LESSON MAKER PRO

Which Values Work?

Solve inequalities and show their solutions.

GRADE 8 · 8.AT.B.4

8.AT.B.4 "Solve linear inequalities in one variable. Solve inequalities including those requiring the use of the distributive property and combining like terms..."

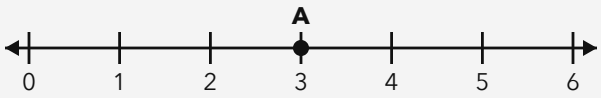
NAME _____ DATE _____

SOLVE AND SHOW

Expand parentheses and combine like terms before isolating x. If you multiply or divide by a negative number, reverse the inequality sign. On a number line, use an open point for < or > and a filled point for <= or >=.

WORKED EXAMPLE

Solve 7(x + 4) > 2x + 43. Use A to show the solution on the number line.



1. 7x + 28 > 2x + 43
2. 5x > 15
3. x > 3

Answer: Use an open point at A and shade right.

PRACTICE 4 problems

1 Solve 4x - 9 < 23.

ANSWER _____

2 Solve -3x + 8 >= 20.

ANSWER _____

3 Solve 2(x + 7) <= 5x - 1.

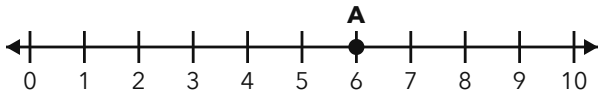
ANSWER _____

4 Solve 6(x - 2) + x > 2x + 18.

ANSWER _____

APPLY IT Show your work

1 An arcade charges $12 to enter and $5 per game. You have $42. Let x be games. Write and solve an inequality. Is A open or filled, and which way do you shade? State the possible game counts.



ANSWER _____

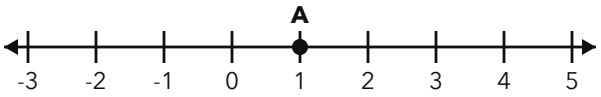
2 A video app charges $10 to start and $6 per rental. A coupon takes $2 off each rental. You have $40. Let x be rentals. Write and solve an inequality. State the possible rental counts.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Solve 9 - 2(3x + 1) >= 4(x - 2) + 5. Use A to show the solution on the line. Explain why the inequality sign flips.



WORK SPACE AND ANSWER

ANSWER KEY # Which Values Work?

GRADE 8 · 8.AT.B.4

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Solve 4x - 9 < 23.	**x < 8**
2	Solve -3x + 8 >= 20.	**x <= -4**
3	Solve 2(x + 7) <= 5x - 1.	**x >= 5**
4	Solve 6(x - 2) + x > 2x + 18.	**x > 6**

PART 2 · APPLY IT

1. **12 + 5x <= 42, so x <= 6. Fill A and shade left to 0. You can play 0 through 6 whole games.** Subtract 12, then divide by 5. Only whole, nonnegative game counts make sense.
2. **10 + (6 - 2)x <= 40, so x <= 15/2. You can rent 0 through 7 videos.** Each rental costs $4 after the coupon. The budget allows at most 15/2 rentals, so the greatest whole-number count is 7.

CHALLENGE

x <= 1. Fill A and shade left. The sign flips when you divide -10x >= -10 by -10.

Accept equivalent inequalities. In the word problems, accept a list of whole-number counts or a clear range from 0 through the stated maximum.