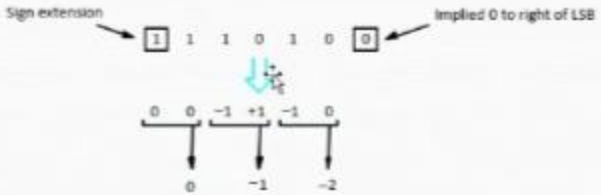
Bit-Pair Recoding of Multipliers

- Bit-pair recoding halves the maximum number of summands (versions of the multiplicand).



(a) Example of bit-pair recoding derived from Booth recoding

- -15
- 01111
- 10001
- 1100010
- 0-100+1-1
- -1 0 1

Scientific notation

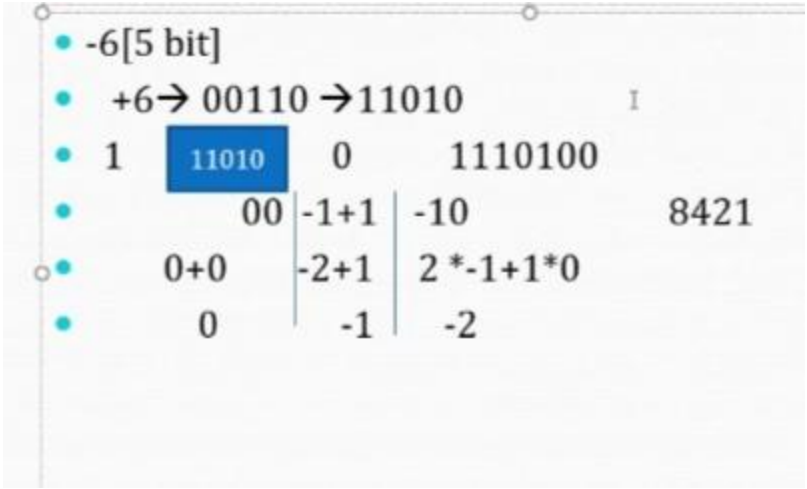
- Previous representations have a fixed point. Either the point is to the immediate right or it is to the immediate left. This is called Fixed point representation.
- Fixed point representation suffers from a drawback that the representation can only represent a finite range (and quite small) range of numbers.

A more convenient representation is the scientific representation, where the numbers are represented in the form:

$$x = m_1.m_2m_3m_4 \times b^{\pm e}$$

Components of these numbers are:

Mantissa (m), implied base (b), and exponent (e)


-6[5 bit]
+6→ 00110 →11010
1 11010 0 1110100
00 -1+1 -10 8421
0+0 -2+1 2 *-1+1*0
0 -1 -2