LESSON MAKER PRO

Find the Breakpoint

Solve equations and inequalities, then use them to make choices.

GRADE 7 · 7A.AF.C

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

NAME _____ DATE _____

UNDO IN ORDER

To solve a two-step equation or inequality, undo addition or subtraction first, then undo multiplication or division. Do the same operation to both sides. When you divide by a positive number, the inequality sign stays the same.

WORKED EXAMPLE

Solve 8x + 19 = 67.

1. Subtract 19 from both sides: 8x = 48.
2. Divide both sides by 8: x = 6.

Answer: x = 6

PRACTICE 6 problems

1 Solve 3x + 4 = 25.

ANSWER _____

2 Solve 4x - 12 = 24.

ANSWER _____

3 Solve x/2 + 7 = 15.

ANSWER _____

4 Solve 5x + 11 = -4.

ANSWER _____

5 Solve 3x + 2 < 23.

ANSWER _____

6 Solve 2x - 5 >= 17.

ANSWER _____

APPLY IT Show your work

1 An arcade charges a $4 entry fee and $3 per game. You spend $31 in all. How many games did you play? Write and solve an equation.

WORK SPACE

ANSWER _____

2 You have $32 to order sticker sheets. Shipping costs $5, and each sheet costs $3. What is the greatest number of sheets you can buy? Write and solve an inequality.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Two video-editing apps charge by the clip. Plan A costs $2 plus $4 per clip. Plan B costs $29 plus $1 per clip. For which whole-number values of x, the number of clips, is Plan B cheaper? Write an inequality and explain your answer in one sentence.

WORK SPACE AND ANSWER

ANSWER KEY

Find the Breakpoint

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Solve 3x + 4 = 25.	**x = 7**
2	Solve 4x - 12 = 24.	**x = 9**
3	Solve x/2 + 7 = 15.	**x = 16**
4	Solve 5x + 11 = -4.	**x = -3**
5	Solve 3x + 2 < 23.	**x < 7**
6	Solve 2x - 5 >= 17.	**x >= 11**

PART 2 · APPLY IT

1. **3x + 4 = 31; x = 9 games** Subtract the $4 entry fee from $31, then divide the remaining $27 by $3 per game.
2. **3x + 5 <= 32; x <= 9, so the greatest number is 9 sheets.** Subtract $5 from both sides, then divide by $3. Since sheets come in whole numbers, the greatest amount you can buy is 9.

CHALLENGE

29 + x < 2 + 4x, so x > 9 and Plan B is cheaper for 10 or more clips.

Accept equivalent equations or inequalities in the word problems. For the challenge, accept any one-sentence explanation that shows Plan B costs less starting at 10 clips.