Base 2

Positive Normal
Number: 1.00111
Exponent: 5

Sign Bit:0
Exponent: 1000 0100
Mantissa: 001 1100 0000 0000 0000 0000
Binary Output: 0 1000 0100 001 1100 0000 0000 0000 0000
Hexadecimal: 421C0000

IEEE-754 Binary-32 Floating-Point Converter

1.00111

x2 (Binary)

5

Convert

Clear

Download Output

Binary Output: 0 10000100 00111000000000000000000

Hexadecimal: 421C0000

Special Values Instructions

To enter special values, use the following format:

- Signaling NaN: Enter "sNaN"
- Quiet NaN: Enter "qNaN"
- Positive Infinity: Enter "Infinity"
- Negative Infinity: Enter "-Infinity"
- Negative Zero: Enter "-0"
- Positive Zero: Enter "0"

Negative Normal
Number: -100.111
Exponent: -7

Sign Bit: 1
Exponent: 0111 1010
Mantissa: 001 1100 0000 0000 0000 0000
Binary Output: 1 0111 1010 001 1100 0000 0000 0000 0000
Hexadecimal: BD1C0000

IEEE-754 Binary-32 Floating-Point Converter

-100.111

x2 (Binary)

-7

Convert

Clear

Download Output

Binary Output: 1 01111010 00111000000000000000000

Hexadecimal: BD1C0000

Special Values Instructions

To enter special values, use the following format:

- Signaling NaN: Enter "sNaN"
- Quiet NaN: Enter "qNaN"
- Positive Infinity: Enter "Infinity"
- Negative Infinity: Enter "-Infinity"
- Negative Zero: Enter "-0"
- Positive Zero: Enter "0"

Positive Largest Normal
Number:
1.11111111111111111111
Exponent: 127

Sign Bit:0
Exponent: 1111 1110
Mantissa:
11111111111111111111111
Binary Output:
Hexadecimal: 7F7FFFFF

IEEE-754 Binary-32 Floating-Point Converter

1.11111111111111111111

x2 (Binary)

127

Convert

Clear

Download Output

Binary Output: 0 1111111 0 11111111111111111111111

Hexadecimal: 7F7FFFFF

Special Values Instructions

To enter special values, use the following format:

- Signaling NaN: Enter "sNaN"
- Quiet NaN: Enter "qNaN"
- Positive Infinity: Enter "Infinity"
- Negative Infinity: Enter "-Infinity"
- Negative Zero: Enter "-0"
- Positive Zero: Enter "0"

Negative Largest Normal
Number:
-1.11111111111111111111111
Exponent: 127

Sign Bit:1
Exponent: 1111 1110
Mantissa:
11111111111111111111111
Binary Output: 1 11111110
11111111111111111111111
Hexadecimal: FF7FFFFF

IEEE-754 Binary-32 Floating-Point Converter

-1.11111111111111111111111

x2 (Binary)

127

Convert

Clear

Download Output

Binary Output: 1 1111111 0 11111111111111111111111

Hexadecimal: FF7FFFFF

Special Values Instructions

To enter special values, use the following format:

- Signaling NaN: Enter "sNaN"
- Quiet NaN: Enter "qNaN"
- Positive Infinity: Enter "Infinity"
- Negative Infinity: Enter "-Infinity"
- Negative Zero: Enter "-0"
- Positive Zero: Enter "0"

Smallest Positive Normal
Number: 1
Exponent: -126

Sign Bit:0
Exponent: 0000 0001
Mantissa: 000 0000 0000 0000 0000 0000
Binary Output: 0 0000 0001 000 0000 0000 0000 0000 0000
Hexadecimal: 00800000

IEEE-754 Binary-32 Floating-Point Converter

1

x2 (Binary)

-126

Convert

Clear

Download Output

Binary Output: 0 00000001 00000000000000000000000

Hexadecimal: 00800000

Special Values Instructions

To enter special values, use the following format:

- Signaling NaN: Enter "sNaN"
- Quiet NaN: Enter "qNaN"
- Positive Infinity: Enter "Infinity"
- Negative Infinity: Enter "-Infinity"
- Negative Zero: Enter "-0"
- Positive Zero: Enter "0"

