

The skills for a successful Further Mathematics student are no different to the skills required to be a successful A Level Mathematics student. The problems will differ as you won't always be directed to the method or area of mathematics needed to solve the problem. This means as a Further Mathematics student how you approach a problem is important.

In addition to completing the A Level Mathematics Summer Task, below are a selection of 3 questions that will allow you to see how developed your mathematical problem solving is. Each of the problems can be solved using your GCSE knowledge.

For each problem:

- Write down what you are doing at each stage to tackle the problem.
- Complete as much of the problem as you can.

Please submit all solutions in your first lesson.

Question 1

- (i) Show that you can make up 10 pence in eleven ways using 10p, 5p, 2p and 1p coins.
- (ii) In how many ways can you make up 20 pence using 20p, 10p, 5p, 2p and 1p coins?

Question 2

- (i) How many integers greater than or equal to zero and less than 1000 are not divisible by 2 or 5? What is the average value of these integers?
- (ii) How many integers greater than or equal to zero and less than 9261 are not divisible by 3 or 7? What is the average value of these integers?

Question 3

Solve the inequalities

- (i) $1 + 2x - x^2 > \frac{2}{x} \quad (x \neq 0),$
- (ii) $\sqrt{3x + 10} > 2 + \sqrt{x + 4} \quad (x \geq -10/3).$