1.2

There are many different sets of numbers, Some are

name	Description	Ex.
Natural #s	1,2,3,4,5,6,7, . . . used for counting	
Whole #s	0,1,2,3,4,5, . . . the natural #s with zero	
Integers	. . ., -6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 6, . . . the whole #s with the negatives	It's 10° below = -10° It's 20° above = 20°
Rational #s	Any # that can be written as a fraction when decimals, either terminate or repeat	$\frac{2}{3}$, $8=\frac{8}{1}$, $\frac{1}{11}=.09\overline{09}$ $\frac{1}{3}=.33\overline{3}$, $\frac{1}{2}=.5$
Irrational #s	Any # that goes on forever and doesn't repeat itself	$\pi \approx 3.14159265$4 $\sqrt{2} \approx 1.414213562$..

All of these #s make up the <u>real numbers</u>

<u>Real #s</u> - any # you can think of (probably ü)

We graph the real #s on a number line

number line

to graph real numbers we use dots

ex) graph π, -4, 2, and 2.5 on a #-line

note: $\pi \approx 3.141592654$

We also classify real #s into
natural, whole, integers, rational, irrational

note: many #s fall into multiple sets.

Real ($\sqrt{5} \approx 2.2360\ldots$, $\underset{.875}{\overset{\shortparallel}{7/8}}$, $-13, 0, 6$)

Irrational ($\sqrt{5}$)

Rational ($7/8, -13, 0, 6$)

Integers ($-13, 0, 6$)

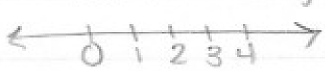
whole ($0, 6$)

natural (6)

So notice: 6 is a natural #, a whole #, an integer, a rational # and a real #.

<u>Ordering the Real #s</u>

On the #-line the #s increase from left to right, we use this to order them (that is to decide which ones are bigger or smaller)

ex. 

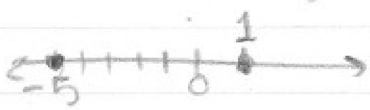
Since 4 is to the right of 3 we know that 4 is bigger than 3 we say 4 is greater than 3 and write $4 > 3$.

Inequality Symbols

$>$ greater than $\quad\quad \geq$ greater than or equal to

$<$ less than $\quad\quad \leq$ less "

(ex) $2<5$ says "2 is less than 5" (true)
$2>5$ says "2 is greater than 5" (false)
$3<3$ says "3 is less than 3" (false)
$3\leq 3$ says "3 is less than or equal to 3" (true)
$6\geq 0$ says "6 is greater than or equal to 0" (true)

(ex) $-5<1$ true since 

-5 is to left of 1 so -5 is smaller.

$5/2 \leq 1$ false since $5/2=2.5$ 

$5/2$ is to right of 1 so $5/2$ is bigger.

to find the Absolute Value (denoted |a number|)

technically, $|a|$ = distance between 0 and a on the #-line.
(to find it, if the number is negative, drop the negative sign. Otherwise don't do anything to the #)

(ex) $|-17|=17$ $\quad |5|=5$ $\quad |-1.2734|=1.2734$
$|0|=0$ $\quad |3/4|=3/4$