LESSON MAKER PRO

Inequality Switches

Solve for x and watch the sign.

GRADE 7 · 7.PFA.4.a

7.PFA.4.a "Apply properties of real numbers and the addition, subtraction, multiplication, and division properties of inequality to solve one- and two-step inequalities in one variable. Coefficients and numeric terms will be rational."

NAME _____ DATE _____

KEEP BOTH SIDES BALANCED

To isolate x, undo addition or subtraction first, then undo multiplication or division. If you multiply or divide both sides by a negative number, reverse the inequality sign.

WORKED EXAMPLE

Solve: -13x + 21 < -70

1. Subtract 21 from both sides: -13x < -91.
2. Divide both sides by -13 and reverse the sign: x > 7.

Answer: x > 7

PRACTICE 6 problems

1 Solve: x + 6 <= 15

ANSWER _____

2 Solve: x - 11 > -5

ANSWER _____

3 Solve: 2x >= 18

ANSWER _____

4 Solve: x/5 < -2

ANSWER _____

5 Solve: -8x <= 16

ANSWER _____

6 Solve: (1/2)x + 10 >= 14

ANSWER _____

APPLY IT Show your work

1 You have 42 game tokens. You want to save 12 tokens for later. Each round of your favorite game costs 6 tokens. Write and solve an inequality for x, the number of rounds you can play.

WORK SPACE

ANSWER _____

2 A music subscription costs $2 to start and $3 each month. You can spend no more than $20. Write and solve an inequality for x, the number of full months you can subscribe.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Solve: $5 - 2x > 17$

WORK SPACE AND ANSWER

ANSWER KEY

Inequality Switches

GRADE 7 · 7.PFA.4.a

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Solve: x + 6 <= 15	**x <= 9**
2	Solve: x - 11 > -5	**x>6**
3	Solve: 2x >= 18	**x >= 9**
4	Solve: x/5 < -2	**x < -10**
5	Solve: -8x <= 16	**x >= -2**
6	Solve: (1/2)x + 10 >= 14	**x >= 8**

PART 2 · APPLY IT

1. **6x + 12 <= 42; x <= 5** Set up 6x + 12 <= 42 because the game costs plus saved tokens cannot exceed 42. Subtract 12, then divide by 6 to get x <= 5.
2. **3x + 2 <= 20; x <= 6** Set up 3x + 2 <= 20 because the total cost cannot be more than $20. Subtract 2, then divide by 3 to get x <= 6.

CHALLENGE

x < -6

Accept equivalent inequality wording, such as “x is at most 9” for x <= 9. For the word problems, accept correct inequality models and whole-number interpretations of x.