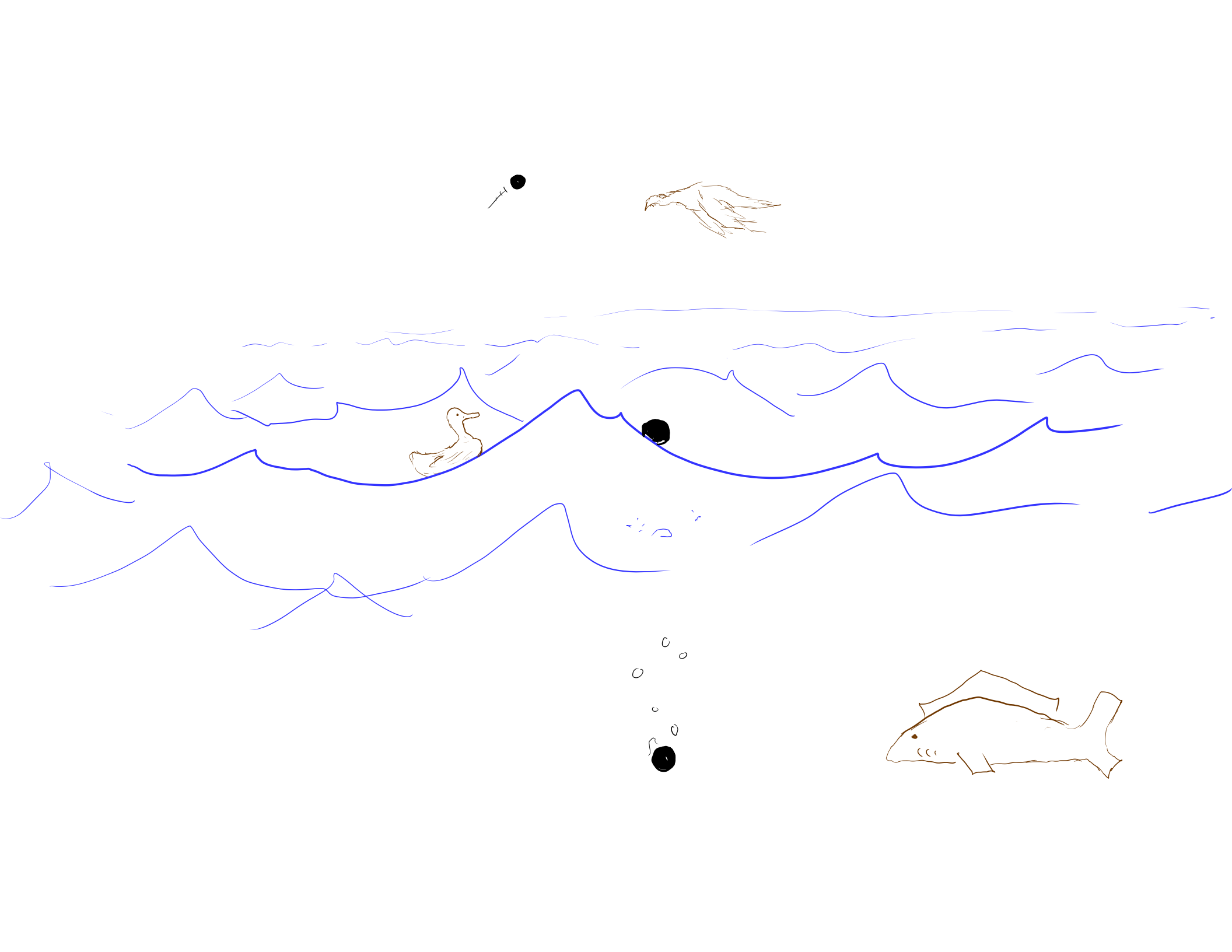


integers
- binary
- 2's comp

n-bits, 2^n values

2^n

9-bit → 512

$\lg n$

3-bits

				$2^3 = 8$ values
0	0	0	0	0
0	0	1	1	1
0	1	0	2	2
0	1	1	3	3
1	0	0	4	-4
1	0	1	5	-3
1	1	0	6	-2
1	1	1	7	-1

