LESSON MAKER PRO

Inequality Trail

Solve, write, and graph one-step inequalities.

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

Use an inverse operation to get x alone. If you multiply or divide by a negative number, reverse the inequality sign. On a number line, use a closed dot for ≤ or ≥ and an open dot for < or >.

WORKED EXAMPLE

Solve and graph: x + 14 ≤ 20

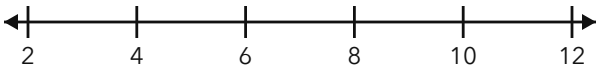


1. Subtract 14 from both sides.
2. x ≤ 6.
3. Place a closed dot at 6 and shade to the left.

Answer: x ≤ 6; closed dot at 6, shaded left

PRACTICE 6 problems

1 Solve and graph: x + 7 > 12



ANSWER _____

_____

2 Solve: x - 9 ≤ 4

ANSWER _____

3 Solve: x/3 ≥ 5

ANSWER _____

4 Solve: -4x < 28

ANSWER _____

5 Solve: $2x \geq 18$

ANSWER _____

6 Solve: $x/(-2) \geq -8$

ANSWER _____

APPLY IT Show your work

1 You have 45 minutes before soccer practice. You need 17 minutes to pack and travel. Let x be the number of minutes you can spend playing a video game. Write and solve an inequality for x.

WORK SPACE

ANSWER

2 A music app gives you 8 free song downloads. You want at least 19 downloads for a playlist. Let x be the number of downloads you buy. Write and solve an inequality, then graph the solution. Graph the real-number inequality, then state which values are possible numbers of downloads.



ANSWER

CHALLENGE One step up

Noah says the solution of $-3x \leq 21$ is $x \leq -7$. Is Noah correct? Explain your reasoning.

WORK SPACE AND ANSWER

ANSWER KEY

Inequality Trail

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Solve and graph: x + 7 > 12	**x > 5; open dot at 5, shaded right**
2	Solve: x - 9 ≤ 4	**x ≤ 13**
3	Solve: x/3 ≥ 5	**x ≥ 15**
4	Solve: -4x < 28	**x > -7**
5	Solve: 2x ≥ 18	**x ≥ 9**
6	Solve: x/(-2) ≥ -8	**x ≤ 16**

PART 2 · APPLY IT

1. **x + 17 ≤ 45 gives x ≤ 28; feasible game time is 0 ≤ x ≤ 28 minutes.** The game time plus the packing and travel time cannot be more than 45 minutes. Subtract 17 from both sides.
2. **x + 8 ≥ 19 gives x ≥ 11. The real-number graph has a closed dot at 11 and a ray right. Possible download counts are whole numbers 11, 12, 13, ….** Subtract 8 from both sides. The inequality includes real values, but this context permits only whole-number download counts.

CHALLENGE

No. The solution is x ≥ -7 because dividing both sides by -3 reverses the inequality sign.

Accept equivalent inequality forms, such as 13 ≥ x for x ≤ 13. For graphs, accept the correct endpoint and direction, with an open or closed dot that matches the inequality.