LESSON MAKER PRO

Inequality Trail

Solve, compare, and show where x belongs.

GRADE 7 · MA.7.AR.2.1

MA.7.AR.2.1 "Write and solve one-step inequalities in one variable within a mathematical context and represent solutions algebraically or graphically."

NAME _____ DATE _____

SOLVE AND SHOW

Undo the operation on x by using the inverse operation on both sides of the inequality. If you multiply or divide by a negative number, reverse the inequality sign. Use an open circle for < or >, and a closed circle for <= or >=.

WORKED EXAMPLE

Solve and graph: -7x > 56

1. Divide both sides by -7.
2. Reverse the inequality sign because you divided by a negative number.
3. x < -8
4. Draw an open circle at -8 and shade left.

Answer: x < -8; open circle at -8, shade left

PRACTICE 6 problems

1 Solve and graph: x + 12 >= 30

ANSWER _____

2 Solve and graph: x - 14 < -3

ANSWER _____

3 Solve and graph: 6x <= 24

ANSWER _____

4 Solve and graph: x/3 > -4

ANSWER _____

5 Solve and graph: -2x >= 20

ANSWER _____

6 Solve and graph: -3x < 15

ANSWER _____

APPLY IT Show your work

1 A gaming club can have no more than 32 players. Nineteen players have already signed up. Write and solve an inequality for the number x of additional players who can join. Graph the solution.

WORK SPACE

ANSWER _____

2 A game costs $39. Priya has saved $27. Write and solve an inequality for the number x of more dollars she must save to have at least enough money. Graph the solution.

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A student solves -5x <= 25 and says x <= -5. Explain the error and give the correct solution with a graph description.

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ANSWER KEY

Inequality Trail

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Solve and graph: x + 12 >= 30	**x >= 18; closed circle at 18, shade right**
2	Solve and graph: x - 14 < -3	**x < 11; open circle at 11, shade left**
3	Solve and graph: 6x <= 24	**x <= 4; closed circle at 4, shade left**
4	Solve and graph: x/3 > -4	**x > -12; open circle at -12, shade right**
5	Solve and graph: -2x >= 20	**x <= -10; closed circle at -10, shade left**
6	Solve and graph: -3x < 15	**x > -5; open circle at -5, shade right**

PART 2 · APPLY IT

1. **x <= 13; closed circle at 13, shade left** Write 19 + x <= 32 because the total cannot be more than 32. Subtract 19 from both sides to get x <= 13.
2. **x >= 12; closed circle at 12, shade right** Write 27 + x >= 39 because Priya needs at least $39. Subtract 27 from both sides to get x >= 12.

CHALLENGE

The student did not reverse the inequality sign when dividing by -5. The correct solution is x >= -5; closed circle at -5, shade right.

Accept equivalent inequality forms with the variable on either side, such as 18 <= x for x >= 18. For graphs, accept correct open or closed endpoints and correct shading direction.