$2.75 - 2 \rightarrow 0.75 - 0.5 \rightarrow 0.25 - 0.25$

dec 2.75

2^4	2^3	2^2	2^1	2^0	.	2^{-1}	2^{-2}	2^{-3}	2^{-4}
0	0	0	1	0	.	1	1	0	0

bin 10.11

9.375

1.375

0.375

0.125

0.000

1001.011

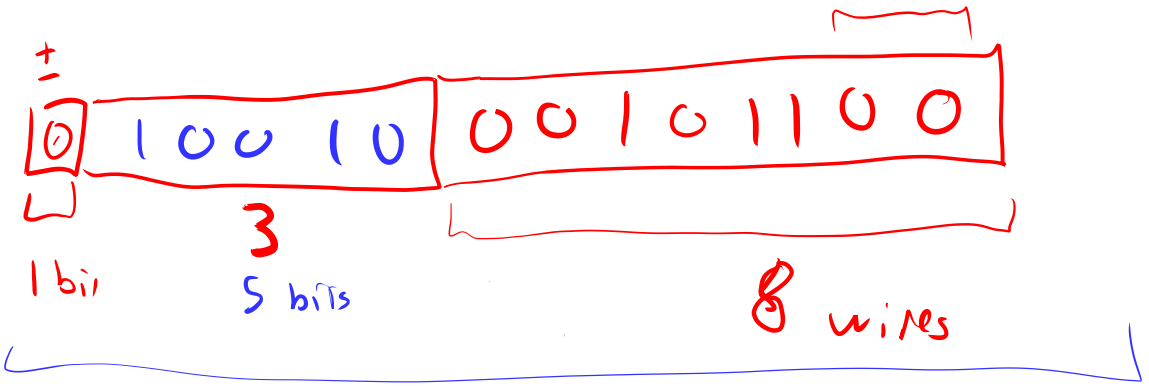
1001.011

↓

binary scientific

1.001011×2^{3}

↓ floating point



0.01

↓

1.0×2^{-2}

0 → pos

1 → neg

14 bits

$2^{14} \rightarrow 2^{10} 2^{4} \rightarrow 16k$

↓

ki 16

float 32

1 8 23

double 64

1 11 52

5-bit biased integer

bias: 01111 → 15

