<u>8.1 Real Numbers</u>

The set of Real Numbers, denoted by **R**, is the union of the rational numbers and irrational numbers.

In decimal form, irrational numbers _____.

Examples:

Properties of Real Numbers (for addition and multiplication)

1. Closure

2. Commutativity & Associativity

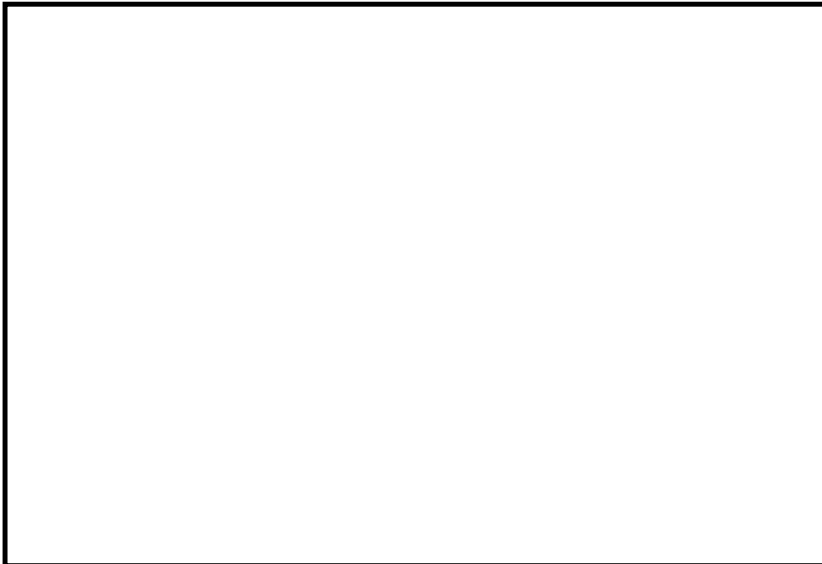3. Distributivity

4. Identities

5. Inverses

6. Denseness

What properties does the set of irrational numbers have?

Prove that there are infinitely many primes.

Prove that $\sqrt{2}$ is irrational.

Draw Venn Diagram for all the sets of numbers considered this semester (**N**, **W**, **Z**, **Q**, **R** and irrationals (**I**)).

Fractional Exponents

$a^{1/n} =$

i.e. we can convert between rational exponents and roots/radicals

Examples: Simplify these expressions.

(a) $\sqrt[4]{81}$

(b) $\sqrt[3]{\dfrac{1}{-125}}$

(c) $(-27)^{-4/3}$

(d) $9^{3/2}$