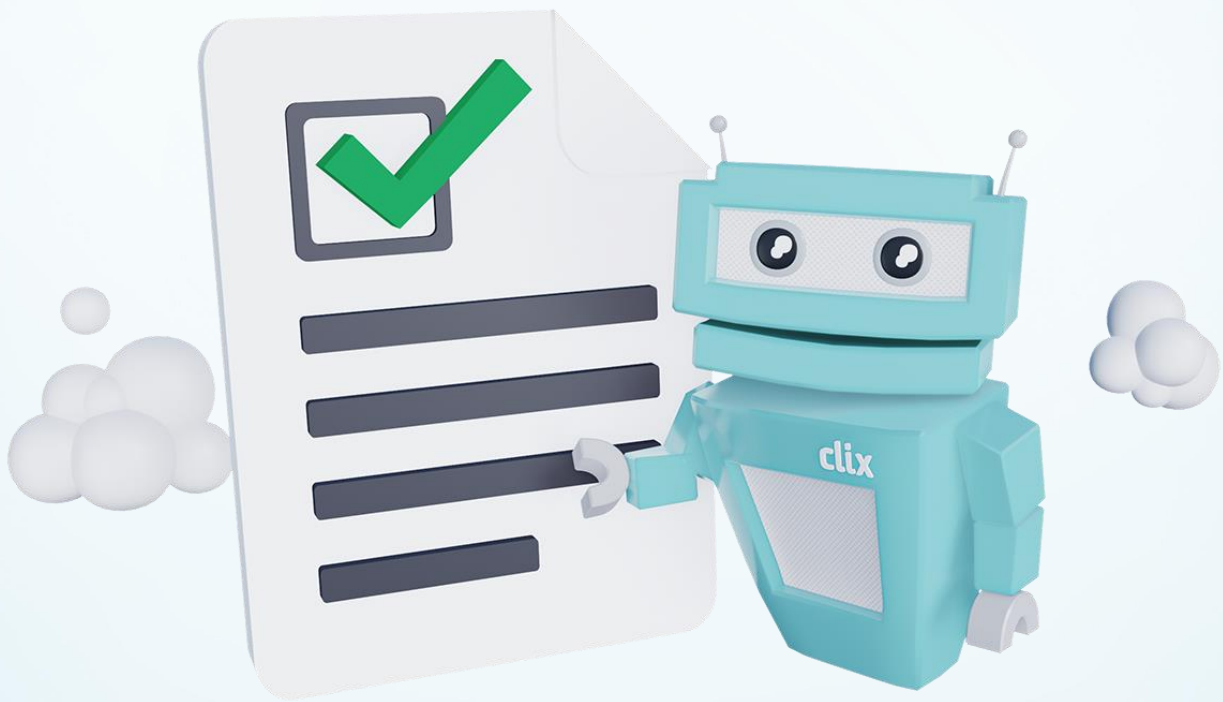# studyclix.ie
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Maths

How to get a Distinction in Junior Cycle Maths

by Stephen Begley

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Introduction

Junior Cycle Maths is a busy course which seeks to turn you into an all-rounder mathematician – one that can deal with mathematical ideas and concepts and then apply these to problem solve. Its goal is to teach you to work with the main concepts of Algebra, Geometry, Number, Functions, Probability & Statistics and then push you to use these ideas to find the solutions to problems. The exam is dynamic and varied meaning you will get some very direct and straightforward questions where you just apply mathematical procedures, but also it will have some busy problems for you to apply your knowledge to tackle. It can be tricky but no need to stress. This guide will highlight everything you need to know and do in order to succeed in maths!

How Is Maths Assessed?

You will be assessed in four main ways throughout Junior Cycle – CBA1, CBA2, The Assessment Task and the Final Exam. You will complete two CBAs; one in 2nd year and one in 3rd year. Each CBA will be graded by your class teacher, who will give you one of the following descriptors for your work: Below Expectations, In-line with Expectations, Above Expectations or Exceptional.

The Assessment Task and Final Exam is corrected by Examiner for the State Examinations Commission, and these will form your overall grade for the subject. This grade can be either a Distinction, Higher Merit, Merit, Achieved, or Partially Achieved. Your overall grade will appear on your Junior Cycle Profile of Achievement along with your two CBA grade descriptors.

The CBAs

Maths CBAs are quite different to those for other subjects and so can appear daunting at first. You are asked to carry out two investigations: a Mathematical Investigation (CBA1) in 2nd year and a Statistical Investigation (CBA2) in 3rd year. These are quite broad projects and can sometimes appear daunting, but never fear! Both investigations can be nicely broken down into simple steps that you can follow in order to complete your CBA!

CBA 1- Mathematical Investigation

Here you will be asked to create a Mathematical Investigation by following the Problem-Solving Cycle as outlined below. You are asked to come up with a mathematical problem, question or investigation that you will work on over a three-week period in class. Then, you will create a report in a format of your choice to present your project, in approximately 400-600 words. You will complete this CBA in 2nd year.

