

Chapter 3 Student Success Sheet (SSS)

Solving Inequalities and Absolute Value

1

Olathe East High School – Intermediate Algebra

Name: _____
Hour: _____

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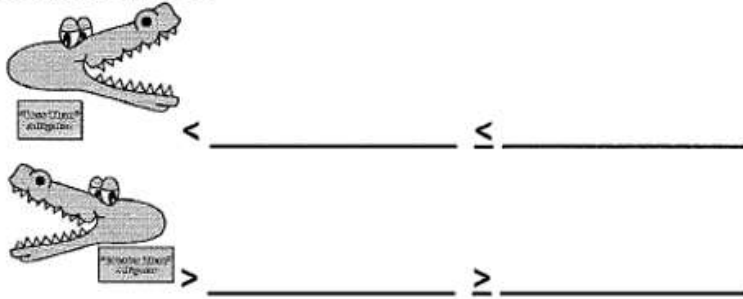
“Success has a simple formula: do your best, and people may like it.”

Sam Ewing

Concept #	What we will be learning...	Videos
1	Graphing inequalities with one variable AND writing inequalities in one variable	2
2	Checking if a number is a solution to an inequality	1
3	Solving inequalities with addition and subtraction/graph and check solutions	1
4	Solving inequalities with multiplication and division/graph and check solutions	1
5	Solving multi-step inequalities/checking solutions (inequalities include distribution, variables on both sides, etc.)	1
6	Solving absolute value equations	1

#1 Graphing inequalities with one variable AND writing inequalities in one variable.

Inequality symbols:



The **angry** man left the door **open** and **dashed** out.

On a number line (one variable only, any letter), we use circles...

A number line looks like this:

$<$ and $>$ use _____ like _____

\leq and \geq use _____ like _____

The **sleepy** man **closed** his eyes and had a **solid** night's sleep.

On a coordinate plane (one or two variables, must be x and y), we use lines...

A coordinate plane looks like this:

$<$ and $>$ use _____ like _____

\leq and \geq use _____ like _____

We read an inequality from the variable to the number

$n > 4$ Is read as _____

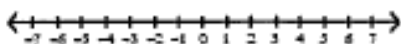
$-3 \geq n$ Rewrite to be: _____ so it is read as _____

1) $r \leq 6$

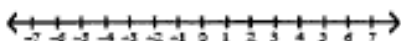


For #5 and #7, graph on a coordinate plane as well...

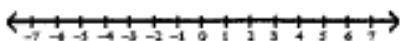
3) $p \leq -2$



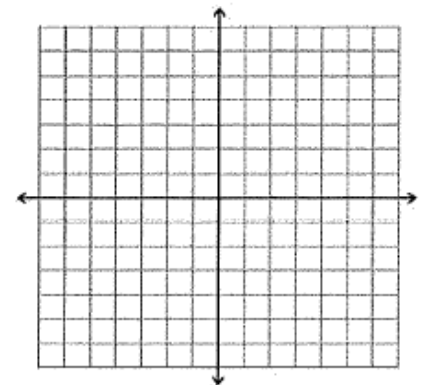
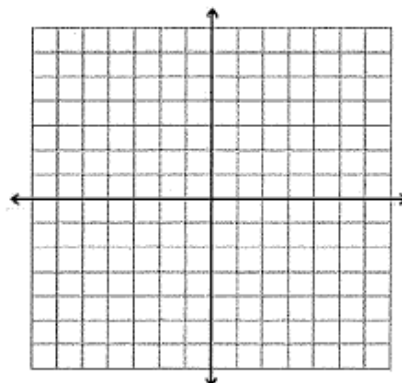
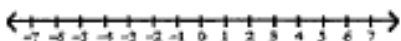
5) $6 \leq x$



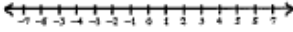
7) $x < 2$



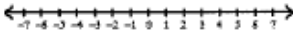
9) $n > -2$



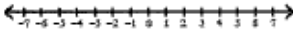
2) $5 \leq n$



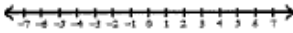
4) $2 > n$



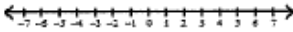
6) $v \geq -5$



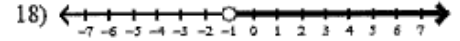
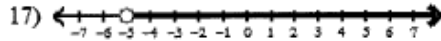
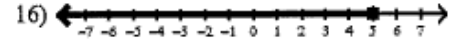
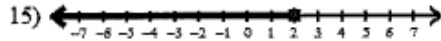
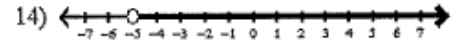
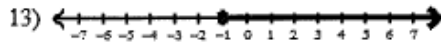
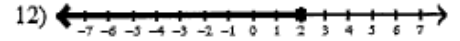
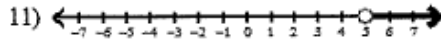
8) $v \geq -2$



10) $-2 \leq m$



Write the inequality that goes with each graph:

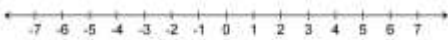


#2 Checking if a number is a solution to an inequality.

