

Chapter 2

REAL NUMBERS

Rational Numbers



a rational number is a number that can be written in the form of a fraction:

$$\frac{a}{b} \quad (b \text{ cannot be } = 0)$$

They include: + and - numbers
decimals
fractions
percentages

How Do You Recognize A Rational Number

Rational Numbers are.....

NON-TERMINATING

there is no end..goes on forever

AND

REPEATING

they have a number or set of numbers that
keep repeating themselves

The part of the rational number that repeats itself is called the **period of the number**. Its the number or set of numbers that repeat over and over.

EXAMPLE: $2/3$ is written as $0.666666666666..$
the 6 will repeat over and over. We
write it as $0.\overline{6}$

Example	number in decimal form	what is repeating..	period of the number
1	$1.\overline{0}$.00	0
$1/3$	$0.\overline{3}$	33333	3
0.125125...	$0.\overline{125}$	125	125
3.478947894789	$3.\overline{4789}$	4789	4789

Irrational Numbers \mathbb{Q}'

Irrational numbers are numbers that:
NON-TERMINATING (never end)
and
NON-REPEATING (never repeat)

there is no period to the number because
nothing repeats !

most famous..... π (pi)

NATURAL NUMBERS \mathbb{N}

NATURAL NUMBERS are whole positive numbers

example: 0,1,2,3,4,5,6...

Integers

 \mathbb{Z}

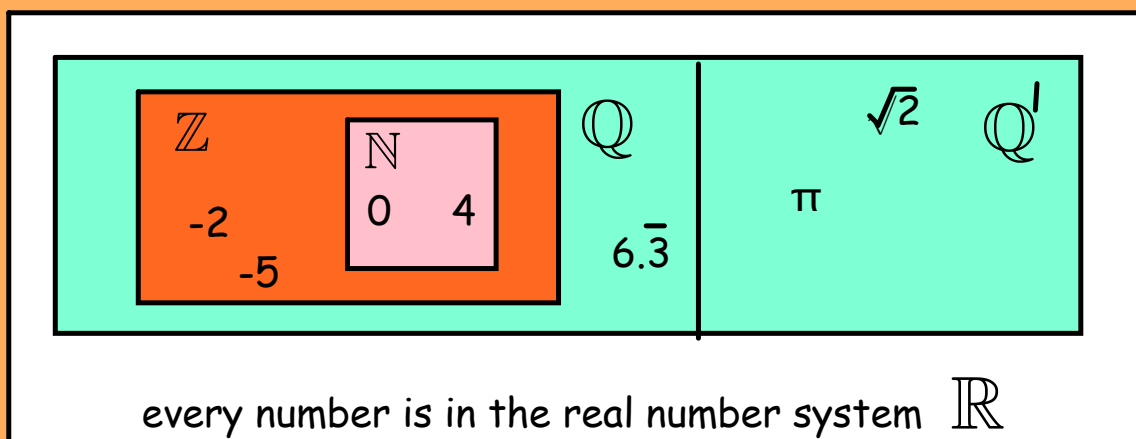
INTEGERS are whole numbers that are either positive or negative numbers.

example: ...-6,-5,-4,-3,-2,-1, 0 ,1, 2, 3, 4, 5, 6...

THE REAL NUMBER SYSTEM

REAL NUMBERS are any number that is either rational or irrational.

How Are The Real Numbers Related



Review of the Symbols Used for Real Numbers

\mathbb{R} = real numbers (every number is a real number)

\mathbb{Q} = rational (repeating & non-terminating)

\mathbb{Q}' = irrational (no repeats & non terminating)

\mathbb{Z} = integers (+ and - whole numbers)

\mathbb{N} = natural numbers (+ whole numbers)

\mathbb{Q}^* - non-zero rational numbers

\mathbb{Q}_+ - positive rational numbers

\mathbb{Q}_- - negative rational numbers

\in ex $5 \in \mathbb{Z}$ $\notin -5 \in \mathbb{N}$

\subseteq ex $\mathbb{N} \subseteq \mathbb{Z}$

P_{10}

$\notin \mathbb{Z}$	a)	-1.25	\in	\mathbb{Q}	\in
	b)	2.5	\notin	\mathbb{Z}	\notin
	c)	$\frac{2}{3}$	\in	\mathbb{Q}	

Homework $P_{10} \#2$ $P_{22} \#1+2$