LESSON MAKER PRO

Costs and Limits

Solve equations and inequalities to make sense of real choices.

GRADE 7 · 7.AF.B

7.AF.B "Solve real-world and mathematical problems using numerical and algebraic expressions, equations, and inequalities."

NAME _____ DATE _____

UNDO TO SOLVE

To find x, use opposite operations to get x by itself. Do the same thing to both sides. If you multiply or divide an inequality by a negative number, reverse its sign.

WORKED EXAMPLE

Solve 8x + 17 = 49.

1. Subtract 17 from both sides: 8x = 32.
2. Divide both sides by 8: x = 4.

Answer: x = 4

PRACTICE 6 problems

1 Solve 3x + 5 = 20.

ANSWER _____

2 Solve 2x - 9 = 15.

ANSWER _____

3 Solve x/3 + 2 = 10.

ANSWER _____

4 Solve 5x + 3 < 28.

ANSWER _____

5 Solve 18 - 3x >= 9.

ANSWER _____

6 Solve x/(-2) + 1 > -5.

ANSWER _____

APPLY IT Show your work

1 You order sticker packs for your club. Shipping costs $5, and each pack costs $3. Your total is $26. How many packs did you order? Write an equation and solve it.

WORK SPACE

ANSWER _____

2 A game server costs $12 each month plus $3 for each player slot you add. You can spend no more than $30 this month. What is the greatest number of player slots you can add? Write an inequality and solve it.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Two gaming lounges offer hourly play. Plan A charges a $16 entry fee plus $2 per hour. Plan B charges a $1 entry fee plus $5 per hour. For which whole numbers of hours is Plan A cheaper? Write and solve an inequality.

WORK SPACE AND ANSWER

ANSWER KEY

Costs and Limits

GRADE 7 · 7.AF.B

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Solve 3x + 5 = 20.	**x = 5**
2	Solve 2x - 9 = 15.	**x = 12**
3	Solve x/3 + 2 = 10.	**x = 24**
4	Solve 5x + 3 < 28.	**x < 5**
5	Solve 18 - 3x >= 9.	**x <= 3**
6	Solve x/(-2) + 1 > -5.	**x < 12**

PART 2 · APPLY IT

1. **7 packs** Let x be the number of packs. Solve 5 + 3x = 26 to get x = 7.
2. **6 player slots** Let x be the number of player slots. Solve 12 + 3x <= 30 to get x <= 6, so the greatest possible number is 6.

CHALLENGE

16 + 2x < 1 + 5x, so x > 5. Plan A is cheaper for 6 or more whole hours.

Accept equivalent equations or inequalities in the word problems. In the challenge, students must use a strict inequality because equal costs do not make Plan A cheaper.