

6.5 Introduction to Inequalities

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So far we have been using the "equals to" in our equations.

We can also use an inequality to model a situation that can be described by a range of numbers of a single number.

Inequality signs:

$>$ greater than

$<$ less than

\geq greater than and equal to

\leq less than and equal to

Examples

1) $a < 3$

"a is less than 3"

2) $d \geq -5.4$

"d is greater than and equal to -5.4"

3) Contest entrants must be at least 18 years old.
(a = age)

$$a \geq 18$$

4) Scientists have identified over 400 species of dinosaurs.
(s = species)

$$s > 400$$

Inequality Solutions

Is each number a solution of the inequality $b \geq -4$?

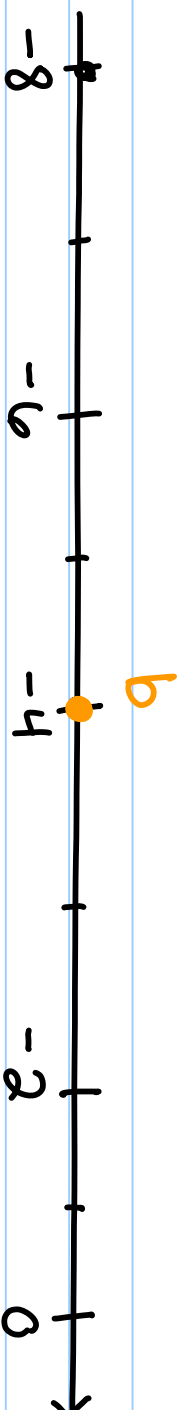
a) -8

b) -3.5

c) -4

d) -4.5

e) 0



a) $-8 \geq -4$

not a solution

b) $-3.5 \geq -4$

solution

c) $-4 \geq -4$

solution

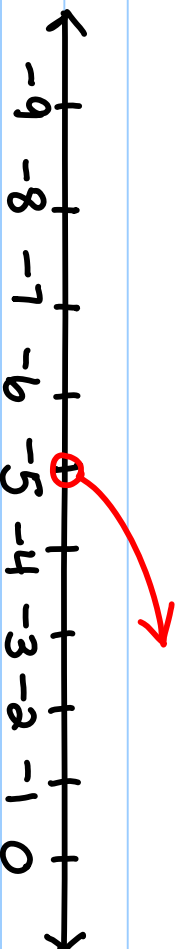
d) $-4.5 \geq -4$ not a solution

e) $0 \geq -4$ solution

Graphing solutions

Graph each inequality on a number line.
Write (3) possible solutions.

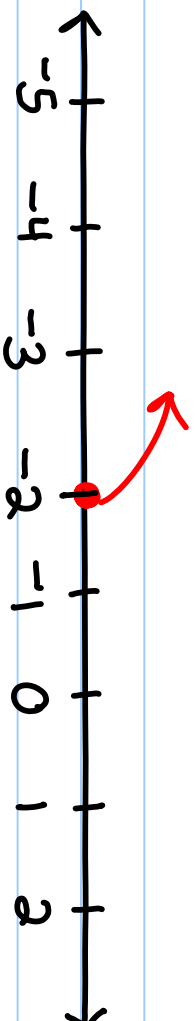
1) $x > -5$



open dot for $>$ and $<$
possible: 74, 36, -1

$$2) -2 \geq x$$

$$x \leq -2$$

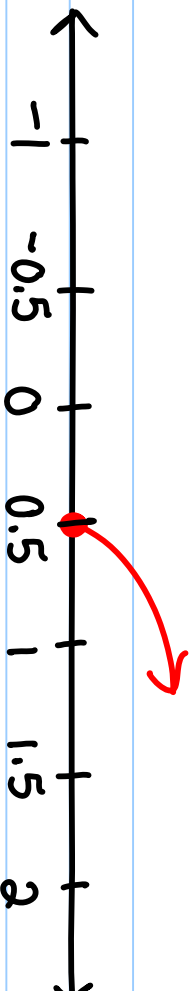


closed dot for \geq and \leq

solutions : -9 000 000 , -3.5 , -11

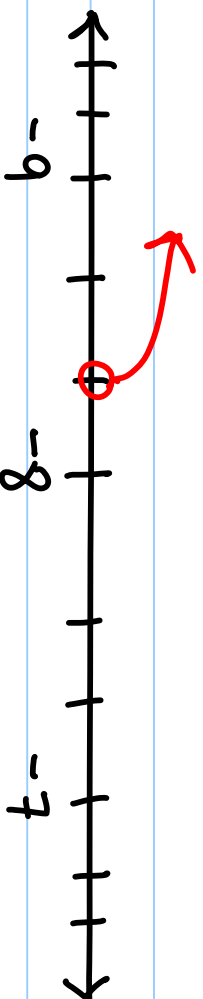
$$3) 0.5 \leq a$$

$$a \geq 0.5$$



solutions : 409.3 , 0.5a , 0.5

$$4) \quad p < -\frac{25}{3} \quad p < -8\frac{1}{3}$$



solutions: $-9, -\frac{25}{3}, -101$

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