

January 19, 2016

Set: a collection of things

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    graph TD
      Set[Set] --> Members[Members]
      Set --> Elements[Elements]
  
```

$\mathbb{N} = \{1, 2, 3, \dots\}$   
 ↑  
 Natural Numbers

$\mathbb{W} = \{0, 1, 2, 3, \dots\}$   
 ↑  
 Whole Numbers

$\mathbb{Z} = \{\dots, -2, -1, 0, 1, 2, \dots\}$   
 ↑  
 Integers

$\mathbb{Q} = \left\{ \frac{a}{b} \mid a \in \mathbb{Z} \neq 0, b \in \mathbb{Z} \neq 0 \right\}$   
 ↑  
 Rational Numbers (Fractions)

Decimal Representation  
 Terminates - settles into a pattern  
 $\frac{1}{2} = 0.5$   
 $\frac{1}{5} = 0.2$

Jan 19-9:08 AM

$\frac{3}{4}$  of some whole

$\frac{5}{0}$  of some whole

Undefined!

$\bigcirc = \frac{5}{5}$

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Irrational = { numbers which are not Rational }

$\pi, e, \sqrt{2}, \sqrt{3}, \sqrt{5}$

- Decimal representation does not terminate or settle into a pattern.

$\pi \approx 3.14\dots$   
 ↑  
 approx. to

Jan 19-9:35 AM

```

    graph BT
      Real[Real] --> Rational[Rational]
      Real --> Irrational[Irrational]
      Rational --> Integers[Integers]
      Integers --> Whole[Whole]
      Whole --> Natural[Natural]
  
```

Jan 19-9:33 AM

$\mathbb{R} = \{ x \mid x \text{ is a Real Number} \}$

↑  
 Real Numbers

Jan 19-9:42 AM