What's In A Number?

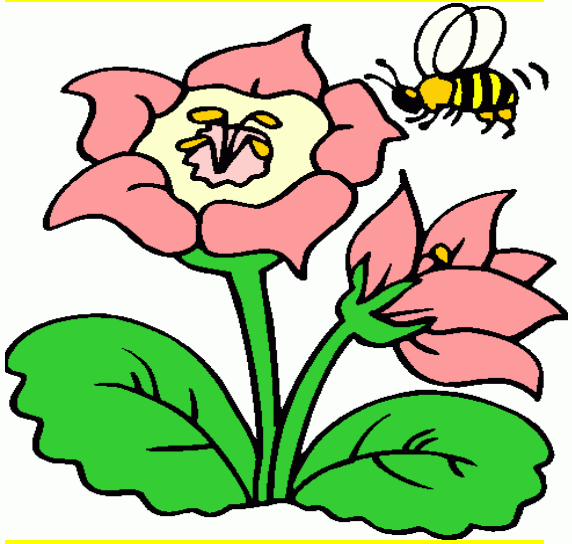
The Mysterious World of Number Identity...

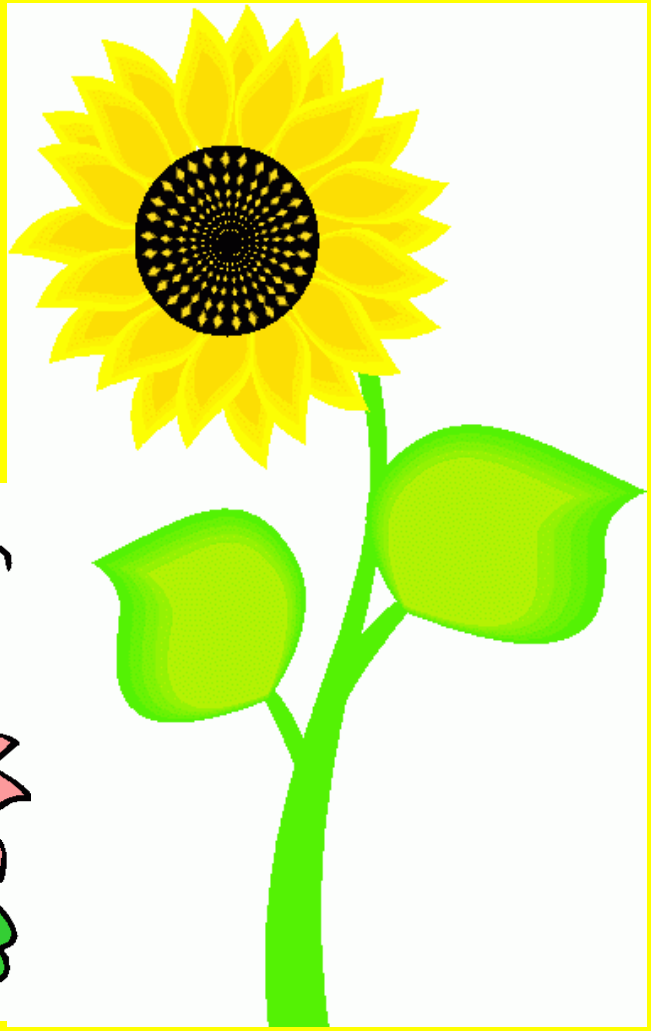
Categories of Numbers in the *REAL* Number System

- Natural Numbers
- Whole Numbers
- Integers
- Rational Numbers
- Irrational Numbers

Natural Numbers

- Are the counting numbers
- {1, 2, 3, 4, 5, 6, 7, 8, …}



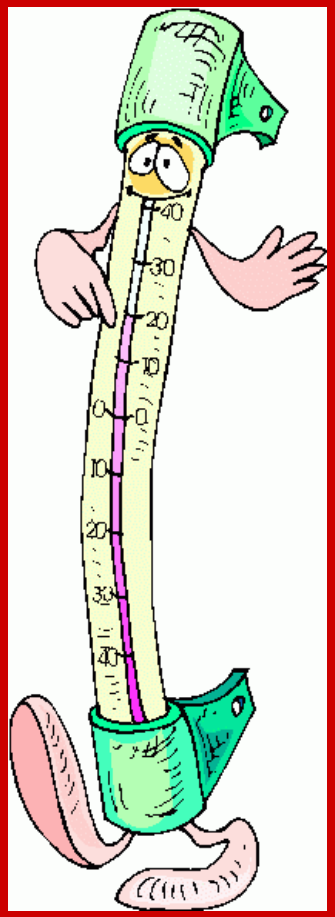


Whole Numbers

- All of the counting numbers and zero.
- {0, 1, 2, 3, 4, 5, 6, 7, …}

INTEGERS

- Are all of the natural numbers, their opposites and zero.
- {…, -4, -3, -2, -1, 0, 1, 2, 3, 4, …}



