Lesson SE - 2

Objective: Representing Solution Sets of Equations and Inequalities

Homework SE-2 – The Doctor's Solution Set Handout

Do Now: What are the solutions? 1. $x^2 = 36$ 2. $2x + 1 > 13$

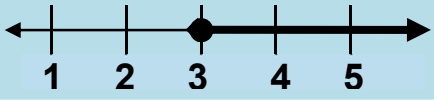
Exam Prep: Equations have one solution.

A) *Always true* B) *Sometimes true* C) *Never true*

Good day… solution sets can be shown in two ways.

Set Notation: {3, 4, 5, 6….} or {x | x ≥ 3}

Graphical Notation:



Basic Set Notation

A set is a collection of elements or members. Use braces {} to denote a set.
Roster Form of a set lists the elements in braces. {1, 2, 3} or {red, green, blue} - Use "…" to show an infinite set. Odd Numbers = {1, 3, 5, …}
Set-Builder notation describes a set. {x | x is a factor of 12}, so {1, 2, 3, 4, 6, 12}.
1. P is the set of whole numbers less than 5. a) Roster: b) Set-Builder:
2. M is the set of odd whole numbers greater than or equal to 11. a) Roster: b) Set-Builder:

Note: The empty set (or null set) contains no elements. S = Ø or { }.

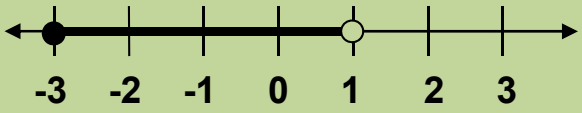
Practice: Write the solution set in set notation

1. $x + 10 = 25$	2. $-4 < 2x < 12$	3. $5x - 2 \geq 33$	4. $x^2 = 49$

Graphing Solution Sets

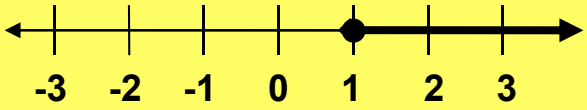
$-3 \leq n < 1$

- ● Filled circle means that –3 is included in the solution.
- ○ Open circle means that 1 is not included.
- – Heavy line shows all numbers between are included.



$x \geq 1$

Heavy arrow shows that the solution set extends to the right or infinity (∞).

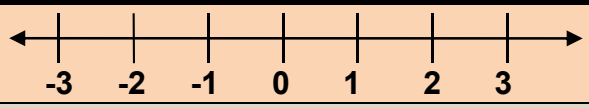
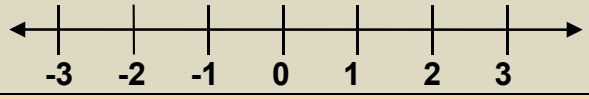
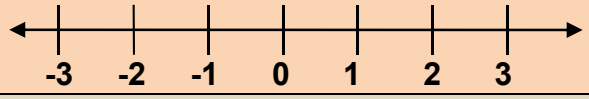
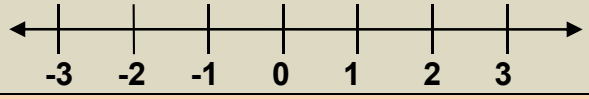
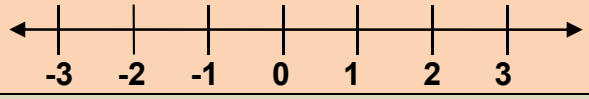
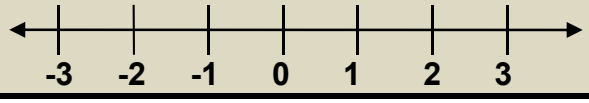


Note: Values in the solutions always have bubbles, like 3 and 1 above!

Practice: Graph the solution set (same as above)

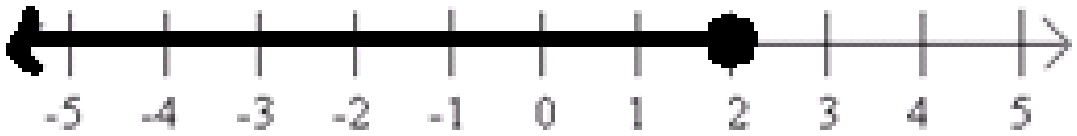
1. $x + 10 = 25$	
2. $-4 < 2x < 12$	
3. $5x - 2 \geq 33$	
4. $x^2 = 49$	

Extra Practice with Inequalities

Inequality	Graph
$-2 \leq n \leq 2$	
$-2 < n < 2$	
$-2 < n \leq 2$	
$-2 \leq n < 2$	
$-2 \leq n$	
$n < 2$	

Wrap Up

1. **Here is the graphical representation of a set of real numbers:**



   a. **Describe this set of real numbers in words.**

   b. **Describe this set of real numbers in set notation.**

   c. **Write an equation or an inequality which has the set above as its solution set.**