/Computing@Balcarras_

SUBJECT	YEAR	TERM
A-Level Computer Science (OCR)	**12**	**1**

UNIT

Representing Data

INTENT

PRIOR LEARNING (TOPIC) – GCSE Representing Data

At a base level, everything in computer science comes back to binary numbers. This unit explores how data can be represented using just 0s and 1s. We pick up from where GCSE left off, however, we are no longer content just dealing in representing simple numbers, i.e. positive integers. For instance, at A-level we start looking at how negative and decimal numbers are represented using techniques such as two's complement and floating points.	**Specification Points:** This unit covers point 1.4.1

FUTURE LEARNING (TOPIC): Boolean Algebra

IMPLEMENTATION	IMPACT
Throughout the unit pupils will cover: • Representing numbers in binary, including the use of sign and magnitude and two's complement. • The use of floating point to represent decimal numbers in binary. • Performing addition and subtraction in binary numbers, including floating point. • The use of hexadecimal numbers. • The use of bitwise operations, such as shifts and masks. • Representing text using ASCII and Unicode.	**Assessment:** Pupils will sit a 40 mark in-lesson assessment at the end of the unit, the score from which will be translated into an A* to E style grading. In addition to this, pupils will complete regular exam style questions both during lesson and as part of homework tasks.

HOW CAN PARENTS HELP AT HOME?

All course materials are available via Firefly. In the build-up to the assessment, parents can help by supporting their child's revision. This can include testing them using flash cards or simply getting them to explain topics to you.

HELPFUL READING/FURTHER DISCUSSION

READING/EXTRA-LEARNING	CAREERS	WIDER SKILLS
There are an enormous number of online courses and tutorials to help pupils develop their computer science skills further. Visit the Next Steps section of the Computing department's Firefly page for more details.	The skills / knowledge learnt in this unit lead perfectly into a wide range of careers including electrical engineering, networking and encryption.	Digital Literacy Numeracy Problem Solving Resilience

VOCABULARY

Mantissa, Exponent, Normalise, Sign and Magnitude, Two's Complement, Bitwise Mask, AND, XOR, OR, Logical Shift, Overflow, ASCII, Unicode, Character Set, Hexadecimal.