

$4x + 3 = 23$ ,  $x$  is a whole number  
can I replace  $x$  with 11?

$4(11) + 3 = 23$  false statement

$4(5) + 3 = 23$  is a true statement

5 is a solution, a replacement for  $x$   
that makes the sentence true.

$\{5\}$  is the solution set.

The solution set is the set of all solutions.

Equations that don't have exponents on the variable, have 0 or 1 solutions in the solution set.

$$\textcircled{5}x + \textcircled{2} = -13, \quad X \text{ is a natural number}$$

$$\frac{5x}{5} = \frac{-15}{5}$$

$$1x$$

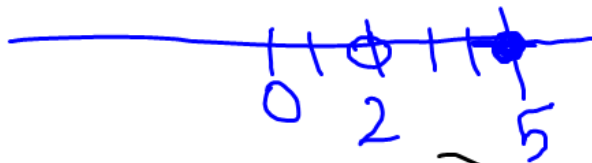
$$x = -3$$

$$-3 \notin \mathbb{N}$$

$\emptyset$  null set, empty set  
the set with no elements

$$2 < X \leq 5$$

$X$  is greater than 2 <sup>but</sup> and  $X$  is less than or equal to 5.



graph of  
the inequality

$$\{x \mid 2 < x \leq 5, x \in \mathbb{R}\}$$

$\mathbb{R}$  real  
numbers  
set of all  
decimals

# Read set-builder notation

$$\{(x, y) \mid X\}$$

$$\{4x + 3 = 23, x \in W\}$$

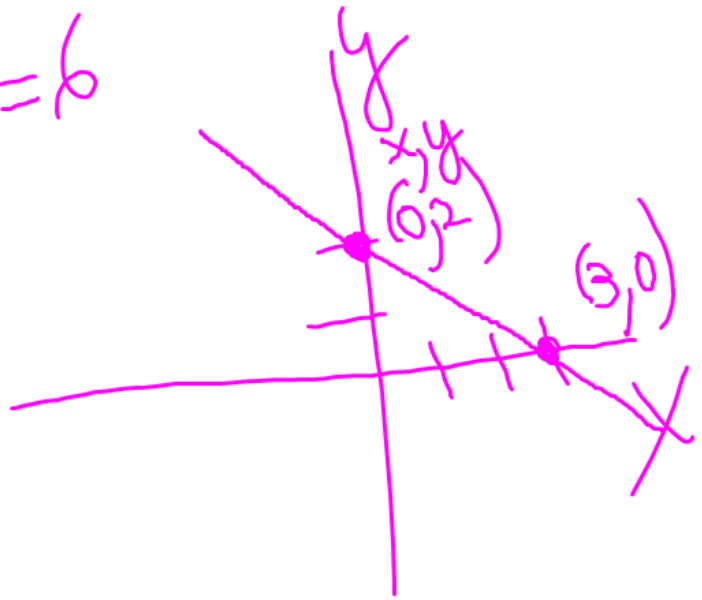
the whole number

the set of all x such that 4x plus 3 equals 23  
brace, letter(s), vertical line key to where recognizing  
set-builder notation

Set-builder notation gets its name from the fact that it requires one to "build" the entire set of solutions.

$$\{x \mid x^2 + 5x + 6 = 0, x \in \mathbb{I}\}$$

$$2x + 3y = 6$$



$$\{x \mid x^2 + 5x + 6 = 0; x \in \mathbb{I}\}$$

$$\textcircled{-2} + 5(-2) + 6 \stackrel{?}{=} 0$$

$$4 + -10 + 6 = 0$$

$$(-3)^2 + 5(-3) + 6 \stackrel{?}{=} 0$$

$$9 + -15 + 6 = 0$$

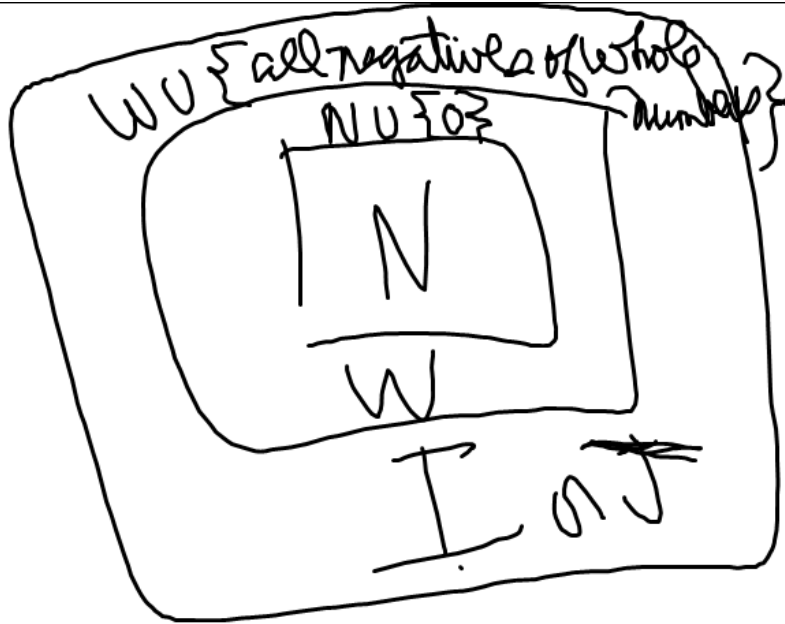
$$0 = 0$$

quadratic equation

-2 is a solution

-3 is a solution

$$\{-2, -3\}$$



Interval notation,