Programming tutorials

- Sign up with https://www.codecademy.com/learn/learn-c-sharp; complete the tutorials. The first three tutorials, along with part of the fifth one, are the most useful in the first term of Year 12 but all are worth completing.
- Use the tutorials at https://www.learncs.org/en/Welcome. Tutorials 1-5 and 10-12 are the ones to use in the first term of Year 12 - particularly if you are finding the work challenging. The other tutorials are all useful as well.
- The first five tutorials at https://www.w3resource.com/csharp-exercises/ are the content covered at the start of Year 12. There are advanced tutorials here as well.
- The yellow book at https://www.robmiles.com/c-yellow-book/. This is an extensive book going from the basics of C# to material not on the A Level course (though that doesn't mean you can't use it when writing programs).
- https://exercism.org/tracks/csharp/exercises has a large range of exercises - ranging from simple to very challenging (some of the challenging ones use programming techniques not on the syllabus, but no harm in you finding out about them).

FutureLearn short courses - do whichever ones seem interesting to you. Some of the ones more relevant to the syllabus are:

- Introduction to databases and SQL
- Functional programming in Haskell
- Cryptography and digital certificates
- Mathematics for computer scientists

It does not use C#, but this University of Harvard course provides university level study in the subject: https://pll.harvard.edu/course/cs50-introduction-computer-science?delta=0

Programming practice and challenges

Complete the programming exercises (focus on a particular technique) and the programming challenges (harder, don't tell you what techniques you need to use and will require multiple techniques) available in your OneNote exercise book. For the challenges, revisit them once solved – see if you can come up with an alternative solution.

For further programming challenges use the websites:
https://projecteuler.net/about
https://www.olympiad.org.uk/problems.html

Logical thinking

These skills are essential to do well in this subject. Also, logic puzzles do appear on the exam papers. There are lots of logic puzzles you can complete including those found at:
https://www.bebras.uk/

Paper 1 skeleton programs

After the first term of Year 12, attempt the programming sections of AS Level Computer Science Paper 1s. Later in the year (when you have studied OOP) use the A Level Computer Science Paper 1s. These can be found in Teams.

In Year 13, spend a significant amount of time on practice questions for the skeleton program for your final exam.

NEA (Non-Exam Assessment)

During Year 13 most of your independent study time should be dedicated to project work.
In Year 12, you could start learning skills not on the syllabus that you might want to use in your project e.g. animation, GUI, AI techniques.

Do past exam questions – past papers can be found at https://www.aqa.org.uk/subjects/computer-science-and-it/as-and-a-level/computer-science-7516-7517/assessment-resources. AS and A Level exam papers are both useful.