Smallest Negative Normal
Number: -1
Exponent: -126

Sign Bit:1
Exponent: 00000001
Mantissa:
00000000000000000000000
Binary Output: 1 00000001
00000000000000000000000
Hexadecimal: 80800000

IEEE-754 Binary-32 Floating-Point Converter

-1

x2 (Binary)

-126

Convert

Clear

Download Output

Binary Output: 1 00000001 00000000000000000000000

Hexadecimal: 80800000

Special Values Instructions

To enter special values, use the following format:

- Signaling NaN: Enter "sNaN"
- Quiet NaN: Enter "qNaN"
- Positive Infinity: Enter "Infinity"
- Negative Infinity: Enter "-Infinity"
- Negative Zero: Enter "-0"
- Positive Zero: Enter "0"

Special Case: Positive Denormalized
Number: 111.0000111
Exponent: -135

Sign Bit: 0
Exponent: 00000000
Mantissa: 00000011100001110000000
Binary Output: 0 00000000 00000011100001110000000
Hexadecimal: 0001C380

IEEE-754 Binary-32 Floating-Point Converter

111.0000111

x2 (Binary)

-135

Convert

Clear

Download Output

Binary Output: 0 00000000 00000011100001110000000

Hexadecimal: 0001C380

Special Values Instructions

To enter special values, use the following format:

- Signaling NaN: Enter "sNaN"
- Quiet NaN: Enter "qNaN"
- Positive Infinity: Enter "Infinity"
- Negative Infinity: Enter "-Infinity"
- Negative Zero: Enter "-0"
- Positive Zero: Enter "0"

Special Case: Negative Denormalized
Number: -1.1110
Exponent: -130

Sign Bit:1
Exponent: 0000 0000
Mantissa: 000 1111 0000 0000 0000 0000
Binary Output: 1 0000 0000 000 1111 0000 0000 0000 0000
Hexadecimal: 800F0000

IEEE-754 Binary-32 Floating-Point Converter

-1.1110

x2 (Binary)

-130

Convert

Clear

Download Output

Binary Output: 1 00000000 00011110000000000000000

Hexadecimal: 800F0000

Special Values Instructions

To enter special values, use the following format:

- Signaling NaN: Enter "sNaN"
- Quiet NaN: Enter "qNaN"
- Positive Infinity: Enter "Infinity"
- Negative Infinity: Enter "-Infinity"
- Negative Zero: Enter "-0"
- Positive Zero: Enter "0"

Special Case: Infinity
Number: 1.111
Exponent: 999

Sign Bit:0
Exponent: 1111 1111
Mantissa: 000 0000 0000 0000 0000 0000
Binary Output: 0 1111 1111 000 0000 0000 0000 0000 0000
Hexadecimal: 7F80000

IEEE-754 Binary-32 Floating-Point Converter

> 1.111

> x2 (Binary)

> 999

Convert

Clear

Download Output

Binary Output: 0 11111111 00000000000000000000000

Hexadecimal: 7F800000

Special Values Instructions

To enter special values, use the following format:

- Signaling NaN: Enter "sNaN"
- Quiet NaN: Enter "qNaN"
- Positive Infinity: Enter "Infinity"
- Negative Infinity: Enter "-Infinity"
- Negative Zero: Enter "-0"
- Positive Zero: Enter "0"

Special Case: -Infinity
Number: -1.111
Exponent: 999

Sign Bit: 1
Exponent: 1111 1111
Mantissa: 000 0000 0000 0000 0000 0000
Binary Output: 1 1111 1111 000 0000 0000 0000 0000 0000
Hexadecimal: FF800000

IEEE-754 Binary-32 Floating-Point Converter

-1.111

x2 (Binary)

999

Convert

Clear

Download Output

Binary Output: 1 11111111 00000000000000000000000

Hexadecimal: FF800000

Special Values Instructions

To enter special values, use the following format:

- Signaling NaN: Enter "sNaN"
- Quiet NaN: Enter "qNaN"
- Positive Infinity: Enter "Infinity"
- Negative Infinity: Enter "-Infinity"
- Negative Zero: Enter "-0"
- Positive Zero: Enter "0"

Special Case: 0
Number: 0
Exponent: 0

Sign Bit:0
Exponent: 0000 0000
Mantissa: 000 0000 0000 0000 0000 0000
Binary Output:0 00000000 00000000000000000000000
Hexadecimal: 00000000

