Convert the following numbers:
i) $(F\ 329)_{10}$ in to Binary
ii) $(1526.32)_{10}$ in to hexadecimal
iii) $(736.4)_{8}$ in to Decimal

## i) Convert $(F\ 329)_{10}$ in to Binary

To convert a decimal number to binary, you can repeatedly divide the decimal number by 2 and note the remainders. Reading the remainders from bottom to top gives the binary representation.

| Division | Quotient | Remainder |
|---|---|---|
| 329 ÷ 2 | 164 | 1 |
| 164 ÷ 2 | 82 | 0 |
| 82 ÷ 2 | 41 | 0 |
| 41 ÷ 2 | 20 | 1 |
| 20 ÷ 2 | 10 | 0 |
| 10 ÷ 2 | 5 | 0 |
| 5 ÷ 2 | 2 | 1 |
| 2 ÷ 2 | 1 | 0 |
| 1 ÷ 2 | 0 | 1 |

Reading the remainders from bottom to top, the binary representation of 329 is 101001001.

Therefore, $(F329)_{10}$ in binary is 101001001.

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## ii) Convert $(1526.32)_{10}$ in to hexadecimal

For the integer part, convert 1526 to hexadecimal:

| Division | Quotient | Remainder (Hexadecimal) |
|---|---|---|
| 1526 ÷ 16 | 95 | 6 |
| 95 ÷ 16 | 5 | F |
| 5 ÷ 16 | 0 | 5 |

Reading from bottom to top, the hexadecimal representation of the integer part is 5*F*6.

For the fractional part, convert 0.32 to hexadecimal:

| Multiplication | Result | Result (Hexadecimal) |
|---|---|---|
| 0.32 × 16 | 5.12 | 5 |
| 0.12 × 16 | 1.92 | 1 |
| 0.92 × 16 | 14.72 | E |

Combining the results, $(1526.32)_{10}$ in hexadecimal is 5*F*6.*E*.

## iii) Convert $(736.4)_8$ in to Decimal

To convert an octal number to decimal, you can use the positional value of each digit.

$(736.4)_8 = 7\times8^2+3\times8^1+6\times8^0+4\times8^{-1}$

$=448+24+6+0.5$

$=478.5$

Therefore, $(736.4)_8$ in decimal is 478.5.

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