0 1 . 1 **Table 2** lists five different quantities of memory, each measured using different units.

Place the quantities of memory into order by writing the numbers 1 to 5 in the **Position** column of **Table 2**, with 1 representing the smallest quantity and 5 representing the largest quantity.

[2 marks]

Table 2

Quantity	Position
3 kilobytes	
2 mebibytes	
2 bytes	
2 megabytes	
20 bits	

0 2 . 1 How many different values can be represented using two bytes?

[1 mark]

0 3 . 1 How many different values can be represented using 10 bits?

[1 mark]

0 4 . 1 Shade in **one** lozenge to indicate which of the following prefixes represents 10^6

[1 mark]

A kibi ⬭

B mebi ⬭

C gibi ⬭

D kilo ⬭

E mega ⬭

F giga ⬭

0 4 . 2 **Table 1** shows two unsigned binary integers, **Number 1** and **Number 2**.

Complete the table to show the result in binary of adding the two numbers.

You **must** complete the carry row to show the carry from the previous column where there is one.

Table 1

Number 1	0	0	0	1	1	0	1	1
Number 2	0	0	0	0	0	1	1	1
Result								
Carry								

[1 mark]

0 4 . 3 What is the result of subtracting the two's complement binary number `00100100` from the two's complement binary number `00011011`?

You should give your answer in two's complement binary.

You **must** show all your working in binary.

[2 marks]

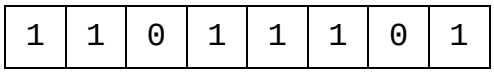
0 4 . 4 In **decimal**, what are the lowest and highest values that can be represented by an **8-bit two's complement** binary integer?

[1 mark]

Lowest: _____ Highest: _____

0 4 . 5 What is the **decimal** equivalent of the bit pattern shown in **Figure 1** if it represents an **unsigned fixed-point binary** value with two bits before the binary point and six bits after the binary point?

Figure 1



[2 marks]

0 5 . 1 The computer has 4 gibibytes of memory installed. How many kibibytes is this equivalent to?

[1 mark]

Answer _____

0 6 . 1 A digital camera takes photographs that are 4000 pixels wide by 3000 pixels tall and can contain up to 16 777 216 different colours.

Calculate the size of one image in megabytes.

[2 marks]

Answer _____ megabytes

0 7 . 1 The computer's address bus uses 36 wires/lines and each main memory location can hold a 16-bit data value.

In gibibytes, express the maximum amount of main memory that could be installed in the computer, assuming that the CPU could access all of the memory using the address bus.

You should show your working.

[2 marks]

Answer _____ gibibytes