

GCSE COMPUTER SCIENCE

GCSE (8520)

UNIT 3.4



3.4 Binary arithmetic

Content	Additional information
Be able to add together up to three binary numbers.	<p>Students will need to be able to add together up to three binary numbers, using a maximum of 8 bits per number.</p> <p>Students will only be expected to add together a maximum of three 1s in a single column.</p> <p>Answers will be a maximum of 8 bits in length and will not involve carrying beyond the eight bits.</p>
Be able to apply a binary shift to a binary number.	<p>Students will be expected to use a maximum of 8 bits.</p> <p>Students will be expected to understand and use only a logical binary shift.</p> <p>Students will not need to understand or use fractional representations.</p>
Describe situations where binary shifts can be used.	Binary shifts can be used to perform simple multiplication/division by powers of 2.

SPECIMEN MATERIAL 2015

0	1	.	4	Explain how a binary number can be multiplied by 8 by shifting bits.	[2 marks]
<p>ASCII (American Standard Code for Information Interchange) is a coding system that can be used to represent characters. In ASCII the character A is represented by the numeric code 65.</p>					

PAPER 1 JUNE 2018

0 3

The following bit pattern represents a binary number.

00000110

0 3 . 1

What is the result of applying a left binary shift of 2 to this bit pattern? Express your answer as a bit pattern.

[1 mark]

0 3 . 2

The arithmetic effect of applying a left binary shift of 1 to a binary number is to multiply that number by 2.

State the arithmetic effect of applying a left binary shift of 3 to a binary number.

[1 mark]

0 3 . 3

What will be the arithmetic effect of left binary shifting a binary number by 4 and then right binary shifting the result by 5?

[1 mark]

PAPER 2 JUNE 2018

0 2

Add together the following three binary numbers and give your answer in binary:

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    01110101
    00100100
    +00010001
    _____
  
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[2 marks]