

Solving Inequalities Homework

Directions: Be sure to show all work, communicate your thought process, and justify your reasoning. Remember to check that your answers are complete, correct, and reasonable.

Solve and graph your solution to each inequality. Also, represent your solution as a compound inequality. One of these problems has no solution. You may be able to identify it before even solving! Always remember to check your solutions as well.

1. $-2(-3x - 4) + 7 < 25$

2. $3 + 9n \geq 12n + 24$ or $28n - 30 < 12 + 27n$

3. $-(7x + 5) < -3x + 10 - 4x < 23$

4. $6 + 5(2 - x) \leq 41 \leq 38 - 2x$

5. $2q - 5 > -2(1 - q) + 8$

6. $9(8 - x) > 3x + 12$ or $-3x < 21$

7. $12 \geq 2(3n + 1) + 22 > 5n - 10$

8. $-3(2w + 8) < w - 1 \leq -11$

9. The sum of three numbers is less than 108. The smallest number is no smaller than 12. The largest number is exactly triple the smallest number, and the number in the middle is 9 less than twice the smallest number. Determine the possible range of values for the smallest number. Express your answer as a compound inequality, and explain the inequality via a short sentence.

10. At Whole Foods, Sarah plans on buying some fruit for a salad. She wants to buy twice as many plums as peaches, and does not want to buy less than 3 peaches. Sarah would also like to buy 3 less apples than peaches. She would like a total of no more than 25 individual pieces of fruit. Determine the possible values for the number of peaches Sarah can purchase. Explain why you cannot represent this solution as a compound inequality.

Selected Solutions (not including graphs)

1. $x < 5/3$

3. all real numbers

5. no solution

7. $-32 < n \leq -2$

9. let s represent the smallest number

$$12 \leq s \leq 19.5$$

The smallest number can range from 12 to 19.5.