LESSON MAKER PRO

Inequality Power Moves

Expand, simplify, and solve for x.

GRADE 8 · 8.PFA.5.a

8.PFA.5.a "Apply properties of real numbers and properties of inequality to solve multistep linear inequalities (up to four steps) in one variable with the variable on one or both sides of the inequality..."

NAME _____ DATE _____

KEEP IT BALANCED

First expand any parentheses and combine like terms on each side. Then use inverse operations to isolate x. Reverse the inequality symbol only when you multiply or divide by a negative number.

WORKED EXAMPLE

Solve: 11(8x - 17) + 13 <= 12x + 41

1. 88x - 187 + 13 <= 12x + 41
2. 88x - 174 <= 12x + 41
3. 76x <= 215
4. x <= 215/76

Answer: x <= 215/76

PRACTICE 6 problems

1 Solve: x/7 + 10 > 15

ANSWER _____

2 Solve: -7x + 19 <= -30

ANSWER _____

3 Solve: 31 - x/10 > 24

ANSWER _____

4 Solve: 16 + 14x >= 20x - 26

ANSWER _____

5 Solve: 18(x - 9) < 30x + 18

ANSWER _____

6 Solve: (4/9)(x + 18) - 2/3 >= x/6 + 1/2

ANSWER _____

APPLY IT Show your work

1 Your group wants to rent movies for a movie night. The site charges a $6 service fee plus $3 for each movie. You have no more than $54. Let x be the number of movies. Write and solve an inequality to find how many movies you can rent.

WORK SPACE

ANSWER _____

2 You compare two music download plans. Plan A charges $14 plus $2 per album. Plan B charges $4 plus $3 per album. Let x be the number of albums. Find when Plan A costs no more than Plan B.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Solve: $-6(3x - 4) + 9 < 7(x + 2) - 6x$. Then write one sentence explaining why the inequality symbol does not reverse.

WORK SPACE AND ANSWER

ANSWER KEY

Inequality Power Moves

GRADE 8 · 8.PFA.5.a

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Solve: x/7 + 10 > 15	**x > 35**
2	Solve: -7x + 19 <= -30	**x >= 7**
3	Solve: 31 - x/10 > 24	**x < 70**
4	Solve: 16 + 14x >= 20x - 26	**x <= 7**
5	Solve: 18(x - 9) < 30x + 18	**x > -15**
6	Solve: (4/9)(x + 18) - 2/3 >= x/6 + 1/2	**x >= -123/5**

PART 2 · APPLY IT

1. **6 + 3x <= 54, so 0 <= x <= 16, where x is a whole number.** Write 6 + 3x <= 54. Subtract 6, divide by 3, and use the fact that a number of movies must be a whole number.
2. **14 + 2x <= 4 + 3x, so x >= 10, where x is a whole number.** Write 14 + 2x <= 4 + 3x. Subtract 2x and then subtract 4 to get 10 <= x.

CHALLENGE

x > 1. The symbol does not reverse because I divide by positive 19, not a negative number.

Accept equivalent inequality forms, such as 7 >= x for x <= 7. For the word problems, accept only whole-number quantities that fit the context.