

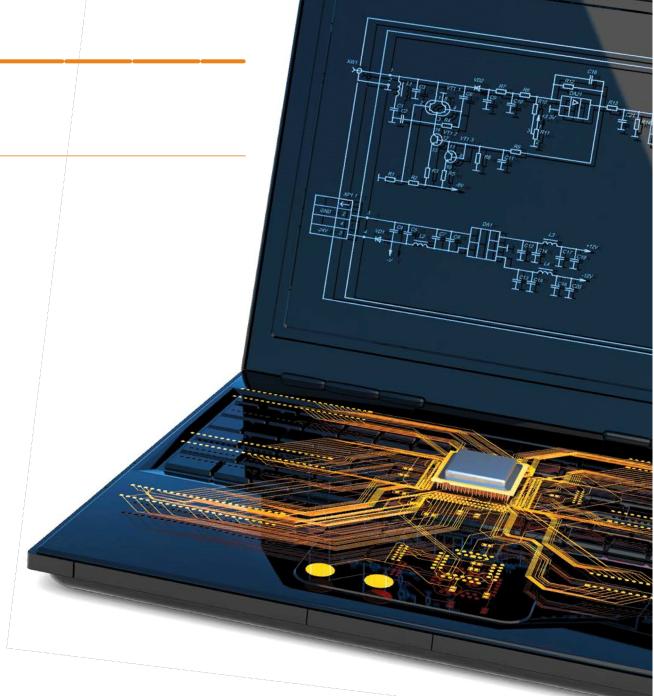




GCSE COMPUTER SCIENCE

GCSE (8520)

UNIT 3.4



3.4 Binary arithmetic

| Content | Additional information |
|---|---|
| Be able to add together up to three binary numbers. | Students will need to be able to add together up to three binary numbers, using a maximum of 8 bits per number. |
| | Students will only be expected to add together a maximum of three 1s in a single column. |
| | Answers will be a maximum of 8 bits in length and will not involve carrying beyond the eight bits. |
| Be able to apply a binary shift to a binary number. | Students will be expected to use a maximum of 8 bits. |
| | Students will be expected to understand and use only a logical binary shift. |
| | Students will not need to understand or use fractional representations. |
| 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 | |
| SPECIMEN MATERIAL 2015 0 1 . 4 Explain how a binary number can be a binary number | be multiplied by 8 by shifting bits. |
| | be multiplied by 8 by shifting bits. [2 marks] |
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PAPER 1 JUNE 2018

| 0 3 | The following bit pattern represents a binary number. |
|------|--|
| | 00000110 |
| 03.1 | What is the result of applying a left binary shift of 2 to this bit pattem? Express your answer as a bit pattern. [1 mark] |
| 03.2 | 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] |
| 03.3 | 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

| 02 | Add together the following three binary numbers and give your answer in binary: |
|----|---|
| | 01110101 |
| | 00100100 |
| | +00010001 |
| | |
| | [2 marks] |
| | |