LESSON MAKER PRO

Inequality Mission

Solve, graph, and interpret strict inequalities.

GRADE 7 · 7.EE.B.4b

CCSS.Math.Content.7.EE.B.4b "Solve word problems leading to inequalities of the form px + q > r or px + q < r, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem..."

NAME _____ DATE _____

SOLVE AND SHOW

Use inverse operations to get the variable alone. If you multiply or divide by a negative number, reverse the inequality sign. For < or >, graph an open circle at the endpoint and shade in the direction of the solutions.

WORKED EXAMPLE

Solve and graph: 6x - 11 < 31

1. Add 11 to both sides: 6x < 42.
2. Divide both sides by 6: x < 7.
3. Graph an open circle at 7 and shade left.

Answer: x < 7; open circle at 7, shaded left

PRACTICE 6 problems

1 Solve and graph: 3x + 8 > 20

ANSWER _____

2 Solve and graph: -5x + 2 > 17

ANSWER _____

3 Solve and graph: x/3 + 1 < 5

ANSWER _____

4 Solve and graph: (9/2)x - 2 > 16

ANSWER _____

5 Solve and graph: (-3/4)x + 10 < 4

ANSWER _____

6 Solve and graph: 2.5x - 1 > 9

ANSWER _____

APPLY IT Show your work

1 At an arcade, your game card starts with 13 bonus tickets. You earn 5 tickets for each game you play. You want more than 33 tickets to trade for a prize. Let g be the number of games. Write and solve an inequality, graph the solution, and tell how many whole games you must play.

WORK SPACE

ANSWER _____

2 A custom sticker order costs $2 for shipping plus $3 for each sticker. You want to spend less than $17. Let s be the number of stickers. Write and solve an inequality, graph the solution, and tell the greatest number of whole stickers you can buy.

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Jordan solves -4x + 9 > 21 and says x > -3. Is Jordan correct? Find the correct solution, graph it, and explain the error.

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_____

ANSWER KEY

Inequality Mission

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Solve and graph: 3x + 8 > 20	**x > 4; open circle at 4, shaded right**
2	Solve and graph: -5x + 2 > 17	**x < -3; open circle at -3, shaded left**
3	Solve and graph: x/3 + 1 < 5	**x < 12; open circle at 12, shaded left**
4	Solve and graph: (9/2)x - 2 > 16	**x > 4; open circle at 4, shaded right**
5	Solve and graph: (-3/4)x + 10 < 4	**x > 8; open circle at 8, shaded right**
6	Solve and graph: 2.5x - 1 > 9	**x > 4; open circle at 4, shaded right**

PART 2 · APPLY IT

1. **5g + 13 > 33; g > 4; open circle at 4, shaded right. You must play 5 or more whole games.** Subtract 13 to get 5g > 20, then divide by 5 to get g > 4. Since games are whole numbers, the least possible number is 5.
2. **3s + 2 < 17; s < 5; open circle at 5, shaded left. You can buy at most 4 whole stickers.** Subtract 2 to get 3s < 15, then divide by 3 to get s < 5. A sticker count must be a whole number, so 4 is the greatest possible count.

CHALLENGE

Jordan is not correct. The solution is x < -3; open circle at -3, shaded left. After dividing -4x > 12 by -4, the inequality sign must reverse.

Accept equivalent algebraic forms and clear graph descriptions with an open endpoint and correct shading direction. For the word problems, accept the continuous inequality solution and the matching whole-number interpretation.