SECONDARY MATH I // MODULE 4

SOLVING EQUATIONS AND INEQUALITIES – 4.4

4.4

> READY, SET, GO!   Name _Key_   Period _____   Date _____

READY

Topic: Write an equation from a context. Interpret notation for inequalities.

Write an equation that describes the story. Then answer the question asked by the story.

1. Virginia's Painting Service charges $10 per job and $0.20 per square foot. If Virginia earned $50 for painting one job, how many square feet did she paint at the job?

$$10 + 0.20x = 50 \qquad x = 200 \text{ ft}^2$$

2. Renting the ice-skating rink for a party costs $200 plus $4 per person. If the final charge for Dane's birthday party was $324, how many people attended his birthday party?

$$4x + 200 = 324 \qquad x = 31 \text{ people}$$

Indicate if the following statements are <u>true</u> or <u>false</u>. Explain your thinking.

3. The notation $12 < x$ means the same thing as $x < 12$. It works just like $12 = x$ and $x = 12$.

   False

4. The inequality $-2(x + 10) \geq 75$ says the same thing as $-2x - 20 \geq 75$. I can multiply by -2 on the left side without reversing the inequality symbol.

   True

5. When solving the inequality $10x + 22 < 2$, the second step should say $10x > -20$ because I added -22 to both sides and I got a negative number on the right.

   False

6. When solving the inequality $-5x \geq 45$, the answer is $x \leq -9$ because I divided both sides of the inequality by a negative number.

   True

7. The words that describe the inequality $x \geq 100$ are "x is greater than or equal to 100."

   True

SET

Topic: Solve inequalities. Verify that given numbers are elements of the solution set.

Solve for x. (Show your work.) Indicate if the given value of x is an element of the solution set.

8. $2x - 9 < 3$

    $x < 6$

    Is this value part of the solution set? $x = 6$; yes?   (no?)

9. $4x + 25 > 13$

    $x > -3$

    Is this value part of the solution set? $x = -5$; yes?   (no?)

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10. $6x - 4 \leq -28$ $x \leq -4$

Is this value part $x = -10$; (yes?)   no?
of the solution set?

11. $3x - 5 \geq -5$ $x \geq 0$

Is this value part $x = 1$; (yes?)   no?
of the solution set?
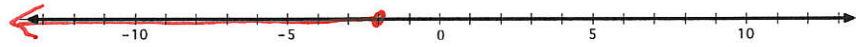
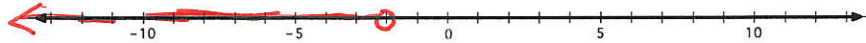**Solve each inequality and graph the solution on the number line.**

12. $x + 9 \leq 7$

$x \leq -2$
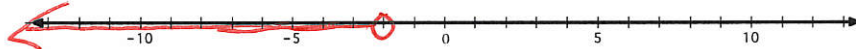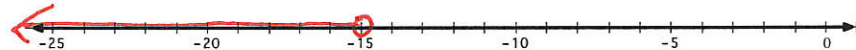

13. $-3x - 4 > 2$

$x < -2$

14. $3x < -6$

$x < -2$

15. $\frac{x}{5} > -\frac{3}{10}$

$x > -1.5$

16. $-10x > 150$

$x < -15$

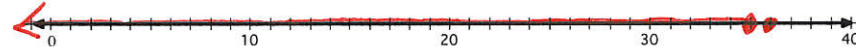17. $\frac{x}{-7} \geq -5$

$x \leq 35$

Solve each multi-step inequality.

18. $x - 5 > 2x + 3$

$x < -8$

19. $\frac{3(x-4)}{12} \leq \frac{2x}{3}$

$x \geq -\frac{12}{5}$

or

$x > -2.4$

20. $2(x - 3) \leq 3x - 2$

$x \geq -4$

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GO

Topic: Use substitution to solve linear systems

Solve each system of equations by using substitution.

Example: $\begin{cases} y = 12 \\ 2x - y = 14 \end{cases}$

The first equation states that $y = 12$. That information can be used in the second equation to find the value of x by replacing y with 12. The second equation now says $\mathbf{2x - (12) = 14}$. Solve this new equation by adding 12 to both sides and then dividing by 2. The result is $x = 13$.

21. $\begin{cases} y = 5 \\ -x + y = 1 \end{cases}$

$(4, 5)$

22. $\begin{cases} x = 8 \\ 5x + 2y = 0 \end{cases}$

$(8, -20)$

23. $\begin{cases} 2y = 10 \\ 4x - 2y = 50 \end{cases}$

$(15, 5)$

24. $\begin{cases} 3x = 12 \\ 4x - y = 5 \end{cases}$

$(4, 11)$

25. $\begin{cases} y = 2x - 5 \\ y = x + 8 \end{cases}$

$(13, 21)$

26. $\begin{cases} 3x = 9 \\ 5x + y = -5 \end{cases}$

$(3, -20)$