In a nutshell here are the steps for the Problem-Solving Cycle used for CBA1:

→ Define a maths problem

→ Break it into manageable parts and steps

→ Translate the problem into maths

→ Follow your steps in order to work with the problem & try to solve it

→ Explain your findings and solutions

Examples include:

- Investigate the cheapest box designs/layout for 24 golf balls.
- How much will it cost to complete a bedroom\kitchen makeover?
- What's the quickest route to my locker?
- Is there a relationship between the area & perimeter of a particular shape?

CBA 2 – Statistical Investigation

This CBA is a Statistical Investigation where you will follow the Statistical Enquiry Cycle, as outlined below, to try to answer a statistical question. Over a three-week period in class, you will come up with a statistical question and work using statistical methods to try and answer it. You must create a report for your CBA in a format of your choice, in roughly 650-800 words. This CBA is complete during the first term of 3rd year. CBA 2 will be the basis of the Assessment Task which you will complete in class after your finish the CBA.

Here's a snapshot of the steps involved in using the Statistical Enquiry Cycle in CBA 2:

→ Come up with a statistical question

→ Plan and collect your data

→ Organise and manage your data

→ Analyse your data using graphs

→ Analyse your data using numerical summaries

→ Answer your statistical question based on the above analyses

→ Write a conclusion for your investigation

Examples include:

- Who can run faster boys or girls?
- Do rural or urban students have a higher screen time?
- Do boys or girls have more pets?
- An analysis of the distance people travels in a car per week.

The Assessment Task

After you complete CBA2 you will complete the Assessment Task. This task is common to Higher & Ordinary level and is worth 10% or 30 marks of your overall Junior Cycle Maths Grade. This will be combined with your final exam which is worth the remaining 90%.

The Assessment Task is based on CBA2 which will be completed across two single classes following the completion of CBA2. So, it's worth your while putting a big effort into your CBA2 and knowing your project inside out. A reminder that the main work in CBA2 is to complete a Statistical Investigation which involves posing a question, gathering and analysing data and interpreting your data. The idea of the statistical inquiry cycle is the basis for this CBA, so it's a good idea to familiarise yourself with it to prepare for the task.

The Assessment Task you will ask you to:

Review a statistical investigation: its design, validity, structure, analysis and conclusions. With this, you will need to know what a good investigation looks like so you can comment on it appropriately.

Apply your learning: completing your own statistical investigation to an unseen statistical situation and data. With that, you will need to brush up on different types of graphs and statistical calculations (mean, mode, median & range).

Reflect on the skills: you have learned and developed while completing CBA 2. The ball is in your court for this part to know what skills you used and learned throughout the process. You certainly can prepare for and study this before you complete the Assessment Task.

The Final Exam

The Final exam is worth 90% of your overall Junior cycle Maths grade. This exam will take place on the first Friday afternoon of the timetabled Junior cycle exams. It is a 2-hour exam worth 270 marks.

Preparing for the exam

The course contains a 'Unifying Strand' whose job is to link together topics into problems and questions pulling from several areas. Practice, practice and more practice with exam-style questions will get you used to this type of questioning. This along with a can-do attitude will see you flying it in the exam! The exam will have a mixed bag of questions from direct and straightforward calculations to more challenging and thought-provoking problems.

How to study for Maths

Make a plan

Narrow down the topics and sections you need to work on and build your plan around these. Use your chapter tests, Christmas tests and summer tests to see what needs work. Don't say you're going to study 'Algebra' tonight, narrow

it down to something specific such as 'factorising quadratics' or 'adding algebraic fractions and work specifically on that area. Each study session should focus on one idea or subtopic – don't try and bite off more than you can chew. Small, targeted bursts of revision done often are the key to success.

Practicing questions = studying maths

It is as simple as that. The most effective way to study a section is to practice questions on it. Now I don't mean do all the easy questions on a section and build a false sense of security. I mean for you to start on the basic questions and then quickly progress on the more difficult ones. When you struggle with a question and push/work through it to the end is where the learning will happen. Start with questions in your textbook then move on to the exam paper questions. Regularly practicing exam-style questions will get you into the habit of their layout and the level of challenge expected.

Don't over-rely on the marking scheme

When practicing questions don't over-rely on the marking scheme. I often see students just copy a marking scheme to complete a question and this is a poor study habit. As you are copying a solution and not thinking of it

yourself you are losing out on the important learning in between. The best way to utilise a marking scheme is to first attempt the question yourself. Then, if you reach a point where you cannot go forward look at the marking scheme to get to the next step. Then put the marking scheme away and try to work from there. That way you identify the exact step you don't

understand and will learn from that. Then continue the question and repeat the above steps if necessary.

