# GETTING AHEAD

HSDC | ALTON

Start to develop skills that are relevant to your course before you join HSDC this September!

# Maths & Further Maths - A Level

Here is a selection of tasks you should do over the summer. To help remind you of the Maths you will need for A Level Maths (and Further Maths) please use the following links:
https://sites.google.com/site/tlmaths314/home/gcse-to-a-level-maths-bridging-the-gap

The TLMaths site has videos to help explain the following essential skills for studying A Level Maths (and Further Maths): Expanding Brackets, Factorising, Fractions, Indices, Rearranging Formulae, Simultaneous Equations, Solving Equations, Straight Line Graphs, Surds and Trigonometry. The videos will help bridge the gap between GCSE and A Level. Please watch them all, particularly those topics you are less confident about. If you are feeling more confident with a topic, you might like to listen to a question, do the question yourself, then listen to the solution to check you got it correct and completely understood the method. Once you've watched the videos, please go to https://amsp.org.uk/resource/gcse-alevel-transition-resources.

The AMSP link will help the transition from GCSE to A Level Mathematics and includes 6 topics Simplifying, Expanding, Factorising, Rearranging, Solving Equations and Sketching Graphs. The PDFs have investigations, puzzles, questions and solutions. Please have a go at all of the questions, etc., and then check your work to make sure you are answering them correctly. Some of them are straightforward and some of them are tricky. The PDFs also have links to further activities, including graphing apps, videos and TED talks. After you have completed the above work, please move on to the next page.

The first task below will remind you of skills from GCSE; the second task will extend your learning from GCSE. The Senior Maths Challenge questions will hopefully be fun but challenging and help improve your problem solving skills. If you're doing Maths, you only need to do 1 of these options, but you can do more if you wish. If you're also doing Further Maths, please do the Senior Maths Challenge and a poster. We'll display the best posters in your classroom when you start.

1. Produce a poster to help someone revise one of the following GCSE Maths topics:
a. Quadratic Equations

b. Simultaneous Equations
c. Trigonometry
d. Surds & Indices

2. Produce a poster to answer one of the following:
a. How many different ways can you solve $x^2 + 3x - 4 = 0$? Can you sketch the graph?
Can you generalise your methods to solve $ax^2 + bx + c = 0$? Can you sketch it?

b. How many different ways can you solve $3^x = 5$?
Can you generalise your methods to solve $a^x = b$?

c. What's the centre of the circle that passes through (6, 3), (−3, 6) and (−4, −2)?
Can you generalise the result, so the circle passes through (a, b), (c, d) and (e, f)?

d. What's the best prediction for someone's Paper 2 exam result if you know they got 78 in Paper 1, and you have the following data of other students' scores:

| Paper 1 - 76 91 73 98 93 98 91 82 91 64 67 89 73 91 |
|---|
| Paper 2 - 66 73 47 96 80 79 90 74 93 71 50 74 76 90 |

3. Go to https://www.ukmt.org.uk/sites/default/files/ukmt/senior-mathematical-challenge/SMC_2019_Paper.pdf and try last year's Senior Maths Challenge.

Produce a poster on one or some of the questions if you like!
Please bring your completed poster(s) to your first Maths lesson of the term.

**We look forward to seeing you all in September!**
For further information about your college and being a student at HSDC,
please visit hsdc.ac.uk/Alton