



Morecambe Bay Academy Transition Work: Mathematics

Name: _____ Due the first Maths lesson in September

Introduction

In order to prepare for taking A-level maths next year, you need to ensure you are fluent in all aspects of GCSE maths, particularly algebra, and you need to be able to approach problems with a confident, logical mindset.

Success in A-Level Mathematics relies on an excellent attitude to learning and commitment to your studies. Whilst you are completing this transition work, if you struggle with any of the content you need to seek help from website platforms you have used during your studies, [Corbett Maths](#).

Completed transition work will be entered into a draw to win a £10 amazon voucher.

Equipment needed

In addition to the usual equipment you were required to bring during your GCSEs you will need the following:

- 1) A lever arch folder, please note that this is not a normal slim folder but the ones which can hold 100s of pages.
- 2) A more advance calculator will be given to you in September. As part of the A-Level Mathematics course students are required to more powerful calculator that can solve complex equations and is invaluable when working with statistics.



Additional resources to help you prepare.

Please see below for a few extra ideas to help you prepare for A-Level Maths. You can scan the QR codes or click them to take you to the correct pages.

[Bridging the Gap](#)

An A-Level maths tutor who produces videos and online resources. This page gives you the basics and videos with a A-Level spin. We do not recommend paying £95 per hour for the 1-1 tuition.



[AMSP Transition to A-Level Essential Skills](#)

AMSP produce amazing resources and these were designed for students to complete independently and will develop fluency in the fundamental techniques and the key mathematical concepts that underpin A level Mathematics.



[TL Maths](#)

This person produces very good videos for A-Level maths and he has made a series of bridging videos to help with the transition.



Transition Work

This booklet needs completing – we have chosen topics seen at GCSE. Attempt all the questions, **showing full working out.** All questions should be marked in a different colour pen using answers from the video. If you struggle answering the questions, the video will take you through, step by step, how to do each problem. We will not look at these 2 chapters again as part of the course because they are just GCSE topics; however you may be assessed on them in your A-Level exams.

During your first lesson your teacher will ask to see the notes you have made, therefore ensure these are completed and marked in green pen. You can either print this off and write straight onto it or complete it on paper.



Video 3 - Adding/Subtracting Surds

1) $\sqrt{20} + \sqrt{180}$

2) $\sqrt{63} - \sqrt{28}$

3) $\sqrt{108} + \sqrt{72}$

Video 4 – Expanding brackets

1) $\sqrt{3}(\sqrt{2} + 5)$

Video 5 – Expanding brackets

1) $6(\sqrt{3} + \sqrt{6})$

2) $\sqrt{6}(\sqrt{15} - 2\sqrt{2})$



Video 6 – Expanding Double Brackets

1) $(2 + \sqrt{2})(3 - \sqrt{5})$

Video 7 – Expanding Double brackets

1) $(2 - \sqrt{5})(2 + \sqrt{5})$

2) $(\sqrt{2} + 1)(\sqrt{3} - \sqrt{5})$

3) $(2\sqrt{3} + 3\sqrt{5})(2\sqrt{2} - 3\sqrt{5})$

Video 8 – Rationalising the Denominator

1) Why is rationalising the denominator a good idea?

2) $\frac{1}{\sqrt{2}}$



Video 9 – Rationalising the Denominator

1) $\frac{2}{\sqrt{3}}$

2) $\frac{9}{2\sqrt{3}}$

Video 10 – More Complex Rationalising the Denominator

1) $\frac{1}{1+\sqrt{2}}$

2) What would multiplying by $\frac{1+\sqrt{2}}{1+\sqrt{2}}$ not work?

3) What mathematical property are you utilising here to eliminate the Surds from the denominator?

Video 11 – More Complex Rationalising the Denominator

1) $\frac{2}{\sqrt{2}+2}$

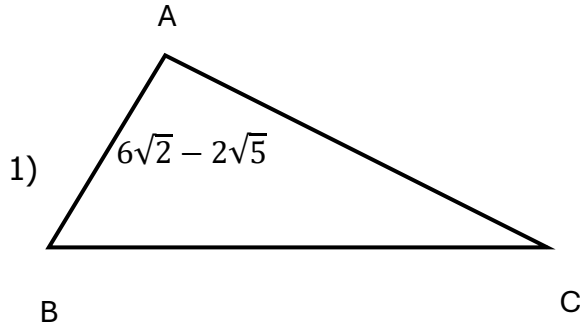
3) $\frac{1+\sqrt{2}}{3-\sqrt{2}}$

2) $\frac{3}{4-\sqrt{5}}$

4) $\frac{4+2\sqrt{3}}{3+3\sqrt{2}}$



Video 12 – Rationalising the Denominator Problem Solving



$\triangle ABC$ has area 5. Find the exact perpendicular height of the triangle

2) Rationalise the denominator of $\frac{1}{\sqrt{2} + \sqrt{3} - \sqrt{5}}$

Video 14 – More Examples of Solving Equations with Surds

Solve:

