Name	p	k	bias	Standard
`float8`	4	4	7	No
`float16`	11	5	15	IEEE754
`bfloat16`	8	8	127	No
`float32`	24	8	127	IEEE754
`float64`	53	11	1023	IEEE754
`float128`	113	15	16383	IEEE754
`float256`	237	19	262143	IEEE754

Table 1: IEEE 754 specification for bits allocation.
p: bits of fraction part (included implicit one),
k: bits of exponent part,
$bias$: exponent bias constant.

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
S	Exponent								Fraction						
$+-$	2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0	2^{-1}	2^{-2}	2^{-3}	2^{-4}	2^{-5}	2^{-6}	2^{-7}
	128	64	32	16	8	4	2	1	$\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{16}$	$\frac{1}{32}$	$\frac{1}{64}$	$\frac{1}{128}$

Table 2: `bfloat16` bits subdivision, powers and actual factors.

7	6	5	4	3	2	1	0
S	Exponent				Fraction		
$+-$	2^3	2^2	2^1	2^0	2^{-1}	2^{-2}	2^{-3}
	8	4	2	1	$\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{8}$

Table 3: Fictional `Float8` bits subdivision, powers and actual factors.

$$
\begin{aligned}
sign &= bit_{(p+k-1)} \\
S &= (-1)^{sign} \\
E &= \sum_{n=0}^{k-1} bit_{(p-1+n)} \cdot 2^n \\
F &= \sum_{n=1}^{p-1} bit_{(p-1-n)} \cdot 2^{-n} \\
value &= S \cdot 2^{E-bias} \cdot (1+F)
\end{aligned}
$$

Equation 1: General formula.

$$
\begin{aligned}
sign &= bit_{31} \\
S &= (-1)^{sign} \\
E &= \sum_{n=0}^{7} bit_{(23+n)} \cdot 2^n \\
F &= \sum_{n=1}^{23} bit_{(23-n)} \cdot 2^{-n} \\
value &= S \cdot 2^{E-127} \cdot (1+F)
\end{aligned}
$$

Equation 2: `float32` formula.

$$
\begin{aligned}
S &= (-1)^{(bit_0)} \\
E &= bit_1 \cdot 2^3 + bit_2 \cdot 2^2 + bit_3 \cdot 2^1 + bit_4 \cdot 2^0 \\
F &= bit_5 \cdot 2^{-1} + bit_6 \cdot 2^{-2} + bit_7 \cdot 2^{-3} \\
V &= S \cdot 2^{E-7} \cdot (1+F)
\end{aligned}
$$

Equation 3: Expanded formula for an imaginary 8-bit float type ($p = 4, k = 4$).

$$
\begin{aligned}
sign &= bit_{31} \\
S &= (-1)^{sign} \\
number &= \sum_{n=1}^{p+k} bit_{n-1} \cdot 2^{n-p} \\
E &= \lfloor number \rfloor \\
F &= number \bmod 1 \\
value &= S \cdot 2^{E-bias} \cdot (1+F)
\end{aligned}
$$