

January 13, 2017

Mathematical Sets

- 1.) Natural: $\mathbb{N} = \{1, 2, 3, \dots\}$
- 2.) Whole: $\mathbb{W} = \{0, 1, 2, 3, \dots\}$
- 3.) Integers: $\mathbb{Z} = \{\dots, -2, -1, 0, 1, 2, \dots\}$

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4.) Rational Numbers

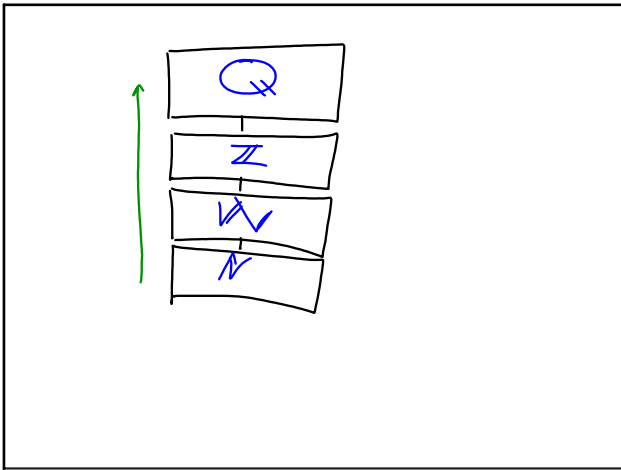
$$\mathbb{Q} = \left\{ \frac{a}{b} \mid a, b \in \mathbb{Z} \neq 0 \right\}$$

such that $b \neq 0$ (not equal to)

$\frac{1}{2}$ (proper) $\frac{8}{3}$ (improper) $-\frac{5}{13}$, 0.75,

18 : 5, 7

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Why of $b \neq 0$

$\frac{a}{b}$ where $a \leftarrow$ numerator, $b \leftarrow$ denominator

$\frac{0}{0}$ of something \rightarrow undefined!

$\frac{1}{2} \mid \frac{1}{2} = 1$

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$\frac{3}{4}$ of some whole (1)

$\frac{4}{4} = 1$

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$\frac{0}{6} = 0$

$\mathbb{N} \rightarrow n = m \cdot k$

$12 = 4 \cdot 3$

$\frac{12}{4} = 3$

$\frac{12}{3} = 4$

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$$n = m \cdot k$$

$$\begin{matrix} n \rightarrow 0 \\ m \rightarrow 6 \end{matrix} = 0 \leftarrow k$$

$$0 = 6 \cdot 0 \text{ true} \checkmark$$

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$$\begin{matrix} n \rightarrow 6 \\ m \rightarrow 0 \end{matrix} = k$$

$$6 = 0 \cdot k$$

$$6 \neq 0 \text{ ~~true~~}$$

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\mathbb{Q} / ← not
 $= \{ \text{all numbers that are not rational} \}$
not Rational Numbers
 "Irrational"
 e.g. $\pi, e, \sqrt{2}, \sqrt{3}$

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head COR I 1.1
 * Quiz #1 - Wednesday

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