1. Convert the **two** given hexadecimal values into denary.

29 ....

C8 ....[2]

Working space

....

....

....

2. Binary is a number system that is used by computers.

(a) Tick (√) **one** box to show whether binary is a base-2, base-10 or base-16 number system

**Tick
(√)**

☐ Base-2

☐ Base-10

☐ Base-16

[1]

(b) Hexadecimal and denary are number systems that can be used by programmers.
Convert these four hexadecimal values into denary values.

09 ....

10 ....

28 ....

A1 .... [4]

Working space

....

....

....

....

3. **a)** Denary is a number system that is used by programmers.

Tick (✓) **one** box to show whether denary is a base-2, base-10 or base-16 number system.

Tick
(✓)

☐ Base-2

☐ Base-10

☐ Base-16

[1]

(b) Hexadecimal values can be used to represent denary values.

Convert these four hexadecimal values into denary values.

05   ....

20   ....

1A   ....

AB   ....   [4]

Working space

....

....

....

(c) Hexadecimal values can also be converted to binary values.

Tick (✓) one box to show the correct 8-bit binary value for each hexadecimal value.

(i) Hexadecimal value 25   [1]

Tick
(✓)

☐ 00011001

☐ 00100101

☐ 10100001

(ii) Hexadecimal value 1B

Tick
(✓)

☐   00011011

☐   10110001

☐   00011010

(d) (i) Give **one** way that hexadecimal is used in website development.

....[1]

(ii)   Give **one** way that hexadecimal is used in low-level programming.

.... [1]

4. A sports stadium has an electronic counter that counts each person that enters the stadium.
The count is stored as binary in a 16-bit register.
A denary value of the count is displayed on a screen at the entrance.

(a) The screen currently displays:

| 0 | 0 | 7 | 1 |

Give the binary value that is stored in the register to display the count shown.

Binary value: ....

Working space

....

....

....[2]

(b) More people enter the sports stadium and the screen now displays:

| 0 | 2 | 5 | 7 |

Give the binary value that is stored in the register to display the count shown.

Binary value: ....

Working space

....

....

....[2]

(c) After everyone has entered the stadium, the register stores the binary value:

0000001000000100

Show what the screen will display when this binary value is stored

Unit 1.1 Number Systems

Display:

| |
| |

Working space [1]

....

....

....

....

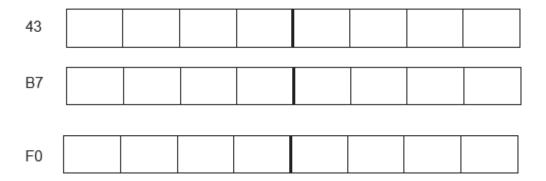**5.** Ron is attending a music concert. He has bought three tickets.

Each ticket number is displayed as a hexadecimal number.

Complete the table to show the **12-bit binary** values and the **Denary** values for each Hexadecimal ticket number.

Hexadecimal ticket number	12-bit binary value	Denary value
028		
1A9		
20C		

[6]

Working space

....

....

....

....

6.   The hexadecimal colour code #**43B7F0** is stored in three **8-bit** registers.

Give the **8-bit binary** values for each part of the hexadecimal code.

43 | | | | | | | | |
|---|---|---|---|---|---|---|---|

B7 | | | | | | | | |
|---|---|---|---|---|---|---|---|

F0 | | | | | | | | |
|---|---|---|---|---|---|---|---|

[6]