



## L8 Summer Exam Topics

May 2018

### Topics

This list is not exhaustive and it appears in no particular order.

The written summer exam is (as your final exam will be) *calculator* but will **not** include Python or C#.

In terms of the Computing text book, you should expect questions from Chapters 13–36 inclusive. For the Discrete Maths, expect questions from Chapters 1–4.

The syllabus will be similar to the AQA AS Level (7516)[1] and elements drawn from the OCR Further Mathematics A (H235/Y534)[2]

### Computing — AQA 7516

#### Data representation

Number systems; Bits, bytes and binary; Binary arithmetic and the representation of fractions; Bitmapped graphics; Digital representation of sound; Compression, Hashing, Encryption; Floating point form

#### Computer Systems

Hardware and software; Role of an operating system; Programming language classification; Programming language translators; Logic Gates; Boolean algebra; Adders and D-type flip flops

#### Computer organisation and architecture

Internal computer hardware; The processor; The processor instruction set; Assembly language; Input-output devices; Secondary storage devices

#### Communication and networking

Communication methods; Network topology; Client-server and peer-to-peer; Wireless networking, CSMA and SSID; Communication and privacy; The challenges of the digital age

### Discrete Mathematics — OCR Y534

#### Mathematical Preliminaries

counting methods;  ${}^nC_r$ ; pigeonhole

#### Graphs and networks

terminology, Eulerian, Hamiltonian, planarity, digraphs



### Algorithms

measuring complexity; sorting algorithms; next-fit, first fit, first-fit descending binpacking problems.

### Network algorithms

least-weight paths; minimum spanning trees; Prim's, Kruskal's algorithms.

## References

- [1] AQA Computer Science (7516) AS Level Specification  
<http://www.aqa.org.uk/subjects/computer-science-and-it/as-and-a-level/computer-science-7516-7517/subject-content-as> AQA, 2015.
- [2] OCR Further Mathematics A <http://www.ocr.org.uk/qualifications/as-a-level-gce/as-a-level-gce-further-mathematics-a-h235-h245-from-2017/specification-at-a-glance/#as-level> OCR, 2017.