LESSON MAKER PRO

Inequality Line Up

Solve each inequality, then show its solution on a number line.

GRADE 8 · 8.PFA.5.b

8.PFA.5.b "Represent solutions to inequalities algebraically and graphically using a number line."

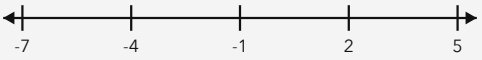
NAME _____ DATE _____

GRAPH THE SOLUTION

Solve an inequality by getting x alone. Reverse the inequality sign only when you multiply or divide by a negative number. Use an open circle for < or >, and a closed circle for ≤ or ≥, then shade in the direction of the solutions.

WORKED EXAMPLE

Solve 11x + 13 < 35. Then graph the solution on the number line.

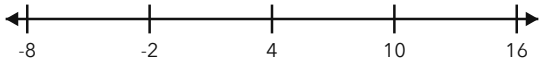


1. Subtract 13 from both sides: 11x < 22.
2. Divide both sides by 11: x < 2.
3. Place an open circle at 2 and shade to the left.

Answer: x < 2; open circle at 2, shaded left.

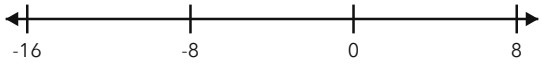
PRACTICE 6 problems

1 Solve 6x - 8 > 52. Then graph the solution on the number line.



ANSWER _____

2 Solve -9x ≤ 72. Then graph the solution on the number line.



ANSWER _____

3 Solve x/14 + 8 < 15. Write the solution and sketch its graph on a number line.

ANSWER _____

4 Solve 33 - 7x ≥ 75. Write the solution and sketch its graph on a number line.

ANSWER _____

5 Solve 7(x - 8) > 49. Write the solution and sketch its graph on a number line.

ANSWER _____

6 Solve -14(x + 8) < -196. Write the solution and sketch its graph on a number line.

ANSWER _____

APPLY IT Show your work

1 Jalen has saved $20 for a game. He earns $9 each week doing chores and wants at least $47. Let x be the number of weeks. Write and solve an inequality, then graph the solution on a number line.

WORK SPACE

ANSWER _____

2 A music app charges a $9 monthly fee plus $6 for each hour of premium listening. You can spend no more than $45. Let x be the number of premium hours. Write and solve an inequality, then graph the solution on a number line.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Solve $23 - 9x > 3x + 95$. Graph the solution on a number line. Explain why the inequality sign changes or does not change when you finish solving.

WORK SPACE AND ANSWER

ANSWER KEY

Inequality Line Up

GRADE 8 · 8.PFA.5.b

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Solve 6x - 8 > 52. Then graph the solution on the number line.	**x > 10; open circle at 10, shaded right.**
2	Solve -9x ≤ 72. Then graph the solution on the number line.	**x ≥ -8; closed circle at -8, shaded right.**
3	Solve x/14 + 8 < 15. Write the solution and sketch its graph on a number line.	**x < 98; open circle at 98, shaded left.**
4	Solve 33 - 7x ≥ 75. Write the solution and sketch its graph on a number line.	**x ≤ -6; closed circle at -6, shaded left.**
5	Solve 7(x - 8) > 49. Write the solution and sketch its graph on a number line.	**x > 15; open circle at 15, shaded right.**
6	Solve -14(x + 8) < -196. Write the solution and sketch its graph on a number line.	**x > 6; open circle at 6, shaded right.**

PART 2 · APPLY IT

1. **20 + 9x ≥ 47; x ≥ 3; closed circle at 3, shaded right.** Subtract 20 to get 9x ≥ 27. Divide by 9, so Jalen needs 3 or more weeks.
2. **9 + 6x ≤ 45; x ≤ 6; closed circle at 6, shaded left.** Subtract 9 to get 6x ≤ 36. Divide by 6, so the listening time can be 6 hours or less.

CHALLENGE

x < -6; open circle at -6, shaded left. The sign changes because dividing -12x > 72 by -12 reverses the inequality sign.

Accept equivalent inequality forms and correct graphs with the matching endpoint type and shading direction. For the word problems, accept an inequality with the terms in either order if it is equivalent.