IEEE-754 Binary-32 Floating-Point Converter

| 0 |

| x2 (Binary) | ⌄ |

| 0 |

| Convert |

| Clear |

| Download Output |

Binary Output: 0 00000000 00000000000000000000000

Hexadecimal: 00000000

Special Values Instructions

To enter special values, use the following format:

- Signaling NaN: Enter "sNaN"
- Quiet NaN: Enter "qNaN"
- Positive Infinity: Enter "Infinity"
- Negative Infinity: Enter "-Infinity"
- Negative Zero: Enter "-0"
- Positive Zero: Enter "0"

Special Case: -0
Number: -0
Exponent: 0

Sign Bit: 1
Exponent: 0000 0000
Mantissa: 000 0000 0000 0000 0000 0000
Binary Output: 1 00000000 00000000000000000000000
Hexadecimal: 80000000

IEEE-754 Binary-32 Floating-Point Converter

-0

x2 (Binary)

0

Convert

Clear

Download Output

Binary Output: 1 00000000 00000000000000000000000

Hexadecimal: 80000000

Special Values Instructions

To enter special values, use the following format:

- Signaling NaN: Enter "sNaN"
- Quiet NaN: Enter "qNaN"
- Positive Infinity: Enter "Infinity"
- Negative Infinity: Enter "-Infinity"
- Negative Zero: Enter "-0"
- Positive Zero: Enter "0"

Special Case: sNaN
Number: sNaN
Exponent: 0

Sign Bit: x
Exponent: 1111 1111
Mantissa: x 1111 1111 01x
xxxx xxxx xxxx xxxx xxxx
Binary Output: 01x
xxxx xxxx xxxx xxxx xxxx
Hexadecimal: 7FC00000

IEEE-754 Binary-32 Floating-Point Converter

sNaN

x2 (Binary)

0

Convert

Clear

Download Output

Binary Output: x 11111111 01xxxxxxxxxxxxxxxxxxxxx

Hexadecimal: 7FC00000

Special Values Instructions

To enter special values, use the following format:

- Signaling NaN: Enter "sNaN"
- Quiet NaN: Enter "qNaN"
- Positive Infinity: Enter "Infinity"
- Negative Infinity: Enter "-Infinity"
- Negative Zero: Enter "-0"
- Positive Zero: Enter "0"

Special Case: qNaN
Number: qNaN
Exponent: 0

Sign Bit: x
Exponent: 1111 1111
Mantissa: 1xx

xxxx xxxx xxxx xxxx xxxx

Binary Output: x 1111 1111 1xx

xxxx xxxx xxxx xxxx xxxx
Hexadecimal: 7FA00000

IEEE-754 Binary-32 Floating-Point Converter

qNaN

x2 (Binary)

0

Convert

Clear

Download Output

Binary Output: x 11111111 1xxxxxxxxxxxxxxxxxxxxxx

Hexadecimal: 7FA00000

Special Values Instructions

To enter special values, use the following format:

- Signaling NaN: Enter "sNaN"
- Quiet NaN: Enter "qNaN"
- Positive Infinity: Enter "Infinity"
- Negative Infinity: Enter "-Infinity"
- Negative Zero: Enter "-0"
- Positive Zero: Enter "0"

Base 10

Positive Normal
Number: 2.005
Exponent: 3

Sign Bit:0
Exponent: 10001001
Mantissa:
11110101010000000000000
Binary Output: 0 10001001
11110101010000000000000
Hexadecimal: 44FAA000

IEEE-754 Binary-32 Floating-Point Converter

2.005

x10 (Decimal)

3

Convert

Clear

Download Output

Binary Output: 0 10001001 11110101010000000000000

Hexadecimal: 44FAA000

Special Values Instructions

To enter special values, use the following format:

- Signaling NaN: Enter "sNaN"
- Quiet NaN: Enter "qNaN"
- Positive Infinity: Enter "Infinity"
- Negative Infinity: Enter "-Infinity"
- Negative Zero: Enter "-0"
- Positive Zero: Enter "0"

Negative Normal
Number: -50
Exponent: 2

Sign Bit: 1
Exponent: 10001011
Mantissa:
00111000100000000000000
Binary Output:
Hexadecimal: C59C4000

