Name:	Date:
Topic:	Class:

Main Ideas/Questions	Examples

Solving
EQUATIONS

Basic Steps to Follow	
❶	**Distribute**
❷	**Simplify Each Side** by combining like terms.
❸	**Move Variables** to one side.
❹	**Solve** using inverse operations.

Directions: Solve each equation below.

1. $6(n + 5) = -18$

2. $\frac{3(5-3x)}{-4} = -15$

3. $2(2 - 7y) - 5 = -29$

4. $-16 = -\frac{15}{16}\left(\frac{4}{5}q + \frac{32}{3}\right)$

5. $10a - 7 = 21 - 6a$

6. $\frac{5}{6}w + 21 = -\frac{1}{3}(2w - 9)$

7. $-5(8p + 6) = 5 - 5p$

8. $16 - (7m + 3) = 8(1 - m)$

	9. $\frac{10x+17-(x-9)}{2}=3x+1$	**10.** $\frac{9}{8}\left(4-\frac{1}{2}a\right)=3\left(\frac{1}{4}a+\frac{5}{2}\right)$
SPECIAL Cases	**11.** $1+3c=5(1-c)+8c$	**12.** $40-8x=-8(x-5)$
PROPORTIONS	**13.** $\frac{5}{2}=\frac{40}{x+4}$	**14.** $\frac{10}{5x-9}=\frac{8}{2x-8}$
LITERAL Equations	**Directions:** Solve each equation or formula for the specified variable.	
	15. $C=2\pi r$ (for π)	**16.** $A=\frac{1}{2}ap$ (for p)
	17. $\frac{a+b}{c}=5$ (for b)	**18.** $3x-3y=24$ (for x)
	19. $7w=\frac{1}{2}(w+v)$ (for v)	**20.** $S=(n-2)\cdot 180$ (for n)

USING EQUATIONS to solve WORD PROBLEMS

Directions: Set up and solve an equation for each problem below.

1. The product of 7 and a number, increased by 3, is equal to twice the number, subtracted from 39. Find the number.

2. Five less than twice a number is equal to one half the difference of three times the number and 13. Find the number.

3. One number is 9 more than twice another number. If the sum of the numbers is 129, find both numbers.

4. Kara's golf score was 1 less than three fourths of Greg's golf score. If the sum of their scores was 153, find Kara's golf score.

5. The length of a rectangle is one more than four times its width. If the perimeter of the rectangle is 62 meters, find the dimensions of the rectangle.

6. The length of one base of a trapezoid is 19 less than five times the length of the other base. If the trapezoid has a height of 18 feet and an area of 477 ft^2, find the length of the longer base.

7. The measure of one angle is six more than half the measure of another angle. If the angles are complementary, find both measures.	**8.** Kelly, Laura, and Tia sold boxes of cookies for a fundraiser. Kelly sold 15 boxes less than Laura. Tia sold twice as many boxes as Kelly. If they sold 83 boxes of cookies in total, how many boxes did each girl sell?
9. The measure of the vertex angle in an isosceles triangle is six less than four times the measure of a base angle. Find the measure of the vertex angle.	**10.** The sum of four consecutive integers is 222. Find the integers.
11. The sum of three consecutive odd integers is 93. Find the integers.	**12.** Find three consecutive even integers such that the sum of the smallest integer and twice the median integer is 20 more than the largest integer.

Name:	Date:
Topic:	Class:

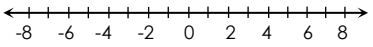
Main Ideas/Questions	Notes/Examples

Graphing INEQUALITIES

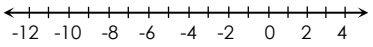
- Use a _____ dot for _____ or _____ symbols.
- Use an _____ dot for _____ or _____ symbols.

Graph each inequality.

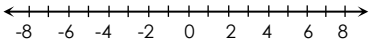
1. $x > 4$



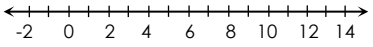
2. $x \leq -7$



3. $x \geq -2$



4. $x < 11$



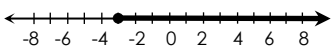
INTERVAL & SET Notation

Interval Notation is a way to write the solution to an inequality using infinity symbols, parentheses, and brackets.

- **Parentheses** indicate **"not included"** or **"open"**
- **Brackets** indicate **"included"** or **"closed"**

Write each inequality in interval notation.

5.



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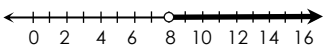

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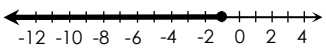

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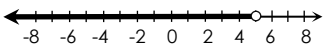


Set Notation is another way to write the solution to an inequality.

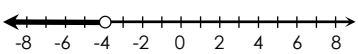
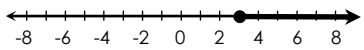
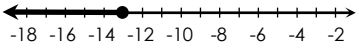
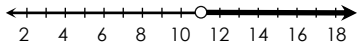
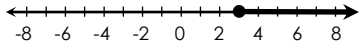
Example: $x > 5$ **Set Notation:** _____

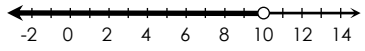
Read as _____

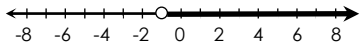
_____

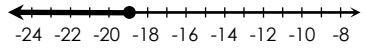
WRITING Inequalities

Write the inequality shown on the graph in interval and set notation.

