Compound Inequalities

Agenda

Warm-Up

HW Check

Notes

Homework: Practice

Objective: You will recognize and solve compound inequalities.

Warm-Up

Write the inequality and solve.

1. Four is less than or equal to twice a number plus twelve.

$4 \leq 2x + 12$

$-12 \quad -12$

$-8 \leq 2x$

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

$-4 \leq x$

2. Twice a number increased by 10 is at most 12 less than the same number.

$12 < x$

$2x + 10 \leq x - 12$

$-x \quad -x$

$x + 10 \leq -12$

$-10 \quad -10$

$x \leq -22$

Homework Check

Did you hear about....

The girl and guy who met in a revolving door and started going around together??

Did You Hear About . . .

1 The	2 girl	3 3.	4 guy	5 who	6 met	7. in	8 a
9 rev.	10 door	11 3.	12 Sand	13 guy	14 snowfighter	15 ??	

Solve each inequality or problem. Write the word under the correct solution in the box containing the exercise number.

Answers 1-7

- $x \geq 44$ — OFTEN
- $x \leq -2\frac{1}{2}$ — AND
- $x > 15$ — HER
- $x > 4\frac{1}{3}$ — THE
- $x < -7$ — MONKEYS
- $x > 13$ — GUY
- $x \geq 58$ — MET
- $x \geq 8$ — WHEN
- $x \leq -2$ — GIRL
- $x \geq 5$ — IN
- $x \leq -4\frac{2}{3}$ — FRIENDS
- $x < -4$ — WHO

1 $7x + 2 > 4x + 15$

2 $10 - 3x \geq 5x + 26$

3 $9x + 40 \leq 15 - x$

4 $3(x - 7) > 18$

5 $75 < -5(4x + 1)$

6 $6(2x - 9) \geq 4 + 11x$

7 $8 - 3(4x - 1) \leq -49$

8 $2(t + 5) > 4t - 7(t + 3)$

9 $-4(3t - 9) > 8(-8 - t)$

10 $14 - (9t - 2) < -t + 26$

11 $45 > 12t + 3(t - 8) - 6$

12 $5(8 - 2t) \leq 2 + 16(4 + t)$

13 $7(5t - 4) - (2 + 15t) < 60$

14 $9(9t - 4) + 3(2t - 3) \geq 30$

15 Suppose you write a book. The printer charges $4 per book to print it, and you spend $3500 on advertising. You sell the book for $15 a copy. How many copies must you sell so that your income from sales is greater than your total cost?

Answers 8-15

- $t > -1\frac{3}{4}$ — DOOR
- $t < 8$ — SPINNING
- $t \leq 0$ — AROUND
- ≥ 308 — CIRCLES
- $t \leq 25$ — REVOLVING
- $t \geq -1$ — STARTED
- $t \leq 3\frac{1}{3}$ — IN
- ≥ 319 — TOGETHER
- $t < 5$ — AND
- $t > -6\frac{1}{5}$ — A
- $t < 4\frac{1}{2}$ — GOING
- $t \geq -3$ — DIZZY

Inequalities:
Solving Inequalities With Parentheses and/or the Variable on Both Sides

9.5

p.22

Algebra I - Unit 1: Topic 4 – Compound Inequalities

Student Notes - Compound Inequalities pp 202-208

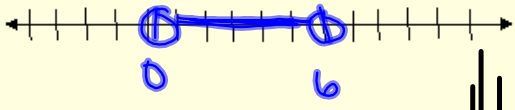
Compound inequality:

• when 2 inequalities are combined into 1 statement

Graph the compound inequality:

1. $-3 \leq x < 2$

2. $0 < x < 6$

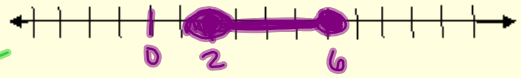


Solve the compound inequality and graph the solutions.