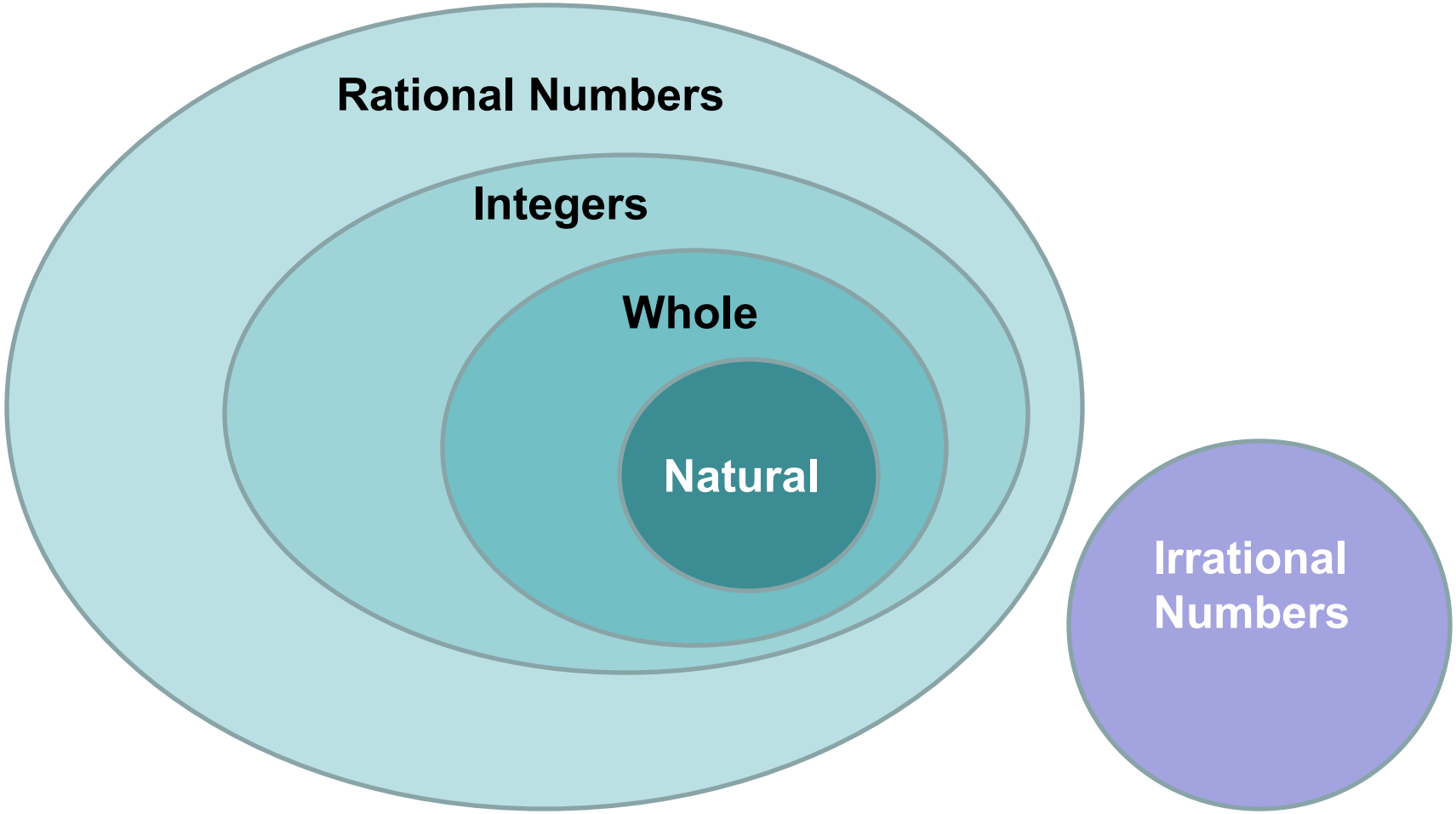
Rational Numbers

- Numbers that can be expressed as a fraction (a/b).
- This set includes the integers, terminating decimals, and repeating decimals.
- Some examples:
- $2 = {}^{2}/_{1}$
- $3\ ¼ = {}^{13}/_{4}$
- $-0.25 = -{}^{25}/_{100}$
- $1/3 = 0.33333333333333333333333$

