LESSON MAKER PRO

Unlock the Unknown

Distribute, combine, and solve.

GRADE 8 · 8.EE.7b

8.EE.7b "Solve linear equations and inequalities with rational number coefficients, including those whose solutions require expanding expressions using the distributive property and collecting like terms."

NAME _____ DATE _____

THE BIG IDEA

Multiply every term inside parentheses by the number outside. Combine like terms, then use opposite operations to isolate x. If you divide an inequality by a negative number, reverse the inequality sign.

WORKED EXAMPLE

Solve -3/7(7x - 14) + 2x = 19.

1. -3x + 6 + 2x = 19
2. -x + 6 = 19
3. -x = 13
4. x = -13

Answer: x = -13

PRACTICE 6 problems

1 Solve 3/4x - 5 = 1.

ANSWER _____

2 Solve -2(x - 3) = 14.

ANSWER _____

3 Solve 1/2(6x - 4) = x + 8.

ANSWER _____

4 Solve 5/6x + 1/3 = 1/2x + 5/3.

ANSWER _____

5 Solve -2(x - 3) + 1/2x >= 12.

ANSWER _____

6 Solve 2/3(3x - 6) - 1/2(x + 4) = 1/2x + 5.

ANSWER _____

APPLY IT Show your work

1 At a gaming cafe, a pass costs $6 and each game costs $3. A coupon takes half off your entire bill. You pay $12. How many games did you play?

WORK SPACE

ANSWER _____

2 You and a friend each order x stickers at 3/4 of a dollar per sticker. You each pay a $2 shipping fee. Together, you pay $19. How many stickers does each of you order?

WORK SPACE

ANSWER _____

CHALLENGE One step up

Solve 3/4(8x - 12) + 5 = 2(3x - 2) - 1, or explain why it has no solution.

WORK SPACE AND ANSWER

ANSWER KEY # Unlock the Unknown

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Solve 3/4x - 5 = 1.	**x = 8**
2	Solve -2(x - 3) = 14.	**x = -4**
3	Solve 1/2(6x - 4) = x + 8.	**x = 5**
4	Solve 5/6x + 1/3 = 1/2x + 5/3.	**x = 4**
5	Solve -2(x - 3) + 1/2x >= 12.	**x <= -4**
6	Solve 2/3(3x - 6) - 1/2(x + 4) = 1/2x + 5.	**x = 11**

PART 2 · APPLY IT

1. **6 games** Let x be the number of games. Solve 1/2(6 + 3x) = 12 to get x = 6.
2. **10 stickers each** The combined cost is 2(3/4x + 2) = 19. Distribute and solve 3/2x + 4 = 19 to get x = 10.

CHALLENGE

No solution. The left side simplifies to 6x - 4, and the right side simplifies to 6x - 5. They cannot be equal.

Accept equivalent forms of the inequality in problem 5. For the challenge, accept any explanation showing that the x terms cancel and leave a false statement.