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	3 [1 solution]
2)	$x > 3$	x is any number greater than 3	4, 5, 4000, $3\frac{1}{2}$, 62.8
3)	$x \geq 3$ (≥ equal to)	x is any number greater than and can include 3	3, 52.7, 9268...
4)	$x \leq 3$	x is any number less than or equal to 3	3, 1, 1.4, 0.8, -4.2, -62.6

Define a variable and write an inequality for each situation

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a)

Let "s" represent speed

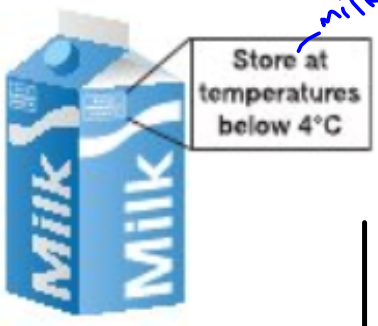
$s \leq 55$

b)

Let "h" represent height

$h \geq 102$

c)



milk

Let "t" represent temperature

$t < 4$

d)

Movie 14A Rating

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) $a \geq 18$

$>$ greater $<$ less

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 items

B) $i \leq 7$

D. Scientists have identified over 40 species of dinosaurs

Let "s" represent species

$s > 40$

$y > -6$

What are 4 possible numbers for "y" ?

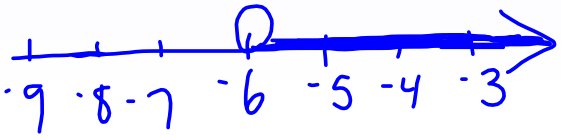
46.7 -2, 22, -4, 1000, -5, 28, 42, 112, 0.5, 215
420, 421, 423.6, 4, 69.3, 12, 54½, 7.23

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

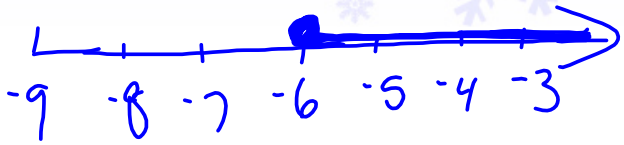
[Graph]

$y > -6$, $y \in R$ ← Belongs to ← Real # [Rational or irrational]

Graph $y > -6$



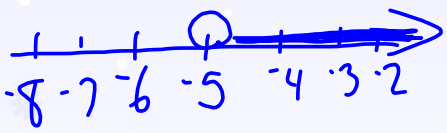
Graph $y \geq -6$



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

< less
> greater

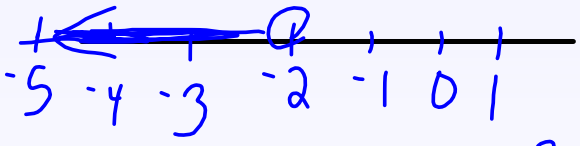
A. $t > -5$



-4, 62
42.8
0

B. $-2 > x$

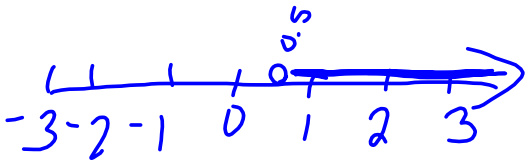
$x < -2$



-3, -56.2
-8, 10^3

C. $0.5 < a$

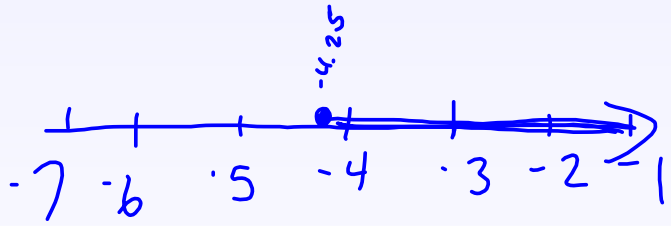
$a > 0.5$



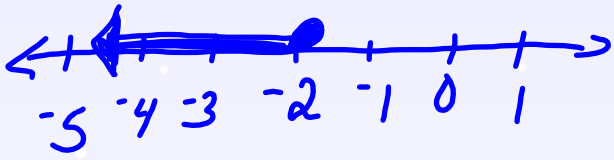
A. Graph [Draw a number line]

B. Give 4 possible solutions

d) $r \geq -4\frac{1}{4}$: $r \geq -4.25$



Write the inequality:



$r \leq -2$

1. Is the statement true? **yes or no**

a) $5>2$ yes

b) $17 < -20$ NO

2. Write the inequality for; $-4>x$

a) -4 is greater than X $x<-4$

b) x is less than 2 $x<2$