1) $\sqrt{2}(x - 3) = 4(x + \sqrt{2})$

2) $x - \sqrt{48} = 2\sqrt{3} - 2x$



Video 15 – Simultaneous Equations and Surds

Find the exact coordinates of intersection of the two lines:

$$y = \sqrt{2}x + \sqrt{3} - 2$$

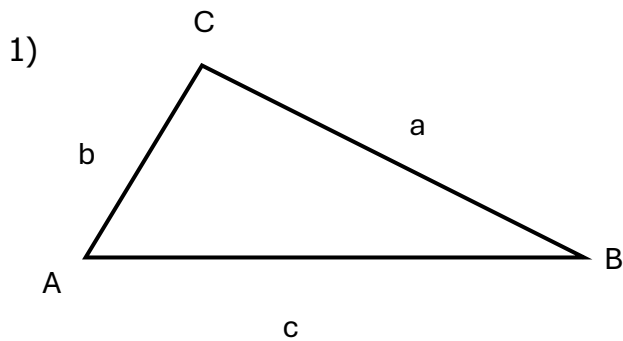
$$y = \sqrt{3}x + \sqrt{3} - \sqrt{6}$$

Video 16 – Prove a Surd is Larger than 2

Prove that $\frac{1}{3\sqrt{2}-4} > 2$

Triangle Geometry

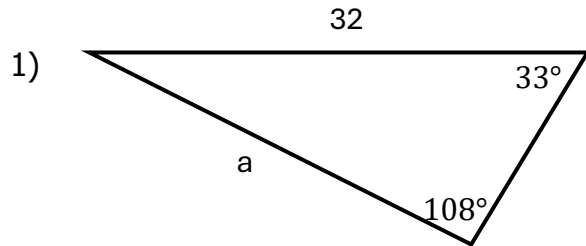
Video 1- Proof of Sine Rule



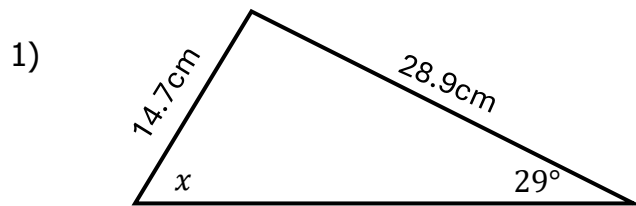
Click or Scan the QR to take you to a full playlist for the videos (you will need to skip the 1st 6 videos)



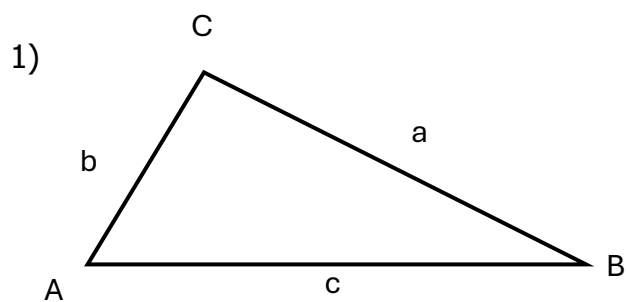
Video 2 - Using the Sine Rule



Video 3 – Two triangles



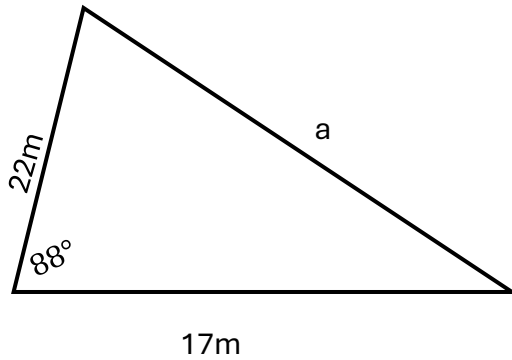
Video 4 – Proof of Cosine Rule



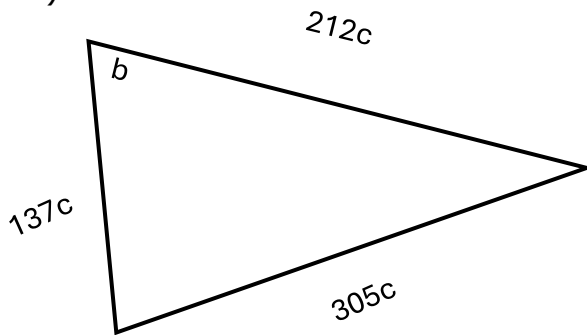


Video 5 – Using the Cosine Rule

1)

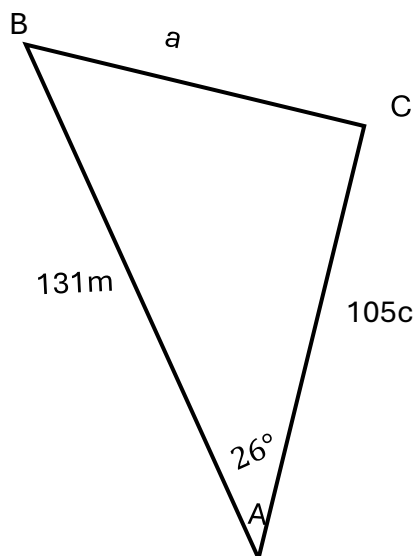


2)



Video 6 - Find all the missing sides and angles of a triangle

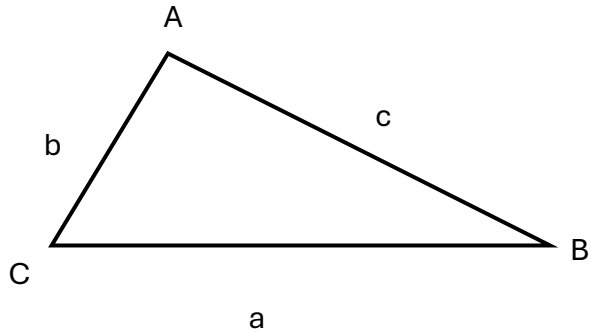
1)





Video 7 - Proof of area of a triangle

1)



Video 8 - Finding the Area of Triangles

1)