$2^{bits-1} - 1$

01...1

3

\+ bias

10010

-2

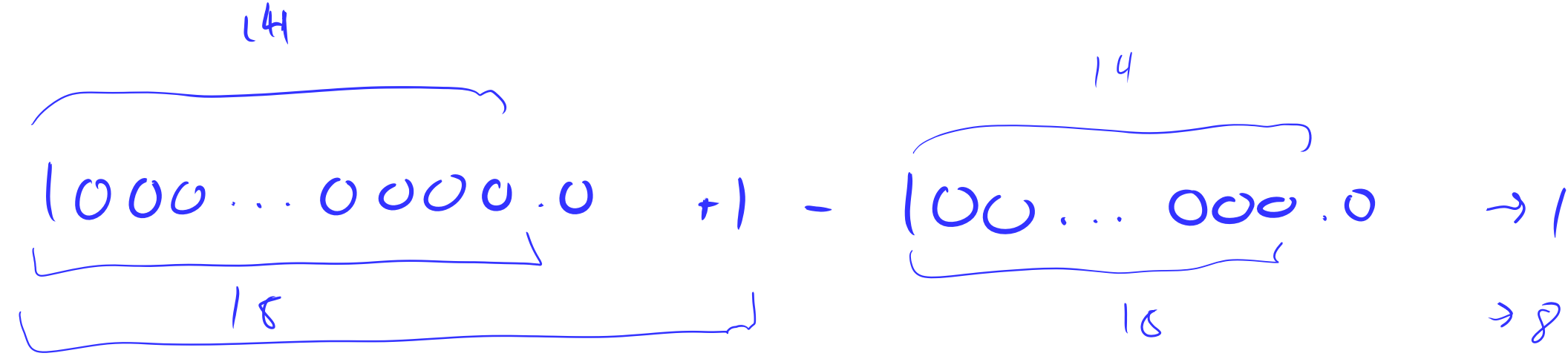
\+ bias

01101

00111

\- bias

-8



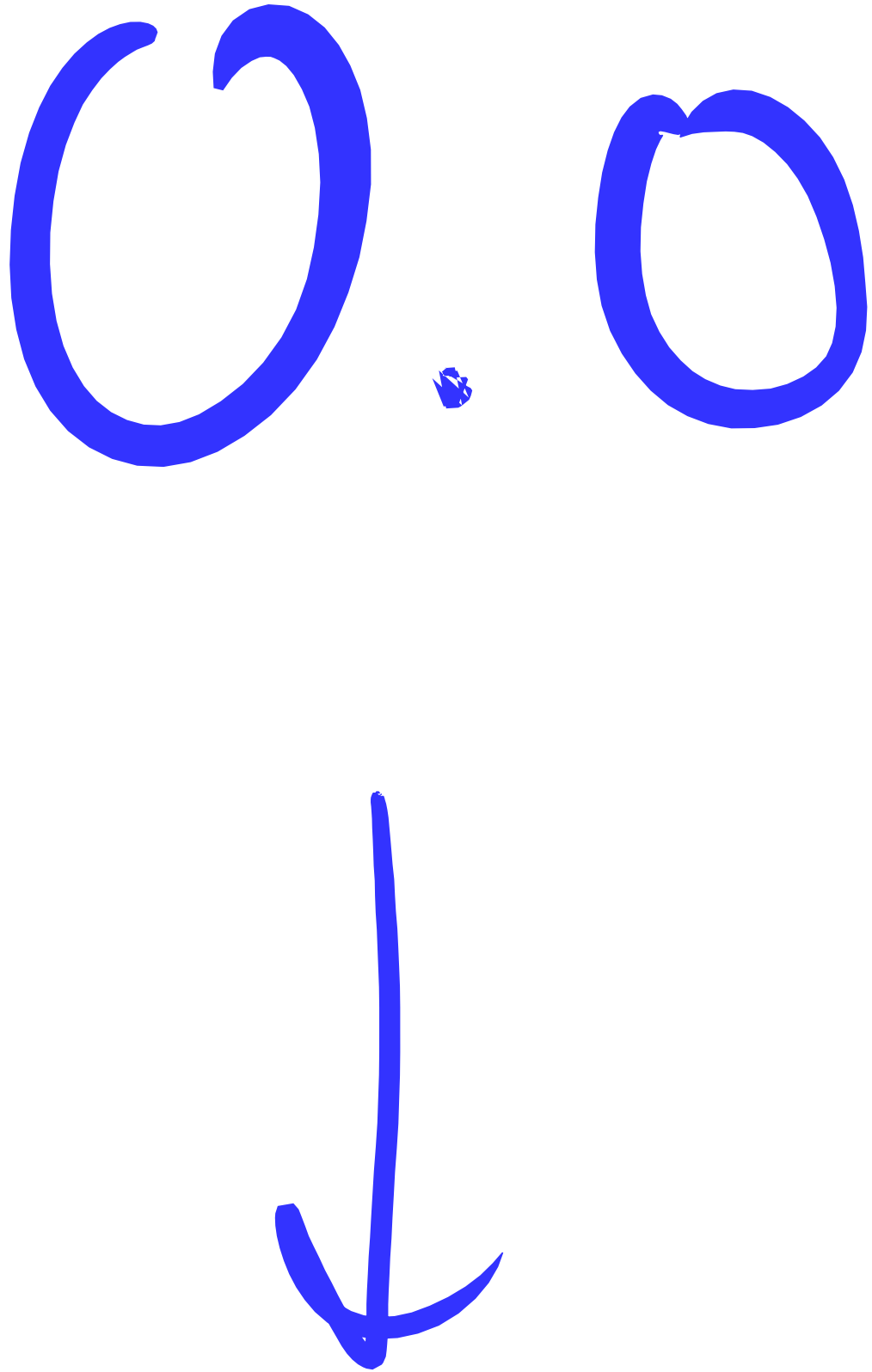
int

8 - ???

16 - short

32 - int

64 - long



$$x^{-y} = \frac{1}{x^y}$$

$$1.x\,2^{-9}$$

$$0.000000001$$

$$\frac{1}{512}$$

$$\begin{array}{r} -9 \\ +\ \text{bias} \quad 0111 \\ \hline -2 \end{array} \qquad 7$$

$E = 0 \rightarrow$ denormal

1	4	3
0	0000	001

\+ denormal $\quad 0.001 \times 2^{-6}$

$$0.\overline{001} \times 2^{-6}$$