Warm Up

A farmer has pigs and chickens together in a pen. There are 60 heads and 162 legs. How many pigs are there?

Let x = # of pigs

Let y = # of chickens

3 Ways to Solve!

Eliminate y

$4x+2y=162$

$2[x+y=60]$

$4x+2y=162$

$-(2x+2y=120)$

$2x=42$

$\frac{2x}{2}=\frac{42}{2}$

$x=21$

21 pigs

Eliminate x

$4x+2y=162$

$4[x+y=60]$ $\Rightarrow$

$4x+2y=162$

$-(4x+4y=240)$

$-2y=-78$

$\frac{-2y}{-2}=\frac{-78}{-2}$

$y=39$

$x+y=60$

$x+39=60$

$-39\ \ -39$

$x=21$

21 pigs

Substitution

$4x+2y=162$

$x+y=60$

$-x\ \ -x$ $\rightarrow$ $y=60-x$

$4x+2(60-x)=162$

$4x+120-2x=162$

$2x+120=162$

$-120\ \ -120$

$2x=42$

$\frac{2x}{2}=\frac{42}{2}$

$x=21$ pigs

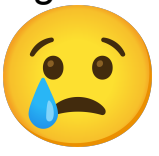
How would you solve the following system of equations?

$$+\begin{cases} 4x - 5y = 15 \\ 2x - 5y = -11 \end{cases}$$

$$6x - 10y = 4$$

same signs subtract!

Not going to work



$$-\begin{cases} 4x - 5y = 15 \\ 2x - 5y = -11 \end{cases}$$

$$2x = 26$$

Symbol Review:

$>$

Greater Than
More than
Bigger than

$\geq$

Greater than or = to
at least

$<$

Less than
smaller than
almost

$\leq$

Less than or = to
at most

What are some values of x that would satisfy (make it true) the following inequality?

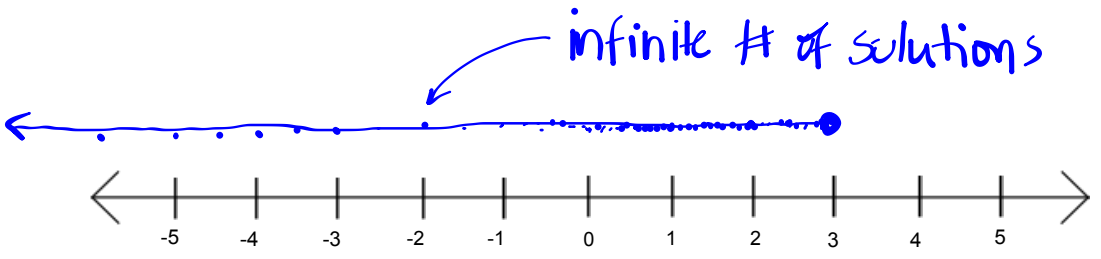
$$3x + 4 \leq 13$$

Find at least 5.

(Remember not all solutions need to be whole numbers or positive!)

Let's put all our solutions on a number line!

$$3x + 4 \leq 13$$

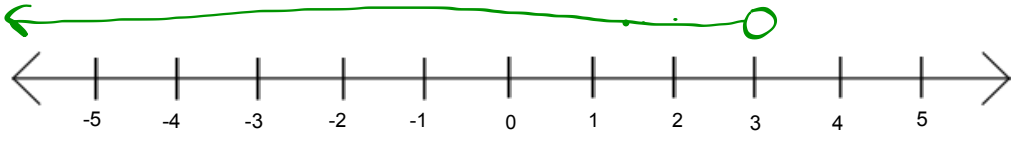


What if our inequality changed to:

$$3x + 4 < 13$$

the answer cannot = 13

What is the difference?



> or < ○

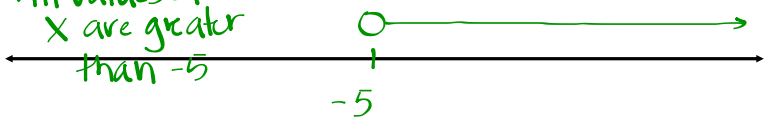
≥ or ≤ ●

Some practice:

Graph all possible values of x on a number line.

