1. Unsigned integers
2. 1001

= 2\*\*0\*1 + 2\*\*1\*0 + 2\*\*2\*0 + 2\*\*3\*1

= 8 + 1 = 9

1. 011011

= 2\*\*0\*1 + 2\*\*1\*1 + 2\*\*2\*0 +2\*\*3\*1 + 2\*\*4\*1

= 1 + 2 + 8 + 16 = 27

1. 01011010

= 2\*\*1\*1 + 2\*\*2\*0 + 2\*\*3\*1 + 2\*\*4\*1 + 2\*\*5\*0 + 2\*\*6\*1

= 2 + 8 + 16 + 64 = 90

1. 10000000

= 2\*\*7 = 128

1. Signed magnitude representation
2. 1001

= 2\*\*1\*0 + 2\*\*2\*0 + 2\*\*3\*1 = -1

1. 011011

= 2\*\*0\*1 + 2\*\*1\*1 + 2\*\*2\*0 +2\*\*3\*1 + 2\*\*4\*1

= 1 + 2 + 8 + 16 = 27

1. 01011010

= 2\*\*1\*1 + 2\*\*2\*0 + 2\*\*3\*1 + 2\*\*4\*1 + 2\*\*5\*0 + 2\*\*6\*1

= 2 + 8 + 16 + 64 = 90

1. 10000000

= -0

1. two’s complement representation
2. 1001 = 0000 1001

= 2\*\*0\*1 + 2\*\*1\*0 + 2\*\*2\*0 + 2\*\*3\*1

= 8 + 1 = 9

1. 011011 = 0001 1011 = 2\*\*0\*1 + 2\*\*1\*1 + 2\*\*2\*0 +2\*\*3\*1 + 2\*\*4\*1

= 1 + 2 + 8 + 16 = 27

1. 01011010 =

2\*\*1\*1 + 2\*\*2\*0 + 2\*\*3\*1 + 2\*\*4\*1 + 2\*\*5\*0 + 2\*\*6\*1

= 2 + 8 + 16 + 64 = 90

1. 10000000

= -128

01111111

+ 1

\_\_\_\_\_\_\_\_\_\_\_

= 10000000 = 2\*\*7 = -128

1. binary code
2. 26 -15

26 = 00011010

15: 0000 1111 -15 🡪 1111 0000 + 1 = 1111 0001

26 + (-15) = 0001 1010 + 1111 0001 = 10000 1011 = 0000 1011

1. -31 -6

31 = 0001 1111 -31🡪 1110 0000 + 1 = 1110 0001

6 = 0000 0110 -6🡪 1111 1001 + 1 = 1111 1010

-31 + (-6) = 1110 0001 + 1111 1010 = 11101 1011 = 1101 1011