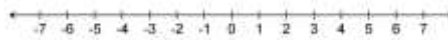
If a number “is a solution,” that means that it will be _____ on the graph!

If a number “is a solution,” that means that it will make a _____ in the equation!

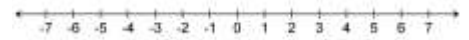
19) $a \geq 4$



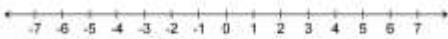
20) $x \geq 1$



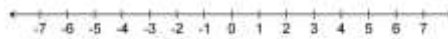
21) $-3 < x$



22) $a < -6$



23) $1 \leq n$



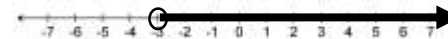
24) $4 \leq n$



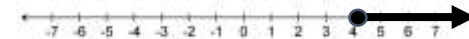
25) _____



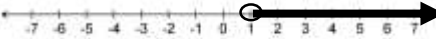
26) _____



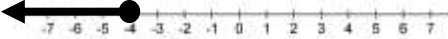
27) _____



28) _____



29) _____



30) _____



	#19	#20	#21	#22	#23	#24	#25	#26	#27	#28	#29	#30
-5												
-3												
-1												
0												
1												
2												
3												
4												
5												

#3 Solving inequalities with addition and subtraction/graph and check solutions.

Solving an inequality is JUST LIKE _____ !!!

Make sure to:

1. Write your solution A_____.
2. Graph your solution on a N_____ L_____ or C_____ P_____ (both if the variable is x!).
3. Write your solution in a S_____ using your vocabulary.

Solving Equations (Hokey Pokey)

Get your variables here

Put your constants there

Do the opposite operation

Just to keep things fair

Subtract and Add first

Till they're all on their own side

Then it's time to divide!

Before you get too crazy

Draw your fence as a line

Separating the equation

By the equals sign

Check for distribution

And then you can combine

Like terms on the same side!

31) $n - 6 > -1$

32) $3 \leq 14 + r$

33) $-23 \leq m - 15$

34) $n - 19 \leq -15$

35) $24 < x + 7$

36) $-9 \geq b - 1$

37) $10 + x \geq 26$

38) $v - 19 > -31$

#4 Solving inequalities with multiplication and division/graph and check solutions.

Solving Inequalities (M-I-C-K-E-Y M-O-U-S-E)

Whenever you _____ or _____
by a negative, the _____ must _____.

Multiply

Or divide

By a negative

Example:

$$-3x < 6$$

Non-Example:

$$2x < -8$$

Means you flip (clap, clap)

$$\frac{-3x}{-3} < \frac{6}{-3}$$

$$\frac{2x}{2} < \frac{-8}{2}$$

The inequality (clap, clap)

You must flip the sign the other way around!

$$x > -2$$

$$x < -4$$

Make sure to:

1. Write your solution A_____.
2. Graph your solution on a N_____ L_____ or C_____ P_____ (both if the variable is x!).
3. Write your solution in a S_____ using your vocabulary.

39) $-44 \geq -11n$

40) $-11n < 33$

41) $14 > 7m$

42) $-3p > 57$

43) $20 \geq \frac{x}{15}$

44) $-6n < 6$

45) $-36 > 18a$

46) $\frac{p}{2} > -20$

#5 Solving multi-step inequalities/checking solutions. Inequalities include distribution, variables on both sides, etc.

47) $74 \geq -10 - 6x$

48) $-2 \geq 8 + 5r$

49) $-2(5 + n) \geq -22$

50) $-2(-6 + b) < 22$

51) $1 \geq 8 - 8v + 1$

52) $4x - 2x \leq 6$

53) $-15 \geq 1 + 8a + 8$

54) $-8n - 3n \geq 22$

55) $-6(1 + 5x) + 2x \geq -34$

56) $-8(1 + 6k) > -56$

57) $-5(x + 5) > -20$

58) $36 > -5(5n + 4) + 6$

59) $-69 \leq 3(p + 8) + 6(4p + 7)$

60) $8(k + 2) + 6(5 + 5k) > -30$

61) $-27 < 5(4n + 8) - 7(n + 4)$

62) $32 > -8(8 + 4x) - 8(4 + 4x)$

#6 Solving absolute value equations.

To solve an absolute value equation, you must first get rid of _____.

Then, you will set up T_____ E_____.

What is inside the absolute value symbols N_____ E_____ C_____.

63) $|a| = 5$

64) $|k| = 1$

65) $|x + 7| = 2$

66) $|x + 7| = 9$

67) $|8m + 5| = 37$

69) $6|4x| = 24$

71) $9 - 10 \left| \frac{n}{5} \right| = 3$

73) $-8|2r + 4| = -48$

75) $4|6 - 5a| - 7 = 49$

68) $|-4n - 8| = 28$

70) $|6p| + 9 = 15$

72) $2 + 3 \left| \frac{b}{2} \right| = 8$

74) $\frac{|6x+3|}{3} = 3$

76) $-7 - 9|n + 3| = -43$