Avoid over-reading notes

Reading pages of notes is not a very effective way to study. In my years of studying myself just reading notes doesn't equip you to fully solve a question. While you may need to read over an example first to help you work on a question, your focus should be on getting stuck into working on questions.

Start by looking at worked examples

Unsure how to start studying a section you know nothing about? Here is some advice. I would start by looking at a worked example in your textbook or notes. Read through the question and solution and try to make sense of it. Then, cover the solution and write out the question. Then, on your own, try the question. If you get stuck, look at the next step in the example, then try proceeding from there. Repeat if necessary. Then, move on to the questions after the example which will be similar in style. If you run into difficulty and can't figure it out; ask your teacher, a friend, or the internet. Don't give up – maths is full of challenging parts and it's all about keeping going, pushing forward and asking for help when you need to.

Utilise your resources to study

If you don't understand something and can't figure it out after trying to study it, you have so many resources available. Don't just leave it, we want to leave no stone unturned in our study.

So, if you need help you can:

- Check if your textbook has a worked example on it

- Ask your teacher – they will only be delighted to help you with any questions

- Ask a friend – they might be able to explain it to you

- Search online for the question or section you're struggling with. There are millions of maths videos out there that can help.

Tips on how to prepare

Algebra is your new bestie

Whether you know that or not. Algebra is one of the most important chapters to have on your side as it can seep into several questions on the exam. Algebra comes into almost every chapter of the course, so it really is unavoidable. Prioritise algebra in your study!

Get to know your calculator

While there are lots of brands of calculators, I am personally on team Casio. Its features are clear and easy to use. Make sure you know the ins and outs of your calculator such as fractions, decimals, degrees minutes seconds, mixed/improper fractions, functions tables and so on. Being confident in using your calculator will mean no time lost in the exam inputting calculations or trying to figure things out.

Use the log tables in your study

Familiarise yourself with finding the relevant formulas in your log tables. When you are working on a topic, have this section of the log tables open and ready to go. Many people don't know how to effectively use a log tables so, to build your confidence with them and to save time in the exam, get to know what is in there and use them in your study.

Noteworthy sections in the log- tables are:

- Area & Volume
- Co-ordinate Geometry
- Sequences & Series, Algebra
- Trigonometry
- Financial Maths
- Sets & Number Systems.

Rounding is important

You could potentially lose out on a distinction if your rounding game is weak. Highlight when a question asks you to round so you don't forget to. Know how to round to the nearest whole number, to one and two decimal places and to different significant figures. Similarly, know scientific notation in case a question wants an answer in this form.

Leave no stone unturned

As the exam has no set structure or sections, that means everything on the course is examinable. Start your study by focussing on the main chapters, then move on to the smaller nitty gritty bits.

The Final Exam

Exam Layout

The Maths exam takes place over a 2-hour period and has no fixed number of questions.

You will be given log tables at the start of the exam by the examiner

The exam is worth 270 marks in total and is worth 90% of your grade.

Questions vary in length from one to several parts and can cover a single topic or a mix of topics.

How many questions are there?

There are usually around 14 questions, but some years may have, and they cover the entire course. The questions are of varying length with some of them having a single part to them, while others can have up to 4 or 5 parts. Usually, if a question has many parts, they tend to get more difficult as the question goes on.

How long should I spend on each question?

Usually, if a question has many parts, they tend to get more difficult as the question goes on. Each question will have a 'Suggested Maximum Time" which I recommend you try your best to stick to. If you follow these times, it will leave you with an extra 10 minutes to check over your exam and spend some more time on parts that need it.

What will my exam paper look like?

Each part will have an answer box for your solution & answer to the question. Every topic covered from 1st – 3rd year can come up in the exam so my advice is to study them all.

Will I know how many marks a question is worth?

The exam paper will not state the marks awarded for each question though it is worth knowing that a single part of a question can range from 5 to 20 marks. The exam paper will have questions based on individual topics and topics mixed. There are always going to be encouraging and straightforward questions and some trickier, problem-solving-style ones that can pull from several topics.

Final Exam Tips

Present your work in a neat, well- laid out format

While you won't gain any extra marks for having tidy work, the examiner will certainly be in good form correcting clear and well-presented work.

You can give multiple answers to a single question

For example, say you have two possible solutions for a question and aren't sure which one is correct – leave both. The examiner will give you marks for the correct one.

Show your work

The examiner can deduct marks from you if correct workings are not shown. You have ample time to show your workings so do so!

You don't get marks for just writing down a formula

You must substitute at least some correct values into it to get some marks.

Use your log tables

Double-check the formula you are using to make sure you have it taken down correctly. I've seen it many times that students take down something wrong in a formula which potentially means no marks.

Don't forget your units

For any lengths, areas, volumes, distances, speeds, angles and times. The examiner can take marks from you for not having the correct units.

Best of luck in the exam!
You will be great