Graph	Interval Notation	Set Notation
1. 		
2. 		
3. 		
4. 		
5. 		

6. 

7. 

8. 

SOLVING

Multi-Step Inequalities

WATCH OUT:
When you multiply or divide by a negative,

Solve, graph, and write each solution in INTERVAL NOTATION.

9. $5v + 1 > 7v - 17$

Interval Notation:

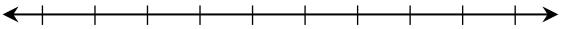
10. $21x - 3(5x + 9) \geq 7$

Interval Notation:

11. $12p + 52 > -2(4 - 2p)$

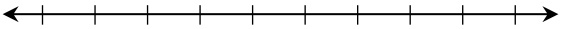
Interval Notation:

12. $3 - (4m + 1) \geq 5m - 25$



Interval Notation:

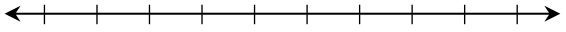
13. $3(8x - 9) > 4(6x + 1)$



Interval Notation:

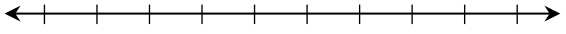
Solve, graph, and write each solution in SET NOTATION.

14. $10(a - 3) - 13a \leq 9(a - 8)$



Set Notation:

15. $8 - 7(2r + 3) \leq 3(r - 10)$



Set Notation:

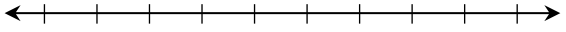
16. $-3(2p + 8) < -4(2p + 6)$

Set Notation:

17. $11x - 4 \leq 6x - (3 - 5x)$

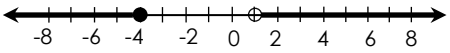
Set Notation:

18. $\frac{4 + 5(2w - 10)}{-2} < w + 7$

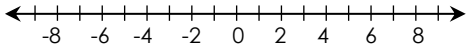


Set Notation:

Name:	Date:
Topic:	Class:

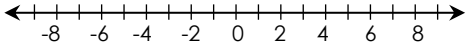
Main Ideas/Questions	Notes
COMPOUND *Inequalities*	
TYPE 1: "OR"	 **Inequality:** **Interval Notation:** **Set Notation:**
SOLVING "OR" *Inequalities* To solve "or" inequalities, solve each part, then graph on a number line to show the solutions.	**Solve, graph, and write each solution in interval notation.**

1. $3x + 4 \le 10$ or $5x > 45$



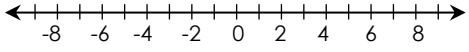
Interval Notation:

2. $n + 6 \le 5$ or $9n + 7 > 43$



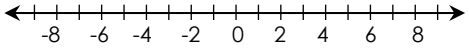
Interval Notation:

3. $-3y + 8 \le -7$ or $10y - 3 \le -33$



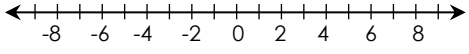
Interval Notation:

4. $6 - 2a < 8$ or $\frac{a}{2} + 1 < -2$



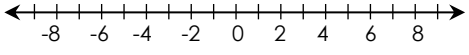
Interval Notation:

5. $3(5 - 2k) < -12$ or $\frac{1}{3}(15k - 9) \le -3$



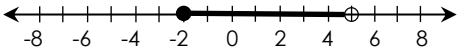
Interval Notation:

6. $\frac{8 - x}{-3} \le -5$ or $5 - \frac{3}{2}x < -1$



Interval Notation:

TYPE 2:
"AND"



Inequality:

Interval Notation:

Set Notation:

REWRITING
"AND"
Inequalities

Because the solutions to an "and" inequality fall between two endpoints, they are frequently written in a more condensed form.

Example: _____ ➡ _____

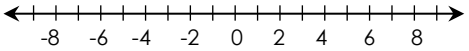
SOLVING "AND"
Inequalities

If the "and" inequalitiy is written out, solve each part separately.

If condensed, you can solve it all together, working inside out. Then, graph to show all possible solutions.

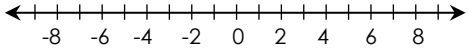
Solve, graph, and write each solution in interval notation.

7. $2x + 3 > -9$ and $8x - 2 < 30$



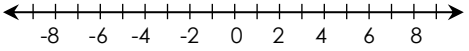
Interval Notation:

8. $2w + 1 \leq 11$ and $1 - 5w < 41$



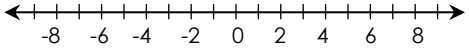
Interval Notation:

9. $-2 \leq a - 1 \leq 6$



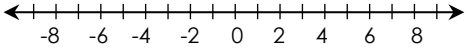
Interval Notation:

10. $4 < 3p + 4 < 19$



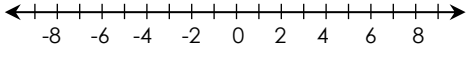
Interval Notation:

11. $28 > -2 - 10m \geq -7$



Interval Notation:

12. $-5 \leq \frac{12 - x}{-2} < -2$



Interval Notation: