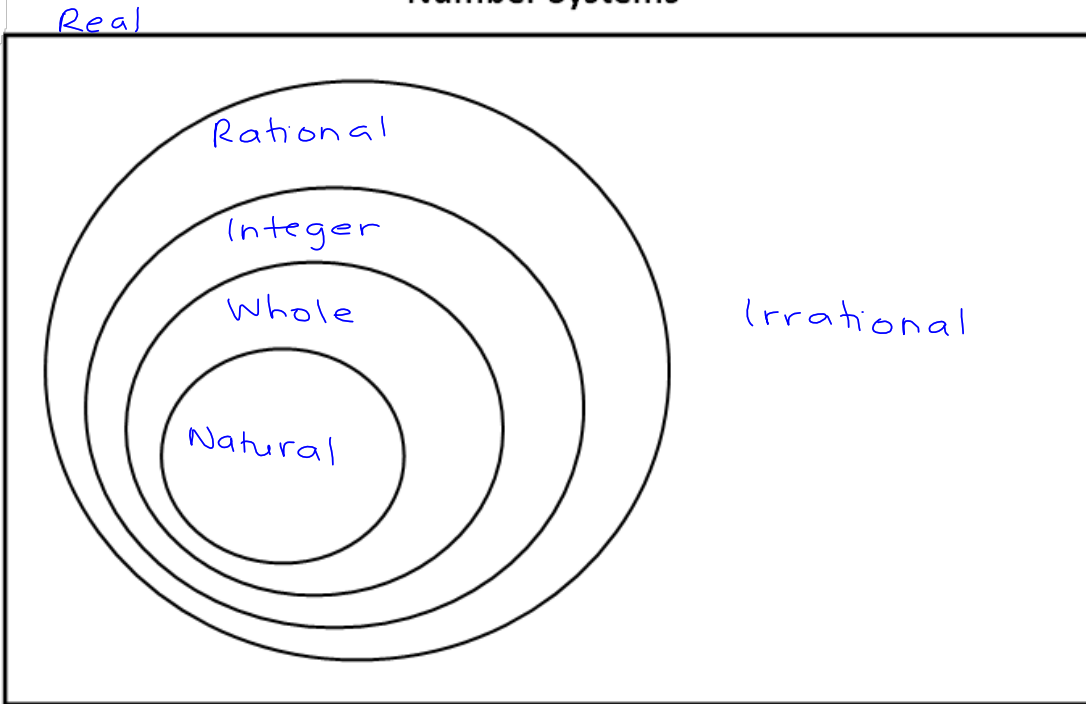


## Number Systems



Real Numbers: $\mathbb{R}$	Any and all numbers.	1.2, -4, $\pi$ , 0, $-\frac{7}{8}$
Natural Numbers: $\mathbb{N}$	Regular counting numbers.	1, 2, 3, ...
Whole Numbers: $\mathbb{W}$	Regular counting numbers and zero.	0, 1, 2, 3, ...
Integers: $\mathbb{Z}$ $\mathbb{I}$	Positive and negative whole numbers.	-7, 2, 0, 100
Rational Numbers: $\mathbb{Q}$	Any integer in the form $\frac{a}{b}$ where $b \neq 0$ . Decimals: terminating or repeating	$\frac{3}{4}$ , $\frac{7}{8}$ , $-\frac{1}{3}$ , 0, $-\frac{1}{10}$
Irrational Numbers: $\overline{\mathbb{Q}}$	cannot be written in the form $\frac{a}{b}$ . Decimals: nonterminating or non repeating	$\pi$ , $e$ , $-\sqrt{2}$ , $\sqrt[3]{17}$

Ex. 1 Identify the following values by checking off the appropriate columns:

	N <sup>1,2,3</sup>	W <sup>0,1,2,3</sup>	Z <sup>-1,0,1</sup>	Q <sup>0/1</sup>	$\bar{Q}$ <sup>5/11</sup>	R
6	✓	✓	✓	✓		✓
$-\frac{3}{5}$				✓		✓
21.8				✓		✓
$\sqrt{2}$					✓	✓
$\frac{5}{6}$				✓		✓
-3			✓	✓		✓
0		✓	✓	✓		✓

Ex. 2 Tell whether each number is rational or irrational. Explain how you know.

a)  $\sqrt{\frac{49}{16}}$   $\mathbb{Q}$  because both numbers are perfect squares.  
 $= \frac{7}{4}$

b)  $\sqrt[3]{-30}$   $\overline{\mathbb{Q}}$  because it's not a perfect cube

c) 1.21  $\mathbb{Q}$  because the decimal stops/terminates.