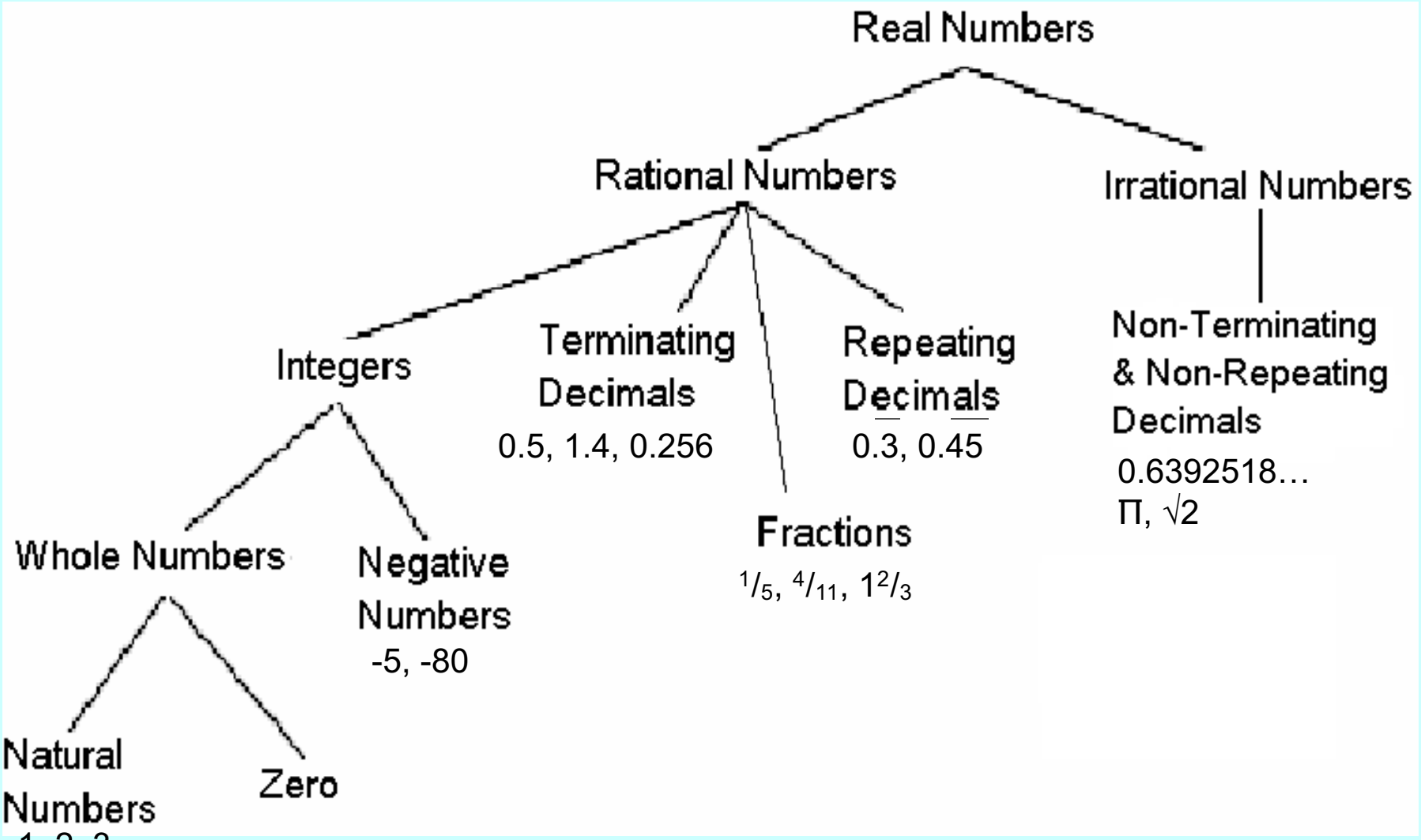
Irrational Numbers

- Numbers that **CANNOT** be expressed as a fraction of integers.
- In decimal form, they are the numbers that go on forever without a repeating pattern.
- Some examples:
- $\sqrt{2}$ = 1.4142…
- π = 3.1415…
- 45.9492…

Venn Diagram of REAL Number System



Tree Diagram of Real Number System



Classify each number as ***natural, whole, integer, rational,*** or ***irrational***.
Write as many as apply.

1. 7.4569594…
2. -5 ¾
3. -79
4. 3
5. 0
6. √16