

## Notes for Section 2

### Types of Numbers:

1. Natural numbers, counting numbers

$\{1, 2, 3, \dots\}$

2. Whole numbers

$\{0, 1, 2, 3, \dots\}$

3. Empty set

$\{\}$

4. Integers

$\{\dots, -2, -1, 0, 1, 2, 3, \dots\}$

5. Rational numbers

Any number that can be written as a fraction

Ex:  $\frac{4}{3}$ , 5.125, 1.2272727...

6. Irrational numbers

Any number that can't be written as a fraction

Ex:  $\sqrt{2}$ ,  $\pi$ ,  $e$

7. Real numbers,  $\mathbb{R}$

The set of all rational *and* irrational numbers

8. Imaginary numbers

Ex:  $\sqrt{-1}$ ,  $8i$

9. Complex numbers,  $\mathbb{C}$

Ex:  $(5 + 2i)$ ,  $(-3 - 5i)$

## Number Patterns

An arithmetic sequence is formed by starting with a number (the first term) and repeatedly adding some fixed number (the common difference).

Ex: 2, 5, 8, 11, ...

A geometric sequence is formed by starting with a first term and repeatedly multiplying by a fixed number (the common ratio).

Ex: 2, 6, 18, 54, ...

# Quantities

A quantity is a number combined with a unit of measurement. For example, 3 is a number, but 3 years is a quantity.

## Metric Prefixes

<u>Prefix</u>	<u>Abbreviation</u>	<u>Quantity</u>
tera	T	$10^{12}$
giga	G	$10^9$
mega	M	$10^6$
kilo	k	$10^3$
hecto	h	$10^2$
deca	da	$10^1$
deci	d	$10^{-1}$
centi	c	$10^{-2}$
milli	m	$10^{-3}$
micro	$\mu$	$10^{-6}$
nano	n	$10^{-9}$
pico	p	$10^{-12}$

## Measuring Time

1 yr = 365 days

1 day = 24 hours

1 hr = 60 min

1 min = 60 sec

1 sec = 1000 milliseconds (ms)

1 decade = 10 yrs

1 century = 100 yrs

1 millennium = 1000 yrs

Years are designated as

B.C. – “Before Christ”

A.D. – *anno domini*, “in the year of our Lord”