

Name: Key

Date:

Topic:

Class:

Main Ideas/Questions	Notes/Examples				
	LESS THAN	LESS THAN OR EQUAL TO	GREATER THAN	GREATER THAN OR EQUAL TO	
inequality symbols	$<$	\leq	$>$	\geq	
graphing inequalities	Directions: Graph each inequality on the number line.				
	1. $x > -8$			2. $k \leq 5$	
	3. $m < -3$			4. $p \geq 14$	
	5. $7 > p$			6. $-2 \leq n$	
	translating inequalities	Directions: Translate each inequality, then graph.			
		7. "A number is less than 4."	$n < 4$		
8. "A number is greater than or equal to -18."		$n \geq -18$			
9. "A number is at least -2."		$n \geq -2$			
10. "A number is no more than 9."		$n \leq 9$			
11. "A number is at most 40."		$n > 40$ $n \leq 40$			
solutions to inequalities	Directions: State whether the number is a solution to the given inequality.				
	12. $x \geq -6$; 4	13. $n < 8$; 11	14. $k \leq 2$; $\frac{4}{3}$		
	Solution	No	Solution		
	15. $a > 15$; 15	16. $w \leq -1.6$; 1.7	17. $r \geq -\frac{9}{5}$; $-\frac{3}{2}$		
	No	No	Solution		

Solving Inequalities

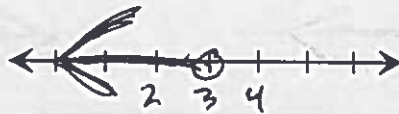
- To solve inequalities, you follow the **same steps** as solving equations.
- If you multiply or divide by a negative number, you must flip the inequality symbol!

Two-Step Inequalities

Directions: Solve each inequality and graph the solution.

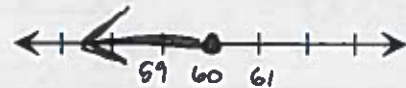
$$18. \quad 3x + 1 < 10$$

$$\begin{array}{r} -1 \quad -1 \\ \hline 3x < 9 \\ \frac{3x}{3} < \frac{9}{3} \\ x < 3 \end{array}$$



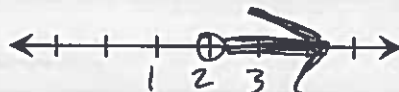
$$19. \quad \frac{a}{5} - 6 \leq 6$$

$$\begin{array}{r} +6 \quad +6 \\ \hline 5 \cdot \frac{a}{5} \leq 12 \cdot 5 \\ a \leq 60 \end{array}$$



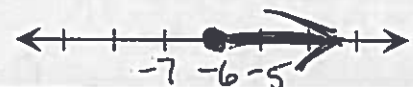
$$20. \quad -2y + 22 < 18$$

$$\begin{array}{r} -22 \quad -22 \\ \hline -2y < -4 \\ \text{Flip Inequality} \rightarrow \frac{-2y}{-2} < \frac{-4}{-2} \\ y > 2 \end{array}$$



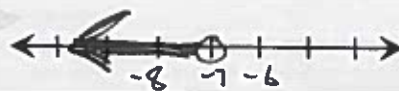
$$21. \quad 7m + 11 \geq -31$$

$$\begin{array}{r} -11 \quad -11 \\ \hline 7m \geq -42 \\ \frac{7m}{7} \geq \frac{-42}{7} \\ m \geq -6 \end{array}$$



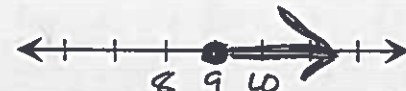
$$22. \quad \frac{w}{-7} + 4 > 5$$

$$\begin{array}{r} -7 \quad -7 \\ \hline \frac{w}{-7} > 1 \cdot 7 \\ \text{Negative Flip Inequality} \rightarrow \frac{w}{-7} > 7 \\ w < -49 \end{array}$$



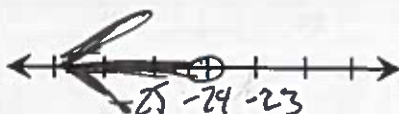
$$23. \quad 4 - 3k \leq -23$$

$$\begin{array}{r} -4 \quad -4 \\ \hline -3k \leq -27 \\ \frac{-3k}{-3} \leq \frac{-27}{-3} \\ k \geq 9 \end{array}$$



$$24. \quad \frac{3}{8}x - 16 < -25$$

$$\begin{array}{r} +16 \quad +16 \\ \hline \frac{3}{8}x < -9 \\ \frac{8}{3} \cdot \frac{3}{8}x < \frac{8}{3} \cdot -9 \\ x < -24 \end{array}$$



$$25. \quad \frac{p+9}{-4} < -5$$

$$\begin{array}{r} -4 \quad -4 \\ \hline p+9 > 20 \\ -9 \quad -9 \\ \hline p > 11 \end{array}$$

