work (e.g word count, note format, reading record etc.)	<p><i>The entire booklet you are given should be completed over summer</i></p> <p><i>For your presentation, You will be judged on:</i></p> <ul style="list-style-type: none"> - <i>How clearly you present your answer</i> - <i>How useful your notes are</i> - <i>How well you can anticipate what difficulties people may have</i> - <i>The overall quality and clarity of your presentation</i>

	- The amount of effort you have put in Have your PowerPoints ready for the first lesson of term.
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Choose any 3 of the following questions for your powerpoint:

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

2.

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

3.

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.

4.

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

5.

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.

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6.

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.

7.

Solve these simultaneous equations.

a $2x + 3y = 10$

b $5x + 4y = 8$

$3x + 5y = 16$

$2x - 3y = -6$

8.

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

9.

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

10.

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

11.

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