# Main_7

## W

$1089_{10}$ OR $22_{16}$

$1089_{10}$ to base_2

| 1024 | 512 | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |

$1089_{10} = 10001000001_2$

$22_{16}$ to base_10

$22_{16} = (2 \times 16^1) + (2 \times 16^0)$

$22_{16} = 34_{10}$

$34_{10}$ to base 2

| 32 | 16 | 8 | 4 | 2 | 1 |
|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 1 | 0 |

$22_{16} = 34_{10} = 100010_2$

$W = 10001000001_2$ OR $100010_2$

| 1089_10 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
|---|---|---|---|---|---|---|---|---|---|---|
| 22_16 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| W = 1089_10 or 22_16 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 |

W to base_10

$W = 10001100011_2$

$1 \times 2^{10} ... + 1 \times 2^6 + 1 \times 2^5 ... + 1 \times 2^1 + 1 \times 2^0$

$1123_{10}$

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## X

$X = (00110001_2 \times 2A_{16}) - (01010000_2 \times 31_8)$

convert everything to base 10 then do the calulcations.

$00110001_2 = ...1 \times 2^5 + 1 \times 2^4 ... + 1 \times 2^0 = 49$

$2A_{16} = 2 \times 16^1 + 10 \times 16^0 = 42$

MINUS

Base 2 to Decimal

$01010000_2 = ...1 \times 2^6 ... + 1 \times 2^4 = 80$

Base 8 to base 16

$31_8 = 011_2 \ \ 001_2$

$0001_2 \ 1001_2 = 19_{16}$

Base 16 to decimal now

$19_{16} = (1 \times 16^1) + (9 \times 16^0) = 25$

$19_{16} = 25_{10}$

$X = (49 \times 42) - (80 \times 25)$

$X = (40 \times 42) + (9 \times 42) - (20 \times 80) + (5 \times 80)$

$X = 1680 + 378 - 160 + 400$

$X = 2058 - 2000$

$X = 58_{10}$

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$Y = 1175_8 \div 31_{16}$

$1175_8$ to base 16

$1175_8 = 001_2 \ 001_2 \ 111_2 \ 101_2$

$1175_8 = 0010_2 \ 0111_2 \ 1101_2$

$1175_8 = 27D_{16}$

$27D_{16}$ to base_10

$27D_{16} = (2 \times 16^2) + (7 \times 16^1) + (13 \times 16^0)$

$27D_{16} = 637_{10}$

$31_{16} = 3 \times 16^1 + 1 \times 16^0 = 49_{10}$

$Y = 637 \div 49 = 13$

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$Z = 189_{10}$ **AND** $57_{16}$

Base 10 to base 2

| 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |
|---|---|---|---|---|---|---|---|
| 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 |

$189_{10} = 10111101_2$

$57_{16}$ to base_10

$57_{16} = (5 \times 16^1) + (7 \times 16^0)$

$57_{16} = 87_{10}$

$87_{10}$ to base 2

| 64 | 32 | 16 | 8 | 4 | 2 | 1 |
|---|---|---|---|---|---|---|
| 1 | 0 | 1 | 0 | 1 | 1 | 1 |

$22_{16} = 87_{10} = 1010111_2$

$Z = 10111101$ or $1010111$

| 189 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 |
|---|---|---|---|---|---|---|---|---|
| 57 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 |
| W = 189 and 57 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 |

$00010101_2$ to base 10

$...1 \times 2^4 ... + 1 \times 2^2 ... + 1 \times 2^0$

$Z = 21_{10}$

## Timari’s Password issss…..

w = 1123

x = 58

y = 13

z = 21

✅ $1123581321_{10}$