Algebra 1 SOL Review Session

Day: 4 **Topics**: Equations (A.4 a, c, e), Inequalities (A.5 a, c), and Properties (A.4 a, b, A.5 a)

Finding Solutions

Solution to an Equation

- An equation has an **equals sign**.
- The solution to an equation is usually a **number**, but it can also be **all real numbers/infinitely many solutions** or **no solution**.
  - If the variable equals a number, that's the solution.
  - If the variable cancels out, and the result is **true**, then the solution is **all real numbers/infinitely many solutions.**
  - If the variable cancels out, and the result is **false**, then there is **no solution**.

How did you learn to solve an equation like this? $7x + 20 = 2(x + 5)$

Open www.desmos.com/testing/virginia/graphing and type in the equation above.

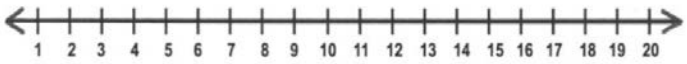
The solution is the **x-intercept** of the vertical line.

Find the solution to this equation: $3(x - 1) = -2x + 7 + 5x$	Find the solution to this equation: $-8x + 10 + 3x = -5(x - 2)$

Solutions to an Inequality

- An inequality has an **inequality symbol (<, >, ≤, ≥)**.
- An inequality with one variable can be graphed on a **number line**.
- The solution to an inequality is usually a **range of values**, but it can also be **all real numbers** or **no solution**.
  - If the variable is less than, greater than, less than or equal to, or greater than or equal to a number, that's the solution.
  - If the variable cancels out, and the result is **true**, then the solution is **all real numbers.**
  - If the variable cancels out, and the result is **false**, then there is **no solution**.

How did you learn to solve and graph an inequality like this? $-\frac{1}{2}x + 17 \leq 8$



Open www.desmos.com/testing/virginia/graphing and type in the inequality above.

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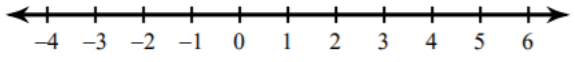
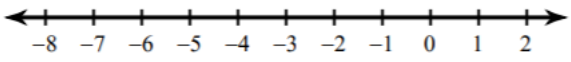
Find and graph the solution to this inequality: $3(1-2x) > 3-6x$	Find and graph the solution to this inequality: $-2(5+6n) < 6(8-2n)$
	

Justify Steps

- Examine the "Chart of Properties". These properties can be used to justify all the steps required to solve an equation.

Marcel has solved the equation using the steps shown. Justify each step by writing the property used on the line. (Hint: Look for the parts that change from one step to the next.)

Given:	$-2(3x-4)+x=-4x+12$	
Step 1:	$-6x+8+x=-4x+12$	_____
Step 2:	$-6x+x+8=-4x+12$	_____
Step 3:	$-5x+8=-4x+12$	_____
Step 4:	$-5x+5x+8=-4x+5x+12$	_____
Step 5:	$8=x+12$	_____
Step 6:	$8-12=x+12-12$	_____
Step 7:	$-4=x$	_____

What is the solution to this equation?

Sarah and Kayla both solved the problem below. Who solved it correctly? Identify the mistake for the person who solved it incorrectly.

Sarah	Kayla
$5x-15-3x=10-(-3x+20)$	$5x-15-3x=10-(-3x+20)$
$2x-15=10+3x-20$	$2x-15=10+3x-20$
$2x-15=-10+3x$	$2x-15=-10+3x$
$-3x \quad -3x$	$+3x \quad +3x$
$-1x-15=-10$	$5x-15=-10$
$+15 \quad +15$	$+15 \quad +15$
$-1x=5$	$5x=5$
$x=-5$	$x=1$

Literal Equations

- A **literal equation** is a formula or equation that consists primarily of variables.
- A literal equation can be solved for one of the variables. This process concludes with all other variables and numbers on the other side.

Solve for *a*. $5ab+12=c$	Solve for *x*. $\frac{3}{4}x+y=z$