LESSON MAKER PRO

Find the Limit

Solve inequalities and decide what their answers mean.

HIGH SCHOOL · FA.A.9

FA.A.9 "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. Solve inequalities of these forms fluently. (7.EE.4b)"

NAME _____ DATE _____

KEEP THE INEQUALITY TRUE

To solve an inequality, undo addition or subtraction first, then undo multiplication or division. If you multiply or divide by a negative number, reverse the inequality sign. In a word problem, check whether x must be a whole number.

WORKED EXAMPLE

Solve $2/5x + 9 > 21$.

1. Subtract 9 from both sides: $2/5x > 12$.
2. Multiply both sides by 5/2: $x > 30$.

Answer: x > 30

PRACTICE 6 problems

1 Solve $3x + 4 > 16$.

ANSWER _____

2 Solve $1/2x - 3 < 5$.

ANSWER _____

3 Solve $-4x + 6 > 14$.

ANSWER _____

4 Solve $3/4x + 1 < 7$.

ANSWER _____

5 Solve $-1/4x - 6 < -1$.

ANSWER _____

6 Solve $1.5x - 2 > 5.5$.

ANSWER _____

APPLY IT Show your work

1 At an arcade, you pay $4 to enter and $1.50 for each game. You want to spend less than $16. Let x be the number of games. Write and solve an inequality, then find the greatest number of games you can play.

WORK SPACE

ANSWER _____

2 You spend $5 on supplies to make phone charms and sell each charm for $2. You want to earn more than $16 in profit after paying for supplies. Let x be the number of charms sold. Write and solve an inequality, then find the fewest charms you must sell.

WORK SPACE

ANSWER _____

CHALLENGE One step up

A student solves -2/3x + 4 > 10 and writes x > -9. Solve the inequality correctly. Explain the student's error.

WORK SPACE AND ANSWER

ANSWER KEY # Find the Limit

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Solve 3x + 4 > 16.	**x > 4**
2	Solve 1/2x - 3 < 5.	**x < 16**
3	Solve -4x + 6 > 14.	**x < -2**
4	Solve 3/4x + 1 < 7.	**x < 8**
5	Solve -1/4x - 6 < -1.	**x > -20**
6	Solve 1.5x - 2 > 5.5.	**x > 5**

PART 2 · APPLY IT

1. **1.50x + 4 < 16; x < 8; greatest number: 7 games** Subtract 4 and divide by 1.50 to get x < 8. Because x is a whole number and 8 is not included, the greatest possible value is 7.
2. **2x - 5 > 16; x > 10.5; fewest number: 11 charms** Add 5 and divide by 2 to get x > 10.5. The fewest whole number of charms that meets this condition is 11.

CHALLENGE

x < -9. The student did not reverse the inequality sign when dividing by -2/3.

Accept equivalent fraction or decimal forms of the solutions. For the word problems, students must give both the inequality solution and a whole-number answer that respects the strict inequality.