3. $4 \leq x + 2 \leq 8$

$-2 \quad -2 \quad -2$

$2 \leq x \leq 6$



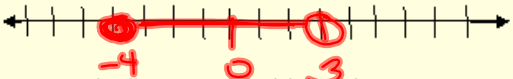
4. $-5 \leq 2x + 3 < 9$

$-3 \quad -3 \quad -3$

$-8 \leq 2x < 6$

$\frac{-8}{2} \leq \frac{2x}{2} < \frac{6}{2}$

$-4 \leq x < 3$



5. Jimmy's car can travel between 380 and 410 miles, inclusive, on a full tank of gas. He filled his tank of and drove 45 miles. How many more miles can he drive without running out of gas?

include

already drove

$380 \leq x + 45 \leq 410$

$-45 \quad -45 \quad -45$

$335 \leq x \leq 365$

He can drive between 335 and 365 more miles.

6. JaVonte's allowance is doubled and is now greater than \$10 but no more than \$16. What amounts could his allowance have been before the increase?

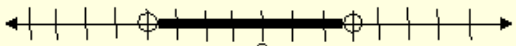
$\frac{10}{2} < \frac{2x}{2} \leq \frac{16}{2}$

$5 < x \leq 8$

\$6, \$7, \$8

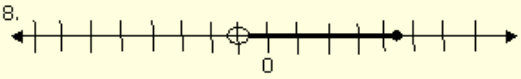
Write the compound inequality shown by each graph.

7.



$-4 < x < 3$

8.



$-1 < x \leq 4.5$

REVIEW

Solve for the given variable.

9. Solve for y on $3x + 7y = 2$

$-3x \quad -3x$

$\frac{7y}{7} = \frac{2 - 3x}{7}$

$y = \frac{2 - 3x}{7}$

SAME

$y = \frac{2}{7} - \frac{3}{7}x$

10. Solve for f on $\frac{f + 3}{g} = 10$

Algebra I - Unit 1: Topic 4 – Compound Inequalities

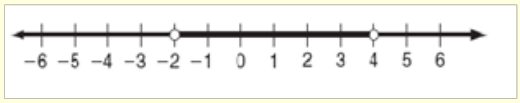
Practice: Compound Inequalities

pp 202-205

Name _____ Date _____ Per _____

Write the compound inequality shown by each graph.

1.



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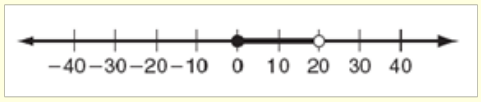
2.



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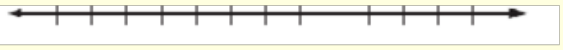
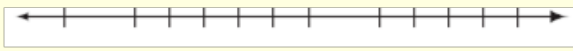
Solve each compound inequality and graph the solutions.

3. $-15 < x - 8 < -4$

4. $12 \leq 4n < 28$



5. $-2 \leq 3b + 7 \leq 13$



6. $5 < 3x - 1 < 17$

Algebra I - Unit 1: Topic 4 – Compound Inequalities

Write a compound inequality for each problem. Graph the solutions.

7. The temperature in a pet iguana's cage should be between 70° F and 95° F, inclusive.

8. ~~Water is a liquid if its temperature is less than 100°C and greater than 0°C.~~

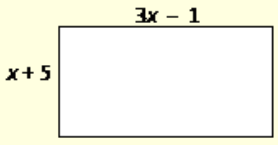
8. A tropical fish requires a water temperature between 68° F and 77° F, inclusive. An aquarium is heated 8 degrees so that a Tetra can live in it. What temperatures could the water have been before the heating?

10. ~~Nathan will be working between 30 to 39 hours, inclusive, this week which is triple what he worked last week. How many hours did Nathan work last week?~~

9. Which of the following is a solution of $-1 < x - 3 < 2$?

A 2 B 3 C -2 D 5

10. The perimeter of the rectangle is 80 m. Find the value of x and the value of each side.



$x =$ _____

Side lengths: _____, _____