Section 6.3 Linear Inequalities

An **inequality** is used to model a situation that can be described by a **range of numbers** rather than a single number.

		What does it mean?	Possible solutions
1)	$x = 3$	x has to be 3	$x = 3$
2)	$x > 3$	x is any number greater than 3	4.2, 23b, 95, $5\frac{1}{3}$
3)	$x \geq 3$ (equal to)	x is any number greater than and including 3	3, 3.2, 472, 8b
4)	$x \leq 3$	x is any number less than or equal to 3	2, 2.5, -125, -1.2

$>$ greater than

$\geq$ greater than and equal to

$<$ less than

$\leq$ less than and equal to.

"Let" statement

Define a variable and write an inequality for each situation.

a)

Let "s" represent speed limit

$s \leq 55$

b)

Let "h" represent height

$h \geq 102$

c)

Let "t" represent temperature

$t < 4°C$

d)

Let "a" represent age

$a \geq 14$

(1) Define a variable ["Let "statement]

(2) write an inequality to describe each situation:

A. Contest entrants must be at least 18 years old.

1) Let "a" represent the age

2) $a \geq 18$

B. The temperature has been below -5 degrees for the last week.

A) Let "t" represent the temperature.

B) $t < -5$

C. You must have 7 items or less to use the express checkout.

a) Let "i" represent

B) $i \leq 7$

D. Scientists have identified over 40 species of dinosaurs

Let "d" dinosaurs

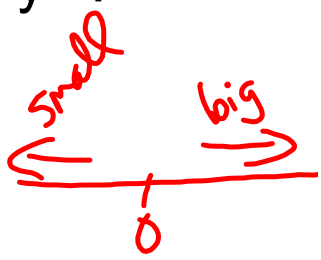
$d > 40$

y > -6

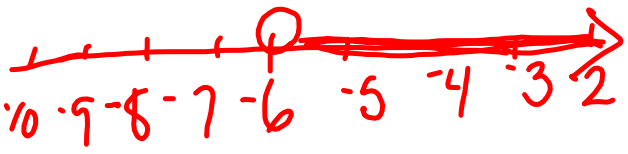
-5.9 , 0, 23, 32.6, 452.9

What are 4 possible numbers for "y" ?

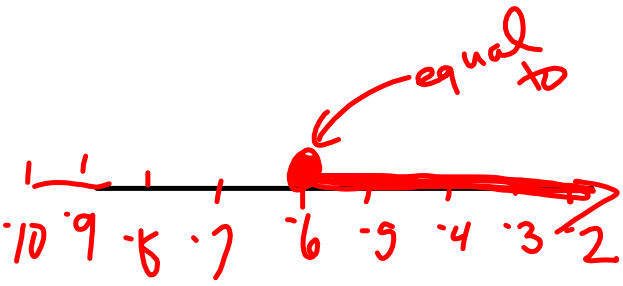
Because there are so many possible solutions for inequalities they are usually represented on a number line [Graph]



$y > -6$, $y \in R$ (belongs to; real numbers)

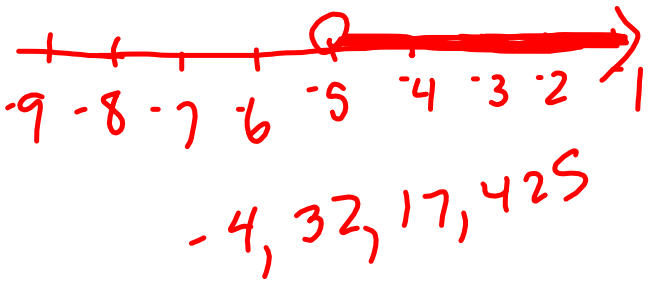


$y \geq -6$, $y \in R$ (equal to)



A. Graph each inequality on a number line
B. Write 4 numbers that are solution to the inequality

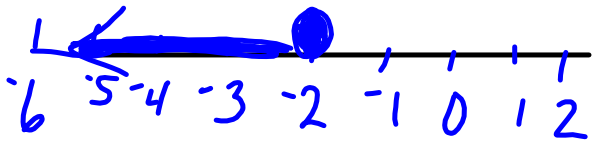
A. $t > -5$



-4, 32, 17, 425

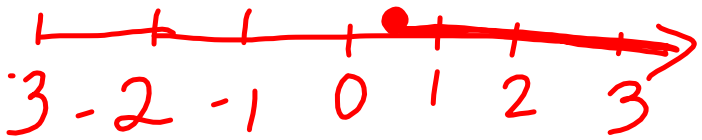
B. $-2 \geq x$

$x \leq -2$



C. $0.5 \leq a$

$a \geq 0.5$



Page 292-293

3. a) $5 < 8$ yes

3, 4, 5,

8 [a, c] Let statement

9 [sketch the number line]