

3 A programmer is creating a computer game. One character is **not** moving correctly.

The programmer needs to debug the program. To do this they need to look at addresses that are locations in memory.

The addresses are displayed as hexadecimal numbers.

(a) One address is A2F.

(i) Convert the address to binary.

..... [3]

(ii) Convert the address to denary.

..... [1]

Working space

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(b) The binary number stored for another address is 000110011011.

(i) Convert the binary number to hexadecimal.

..... [3]

(ii) Convert the binary number to denary.

..... [1]

Working space

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(c) Give **one** reason why the addresses are displayed in hexadecimal instead of binary.

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..... [1]

(d) Identify **two** other ways that hexadecimal is used in computer science.

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2 [2]

(e) The health value for a character in the computer game can sometimes be a negative value. The negative values are stored as two's complement 8-bit integers.

A character has a health value of -25.

Calculate the two's complement 8-bit integer for -25. Show all your working.

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..... [2]