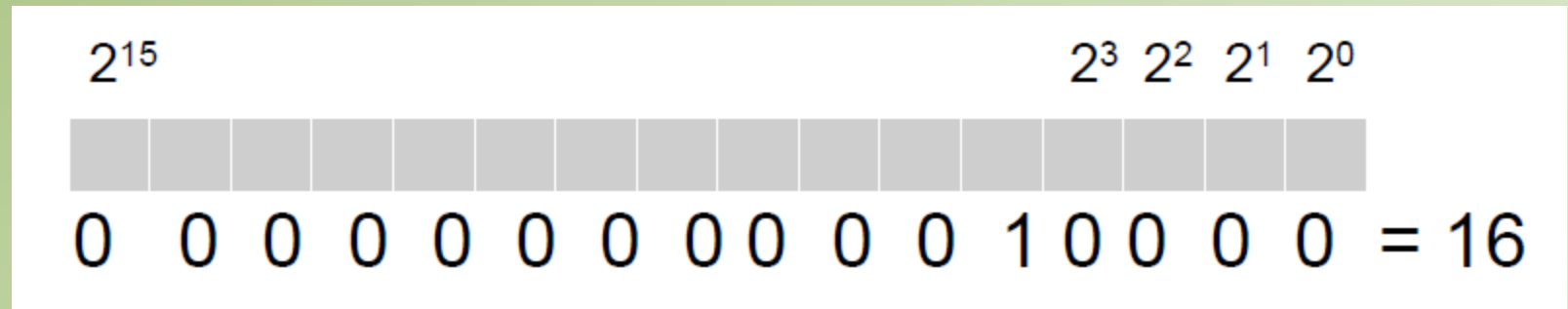


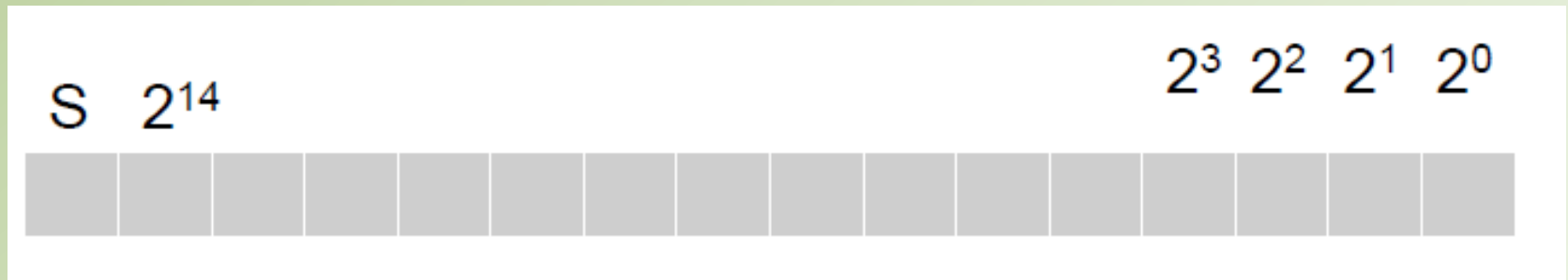
Fixed point Arithmetic:

