
1.2 Convert the binary number 1101.001 to decimal format.

Solution

The digits to the left of the decimal point are treated exactly as in problem 1.1. Thus,

$$1101 = 1 \times 2^3 + 1 \times 2^2 + 0 \times 2^1 + 1 \times 2^0 = 8 + 4 + 0 + 1 = 13$$

The numbers to the right of the decimal point are the multipliers of 2^{-1} , 2^{-2} , 2^{-3} , etc. Thus,

$$0.001 = 0 \times 2^{-1} + 0 \times 2^{-2} + 1 \times 2^{-3} = 0 + 0 + 0.125 = 0.125$$

Thus, the binary number 1101.001 in decimal format is 13.125

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