Base 2^ 15, two’s compliment

Smallest = -16384 to 16383 (4000 – 3FFF) (\*100 0000 0000 0000 \*011 1111 1111 1111)

-1 7FFF (\*111 1111 1111 1111)

1 000001 (\*000 0000 0000 0001)

431 01AF 000 0001 1010 1111

+ -558 7DD2 111 1101 1101 0010

============

-127 7F81 111 1111 1000 0001

1 1000 0001

-256 + 128 + 1

431 01AF 000 0001 1010 1111

-558 7DD2 111 1101 1101 0010

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  | 1 |  | 1 | 1 | 1 | 1 |  | 1 | 1 | 1 |  |  |
| \* | **0** | **0** | **0** |  | **0** | **0** | **0** | **1** |  | **1** | **0** | **1** | **0** |  | **1** | **1** | **1** | **1** |
| \* | **1** | **1** | **1** |  | **1** | **1** | **0** | **1** |  | **1** | **1** | **0** | **1** |  | **0** | **0** | **1** | **0** |
|  | 1 | 1 | 1 |  | 1 | 1 | 1 | 1 |  | 1 | 0 | 0 | 0 |  | 0 | 0 | 0 | 1 |

23,655 0000 5C67 0 0101 1100 0110 0111

+ -33,544 FFFF 7CF8 1 0111 1100 1111 1000

Broken into words

23,655 0000 5C67 0 0101 1100 0110 0111

0 23,655

+ -33,544 FFFF 7CF8 -1 0111 1100 1111 1000

-1 776

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  | 1 |  |  | 110 | 0000 |
|  | 23,655 | \*000 | 0000 | 0000 | 0000 |  | **\*101** | **1100** | **0110** | 0111 |
| + | -33,544 | \*111 | 1111 | 1111 | 1110 |  | **\*111** | **1100** | **1111** | 1000 |
|  | -9889 | \*111 | 1111 | 1111 | 1111 |  | \*101 | 1001 | 0101 | 1111 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 |  | 1 |
| \* | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 |  |
| \* | 1 | 1 | 1 |  | 1 | 1 | 1 | 1 |  | 1 | 1 | 1 | 1 |  | 1 | 1 | 1 | 0 |  |
|  | **1** | **1** | **1** |  | **1** | **1** | **1** | **1** |  | **1** | **1** | **1** | **1** |  | **1** | **1** | **1** | **1** |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 1 | 1 |  | 1 | 1 | 0 | 0 |  | 1 | 1 | 1 | 0 |  |  | 0 | 0 | 0 |  |
| \* | 1 | 0 | 1 |  | 1 | 1 | 0 | 0 |  | 0 | 1 | 1 | 0 |  | 0 | 1 | 1 | 1 |
| \* | 1 | 1 | 1 |  | 1 | 1 | 0 | 0 |  | 1 | 1 | 1 | 1 |  | 1 | 0 | 0 | 0 |
|  | **1** | **0** | **1** |  | **1** | **0** | **0** | **1** |  | **0** | **1** | **0** | **1** |  | **1** | **1** | **1** | **1** |

\*111 1111 1111 1111 \*101 1001 0101 1111

= -32,768 +22,879

= -9,889