Signed/unsigned 16 bit integers

- Unsigned numbers

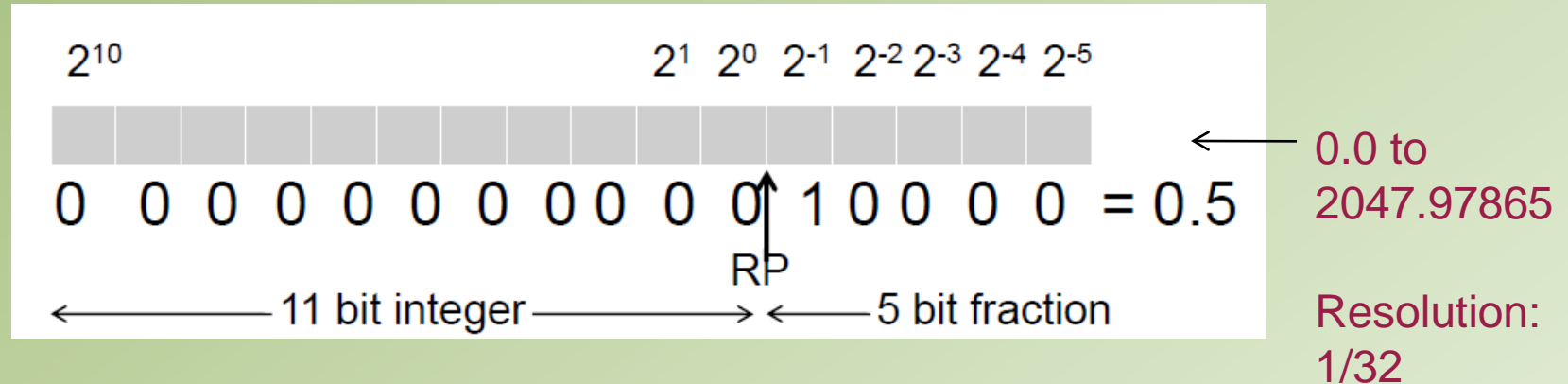


- Signed numbers

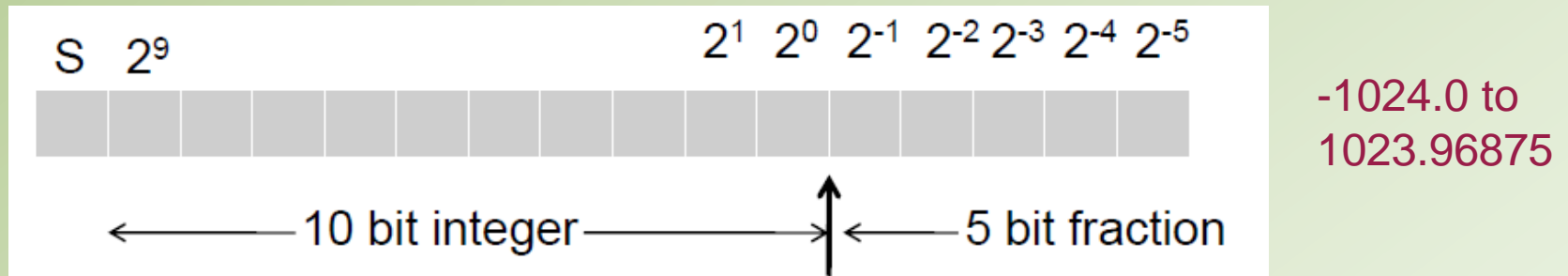


Numbers are not always integer

- Unsigned 16 bit numbers with a radix point

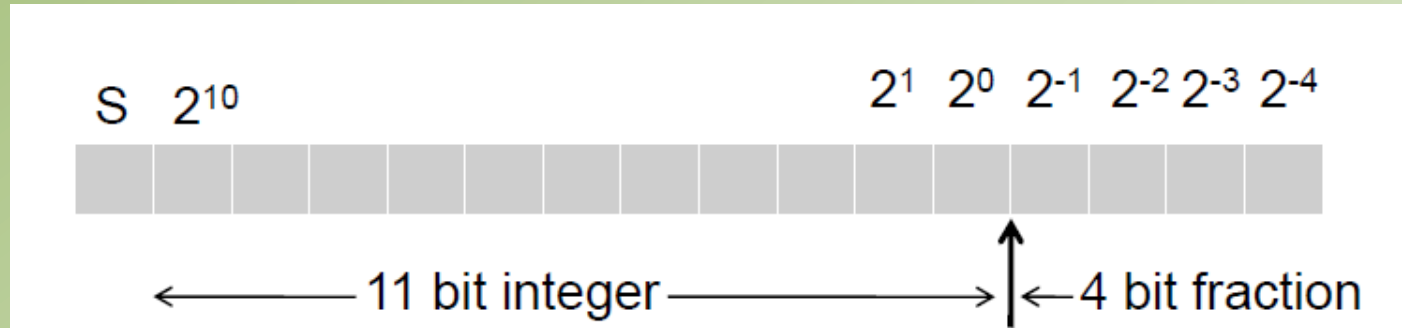


- Signed 16 bit numbers with a radix point



→ Programmer defines the position of radix point

Example: 2 bytes representing signed 11-bit integer, 4 bit fraction



- Range:
 - Integer: sign + 11 bits \rightarrow -2048 (2^{10}) to 2047 ($2^{10}-1$)
 - Fraction: 1/16 resolution (0.0625)
 - \rightarrow -2048.0 to 2047.9375
- 4-bit fraction means scaled by 1/16
- e.g., -700 (decimal) represents $-700/16 = -43.75$, or 1,1111010100.0100 (-700 decimal in 2's complement)