

IGCSE Computer Science

Name: _____ Score: _____

1. How many bits does one hexadecimal digit represent?

☐ 16

☐ 1

☐ 4

☐ 8

2. Add the binary numbers '0101' + '0011'. Give the 4-bit result.

3. How many different characters can 7-bit ASCII represent?

4. How many bytes are in 1 kibibyte (KiB)?

_____ bytes

5. Convert binary '10010110' to denary.

6. Overflow in an 8-bit register happens when:

☐ the result is larger than 255 and needs a 9th bit

☐ the register is empty before the addition begins

☐ a bit is shifted right and falls off the end of the register

☐ one of the numbers being added is negative in two's complement

7. Compared with ASCII, Unicode:

☐ uses fewer bits per character, so text files become smaller

☐ uses exactly the same number of bits as ASCII for every symbol

☐ represents far more characters but uses more bits, so files are larger

☐ can only store English letters, digits and punctuation

8. An image is 100×100 pixels with a colour depth of 24 bits. What is its size in bits?

_____ bits

9. Convert denary 13 to binary (significant bits only).

10. A logical left shift by 1 multiplies an unsigned number by what?

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1. 4

One hex digit covers 16 values = a nibble = 4 bits.

2. 1000

$5 + 3 = 8 = \text{'1000'}$.

3. 128

7 bits give $2^7 = 128$ characters.

4. 1024 bytes

1 KiB = 1024 bytes (each storage unit steps up by $1024 = 2^{10}$).

5. 150

$128 + 16 + 4 + 2 = 150$.

6. the result is larger than 255 and needs a 9th bit

An 8-bit register holds 0–255; a bigger result needs a 9th bit that cannot fit, so it is lost.

7. represents far more characters but uses more bits, so files are larger

Unicode covers many languages and emoji, needing more bits – so the same text is larger than in ASCII.

8. 240000 bits

$\text{width} \times \text{height} \times \text{colour depth} = 100 \times 100 \times 24 = 240\,000$ bits.

9. 1101

$13 = 8 + 4 + 1 \rightarrow \text{'1101'}$.

10. 2

Each left-shift place multiplies by 2 (a right shift divides by 2).