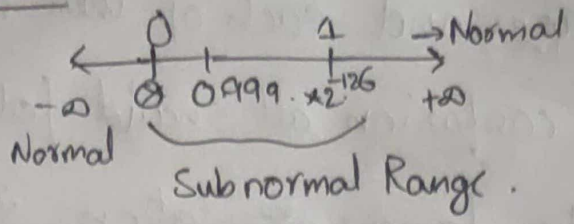
2) Number line:-



Normal numbers :-

$(-1)^S \times (1.M) \times 2^{E-127}$ (Here the bit before decimal part is always 1)

for normal numbers range of e is (0,255) and we can represent numbers $(1.17549435 \times 10^{-38}, 3.402823+7 \times 10^{38})$, for representing even small numbers leading bit convention and this is named as subnormal numbers.

Subnormal numbers :-

$(-1)^S \times (0.m) \times 2^{-126}$ ⊛ e=0; bais exponent is fixed to -126.

✱ Smallest numbers can be represented is $1.401298+6 \times 10^{-45}$ approx. 0.