LESSON MAKER PRO

Inequality Mission

Solve multistep inequalities in equations and real situations.

GRADE 8 · 8.PFA.5.e

8.PFA.5.e "Solve problems in context that require the solution of a multistep linear inequality in one variable."

NAME _____ DATE _____

KEEP BOTH SIDES BALANCED

Use inverse operations to isolate x, doing the same operation to both sides. If you multiply or divide by a negative number, reverse the inequality sign.

WORKED EXAMPLE

Solve: $5(x + 2) - 7 > 18$

1. Distribute: 5x + 10 - 7 > 18
2. Combine constants: 5x + 3 > 18
3. Subtract 3: 5x > 15
4. Divide by 5: x > 3

Answer: x > 3

PRACTICE 6 problems

1 Solve: 4x + 9 <= 33

ANSWER _____

2 Solve: 11 - 4x < -13

ANSWER _____

3 Solve: 6(x + 4) >= 48

ANSWER _____

4 Solve: 14 - 6x > -22

ANSWER _____

5 Solve: x/4 + 11 >= 19

ANSWER _____

6 Solve: -4(x + 8) + 13 <= -35

ANSWER _____

APPLY IT Show your work

1 A music app charges a $12 start fee and $4 per month. A coupon takes $6 off the total. You can spend no more than $42. Let x be the number of months. Write and solve an inequality to find the greatest number of full months you can buy.

WORK SPACE

ANSWER _____

2 Your arcade card begins with 64 credits and gets an 11-credit bonus. Each game costs 6 credits. You want at least 27 credits left. Let x be the number of games you play. Write and solve an inequality to find the greatest number of whole games you can play.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Solve: 12(x - 4) - 11 > 6x + 25. Then explain why the inequality sign does not reverse.

WORK SPACE AND ANSWER

ANSWER KEY

Inequality Mission

GRADE 8 · 8.PFA.5.e

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Solve: 4x + 9 <= 33	**x <= 6**
2	Solve: 11 - 4x < -13	**x > 6**
3	Solve: 6(x + 4) >= 48	**x >= 4**
4	Solve: 14 - 6x > -22	**x < 6**
5	Solve: x/4 + 11 >= 19	**x >= 32**
6	Solve: -4(x + 8) + 13 <= -35	**x >= 4**

PART 2 · APPLY IT

1. **x <= 9, so you can buy at most 9 full months.** Write 12 + 4x - 6 <= 42. Simplify and solve: 4x + 6 <= 42, so 4x <= 36 and x <= 9.
2. **x <= 8, so you can play at most 8 whole games.** Write 64 + 11 - 6x >= 27. Solve -6x >= -48, then reverse the sign when dividing by -6 to get x <= 8.

CHALLENGE

x > 14. The sign does not reverse because subtracting 6x and dividing by positive 6 preserve the order of the two sides.

Accept equivalent inequality notation. For the word problems, accept answers stated as at most 9 months and at most 8 whole games.