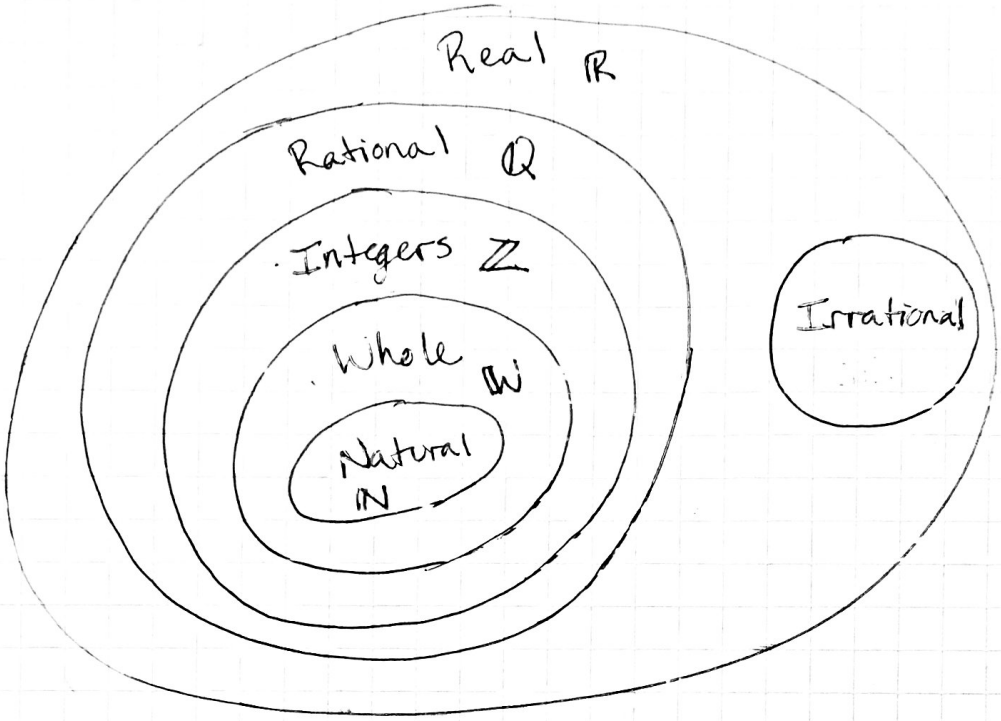
1.1 Classifying Numbers



- Rational - ℚ - can be written as a fraction; decimals that end or have a pattern
  ex: 5 ($\frac{5}{1}$), $\frac{3}{2}$, $0.8\overline{3}$, $6.7676\ldots$

- Irrational - imperfect roots or decimals that go on forever with no pattern
  ex: $\sqrt{5}$, π, $3.7862114\ldots$

- Integers - ℤ - counting numbers (positive & negative)
  ex: $-12, -3, 0, 1, 26$

- Whole - 𝕎 - integers 0 and above
  ex: $0, 1, 2, 3\ldots$

- Natural - ℕ - integers 1 and above
  ex: $1, 2, 3\ldots$

* All of these are subsets of the real number system

1.) List every set to which the numbers belong. Circle the most specific sets.

a) -4
Real
Rational
(Integer)

b) 8.5
Real
(Rational)

c) 21
Real
Rational
Integer
Whole
(Natural)

d) $-2.879216544\ldots$
Real
(Irrational)

Rational & Irrational Numbers

	Rational vs. Rational	Rational vs. Irrational	Irrational vs. Irrational
+	$6+8=14$, $\frac{1}{3}+\frac{7}{7}=\frac{22}{3}$ **Rational**	$3+\pi=6.14159\ldots$ **Irrational**	$\sqrt{2}+\sqrt{3}=3.1462\ldots$ Irrational $-\sqrt{6}+\sqrt{6}=0$ ℚ **Rational or Irrational**
×	$-12\cdot 3=-36$ **Rational**	$6\cdot\sqrt{2}=6\sqrt{2}$ **Irrational**	$\sqrt{2}\cdot\sqrt{3}=\sqrt{6}$ II $\sqrt{2}\cdot\sqrt{8}=\sqrt{16}=4$ ℚ **Rational or Irrational**
	Closed under addition, subtraction, and multiplication • answers stay within same number system	Can't be closed since between two number systems	Not closed since answers are not always in same number system