IEEE-754 Binary-32 Floating-Point Converter

-50

x10 (Decimal)

2

Convert

Clear

Download Output

Binary Output: 1 10001011 00111000100000000000000

Hexadecimal: C59C4000

Special Values Instructions

To enter special values, use the following format:

- Signaling NaN: Enter "sNaN"
- Quiet NaN: Enter "qNaN"
- Positive Infinity: Enter "Infinity"
- Negative Infinity: Enter "-Infinity"
- Negative Zero: Enter "-0"
- Positive Zero: Enter "0"

Special Case: Positive Denormalized
Number: 100000
Exponent: -61

Sign Bit:0
Exponent: 00000000
Mantissa: 000000000000000 00000001
Binary Output: 0 00000000 000000000000000 00000001
Hexadecimal: 00000001

IEEE-754 Binary-32 Floating-Point Converter

| 100000 |

| x10 (Decimal) | ⌄ |

| -61 |

Convert

Clear

Download Output

Binary Output: 0 00000000 00000000000000000000001

Hexadecimal: 00000001

Special Values Instructions

To enter special values, use the following format:

- Signaling NaN: Enter "sNaN"
- Quiet NaN: Enter "qNaN"
- Positive Infinity: Enter "Infinity"
- Negative Infinity: Enter "-Infinity"
- Negative Zero: Enter "-0"
- Positive Zero: Enter "0"

Special Case: Infinity
Number: 999
Exponent: 199

Sign Bit:0
Exponent: 1111 1111
Mantissa: 000 0000 0000 0000 0000 0000
Binary Output: 0 1111 1111 000 0000 0000 0000 0000 0000
Hexadecimal: 7F80000

IEEE-754 Binary-32 Floating-Point Converter

999

x10 (Decimal)

199

Convert

Clear

Download Output

Binary Output: 0 11111111 00000000000000000000000

Hexadecimal: 7F800000

Special Values Instructions

To enter special values, use the following format:

- Signaling NaN: Enter "sNaN"
- Quiet NaN: Enter "qNaN"
- Positive Infinity: Enter "Infinity"
- Negative Infinity: Enter "-Infinity"
- Negative Zero: Enter "-0"
- Positive Zero: Enter "0"

Special Case: -Infinity
Number: -999
Exponent: 199

Sign Bit: 1
Exponent: 1111 1111
Mantissa: 000 0000 0000 0000 0000 0000
Binary Output: 1 1111 1111 000 0000 0000 0000 0000 0000
Hexadecimal: FF800000

IEEE-754 Binary-32 Floating-Point Converter

-999

x10 (Decimal)

199

Convert

Clear

Download Output

Binary Output: 1 11111111 00000000000000000000000

Hexadecimal: FF800000

Special Values Instructions

To enter special values, use the following format:

- Signaling NaN: Enter "sNaN"
- Quiet NaN: Enter "qNaN"
- Positive Infinity: Enter "Infinity"
- Negative Infinity: Enter "-Infinity"
- Negative Zero: Enter "-0"
- Positive Zero: Enter "0"

Special Case: 0
Number: 0
Exponent: 0

Sign Bit:0
Exponent: 0000 0000
Mantissa: 000 0000 0000 0000 0000 0000
Binary Output:0 00000000 00000000000000000000000
Hexadecimal: 00000000

IEEE-754 Binary-32 Floating-Point Converter

| 0 |

| x10 (Decimal) | ⌄ |

| 0 |

Convert

Clear

Download Output

Binary Output: 0 00000000 00000000000000000000000

Hexadecimal: 00000000

Special Values Instructions

To enter special values, use the following format:

- Signaling NaN: Enter "sNaN"
- Quiet NaN: Enter "qNaN"
- Positive Infinity: Enter "Infinity"
- Negative Infinity: Enter "-Infinity"
- Negative Zero: Enter "-0"
- Positive Zero: Enter "0"

Special Case: -0
Number: -0
Exponent: 0

Sign Bit: 1
Exponent: 0000 0000
Mantissa: 000 0000 0000 0000 0000 0000
Binary Output: 1 00000000 00000000000000000000000
Hexadecimal: 80000000

