

# The Real Number Line

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The real number line, real line, coordinate line, all same. It's 1 dimensional entity that is used as a graph.

$\forall x(x \in \mathbb{R} \implies x \text{ has a place in real line})$

$\mathcal{O}$  is defined as origin. Like every other  $(x \geq 1)D$

$\mathcal{O} \mapsto 0$  in real line.

Every point on a line is referred as  $P$

Example:  $\sqrt{2}$  is somewhere between 1.41 and 1.42

Real numbers are ordered. the order is represented as  $(\mathbb{R}, Less_{\mathbb{R}})$  <sup>1</sup>

let  $\mathbb{A} \subset \mathbb{R}$

we can't write  $\mathbb{A} = \{..\}$  because there's infinite amount of numbers between  $a_1$  and  $a_2$

instead we write  $\mathbb{A} = (a_1, a_2)$  do you see the pattern? It's like  $(\mathbb{R}, Less_{\mathbb{R}})$

and like real number line,  $\mathbb{A}$  represents a line, which is a subset of  $\mathbb{R}$

Another way to write this is;

$\mathbb{A} = \{x|a < x < b\}$  <sup>2</sup>

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<sup>1</sup>Check out first order logic

<sup>2</sup>first order logic