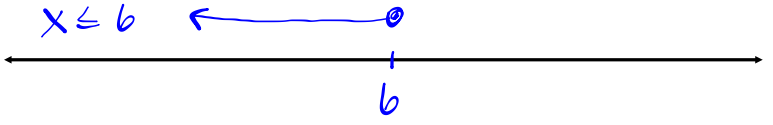
$x > -5$

All values of x are greater than -5



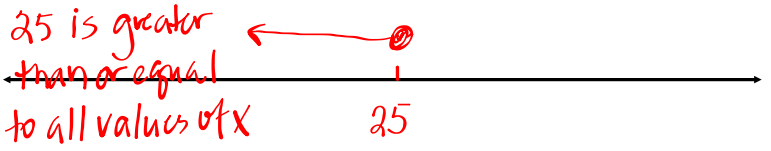
$\frac{2x}{2} \leq \frac{12}{2}$

$x \leq 6$

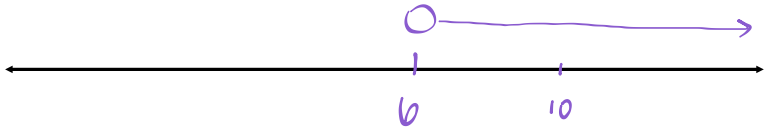


$25 \geq x$

25 is greater than or equal to all values of x



$6 < x$

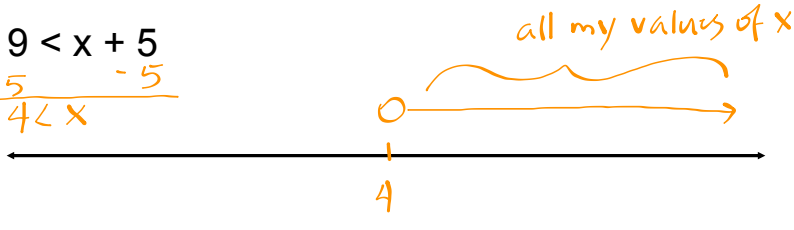


$9 < x + 5$

$-5 \quad -5$

$4 < x$

all my values of x

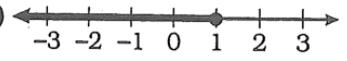


Where Do Airline Pilots Keep Their Uniforms?

For each exercise, write the letter of the answer in the box containing the exercise number.

In Exercises 1-6, match the inequality with its graph.

1. $x < 1$
2. $x \leq 1$
3. $x > -2$
4. $x \geq -2$
5. $-2 > x$
6. $1 \leq x$

A 

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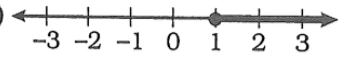
O 

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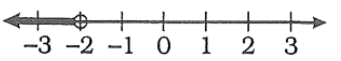
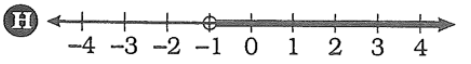
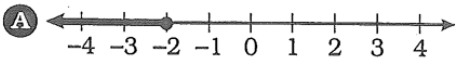
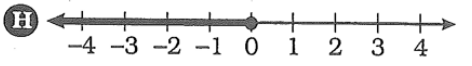
T 

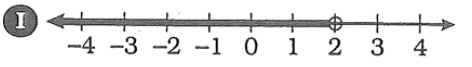
In Exercises 7-18, solve the inequality. Then graph the solution.

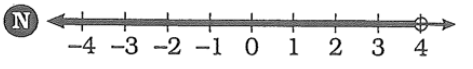
7. $4n + 1 < 9$
8. $7a - 2 \geq 5$
9. $3y + 10 \leq 4$
10. $8k - 3 > -27$
11. $\frac{x}{2} + 9 < 11$
12. $\frac{d}{6} - 4 \geq -5$
13. $\frac{u}{15} - 2 \leq -2$
14. $5p - 14 < 26$
15. $18 \leq 7b + 4$
16. $-9 < 12y + 3$
17. $-14 \geq \frac{x}{3} - 16$
18. $5 < \frac{m}{8} + 5$

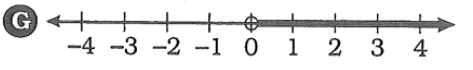
H 

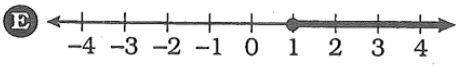
A 

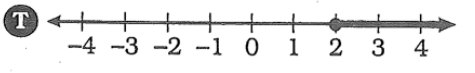
H 

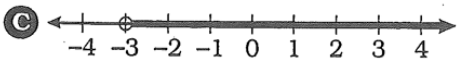
I 

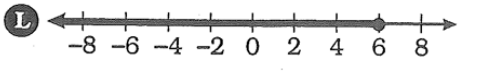
N 

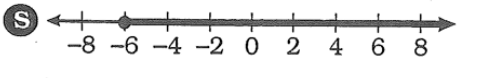
G 

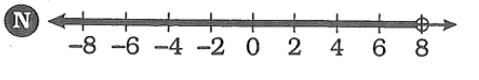
E 

T 

C 

L 

S 

N 

7	11	5	13	3	10	17	6	15	1	8	12	16	2	14	18	9	4

Homework

Finish classwork