IEEE-754 Binary-32 Floating-Point Converter

-0

x10 (Decimal)

0

Convert

Clear

Download Output

Binary Output: 1 00000000 00000000000000000000000

Hexadecimal: 80000000

Special Values Instructions

To enter special values, use the following format:

- Signaling NaN: Enter "sNaN"
- Quiet NaN: Enter "qNaN"
- Positive Infinity: Enter "Infinity"
- Negative Infinity: Enter "-Infinity"
- Negative Zero: Enter "-0"
- Positive Zero: Enter "0"

Special Case: sNaN
Number: sNaN
Exponent: 0

Sign Bit: x
Exponent: 1111 1111
Mantissa: x 1111 1111 01x
xxxx xxxx xxxx xxxx xxxx
Binary Output: 01x
xxxx xxxx xxxx xxxx xxxx
Hexadecimal: 7FC00000

IEEE-754 Binary-32 Floating-Point Converter

| sNaN |

| x10 (Decimal) | ⌄ |

| 0 |

Convert

Clear

Download Output

Binary Output: x 11111111 01xxxxxxxxxxxxxxxxxxxxx

Hexadecimal: 7FC00000

Special Values Instructions

To enter special values, use the following format:

- Signaling NaN: Enter "sNaN"
- Quiet NaN: Enter "qNaN"
- Positive Infinity: Enter "Infinity"
- Negative Infinity: Enter "-Infinity"
- Negative Zero: Enter "-0"
- Positive Zero: Enter "0"

Special Case: qNaN
Number: qNaN
Exponent: 0

Sign Bit: x
Exponent: 1111 1111
Mantissa: 1xx

xxxx xxxx xxxx xxxx xxxx

Binary Output: x 1111 1111 1xx
xxxx xxxx xxxx xxxx xxxx
Hexadecimal: 7FA00000

IEEE-754 Binary-32 Floating-Point Converter

qNaN

x10 (Decimal)

0

Convert

Clear

Download Output

Binary Output: x 11111111 1xxxxxxxxxxxxxxxxxxxxxxx

Hexadecimal: 7FA00000

Special Values Instructions

To enter special values, use the following format:

- Signaling NaN: Enter "sNaN"
- Quiet NaN: Enter "qNaN"
- Positive Infinity: Enter "Infinity"
- Negative Infinity: Enter "-Infinity"
- Negative Zero: Enter "-0"
- Positive Zero: Enter "0"

Error Handling

Null / Incomplete Input
Output: ERROR: Please enter both a number and an exponent

IEEE-754 Binary-32 Floating-Point Converter

Enter number (e.g., NaN, sNaN, qNaN, Infinity, -Infinity, -0)

x2 (Binary)

Enter exponent

Convert

Clear

Download Output

Binary Output:

Hexadecimal:

ERROR: Please enter both a number and an exponent

Special Values Instructions

To enter special values, use the following format:

- Signaling NaN: Enter "sNaN"
- Quiet NaN: Enter "qNaN"
- Positive Infinity: Enter "Infinity"
- Negative Infinity: Enter "-Infinity"
- Negative Zero: Enter "-0"
- Positive Zero: Enter "0"

Invalid Binary Input Output: Conversion will not proceed	# IEEE-754 Binary-32 Floating-Point Converter
	123
	x2 (Binary)
	1
	Convert
	Clear
	Download Output
	Binary Output:
	Hexadecimal:
	## Special Values Instructions
	To enter special values, use the following format:
	- Signaling NaN: Enter "sNaN" - Quiet NaN: Enter "qNaN" - Positive Infinity: Enter "Infinity" - Negative Infinity: Enter "-Infinity" - Negative Zero: Enter "-0" - Positive Zero: Enter "0"

| **Invalid Decimal Input**
Output: Conversion will not proceed | # IEEE-754 Binary-32 Floating-Point Converter

abc

x10 (Decimal)

1

Convert

Clear

Download Output

Binary Output:

Hexadecimal:

Special Values Instructions

To enter special values, use the following format:

- Signaling NaN: Enter "sNaN"
- Quiet NaN: Enter "qNaN"
- Positive Infinity: Enter "Infinity"
- Negative Infinity: Enter "-Infinity"
- Negative Zero: Enter "-0"
- Positive Zero: Enter "0" |