LESSON MAKER PRO

Which Numbers Work?

Solve inequalities and test values on a number line.

GRADE 6 · 6.AT.C.10

6.AT.C.10 "Solve problems in context by writing and solving inequalities and interpreting solution sets in context. Explain that a variable can represent an unknown number in a set and use substitution to determine whether a given number in a set..."

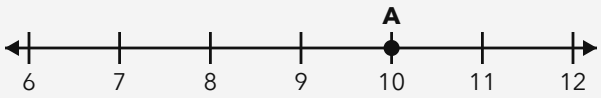
NAME _____ DATE _____

FIND THE SOLUTION SET

Undo an operation to get x alone. When you add, subtract, multiply, or divide by a positive number, the inequality sign stays the same. Substitute a marked number for x to see if it works.

WORKED EXAMPLE

Solve $x + 5 > 14$. Mark the solutions on the line. Does A work?



1. Subtract 5: $x > 9$.
2. Use an open circle at 9 and shade right.
3. A is 10, and $10 + 5 > 14$.

Answer: x > 9; A works.

PRACTICE 4 problems

1 Solve $x + 4 \leq 12$.

ANSWER _____

2 Solve $x - 1/2 > 3/2$.

ANSWER _____

3 Solve $(3/4)x \geq 6$.

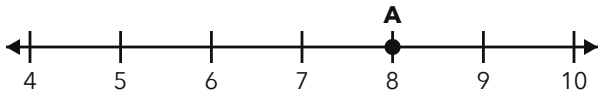
ANSWER _____

4 Solve $x/4 < 3$.

ANSWER _____

APPLY IT Show your work

1 Stickers cost $3 per pack. Spend at least $21 to get a prize. Let x be packs. Write and solve an inequality. Mark the whole-number solutions shown on the line. Does A work?



ANSWER _____

2 You have walked 6 miles toward a 19-mile goal. Let x be more miles walked. Write and solve an inequality. Mark its solutions on the line. Does B work?



ANSWER _____

CHALLENGE One step up

You have $18. A game costs $6, and each add-on costs $4. Let x be add-ons. Write and solve an inequality. What is the greatest whole number of add-ons you can buy?

WORK SPACE AND ANSWER

ANSWER KEY

Which Numbers Work?

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Solve $x + 4 \le 12$.	**$x \le 8$**
2	Solve $x - 1/2 > 3/2$.	**$x > 2$**
3	Solve $(3/4)x \ge 6$.	**$x \ge 8$**
4	Solve $x/4 < 3$.	**$x < 12$**

PART 2 · APPLY IT

1. **3x ≥ 21; x ≥ 7 packs. Mark 7, 8, 9, and 10 on the line. A works.** Divide both sides by 3. At A, 3 × 8 = 24, which is at least 21.
2. **6 + x ≥ 19; x ≥ 13 miles. Use a closed circle at 13 and shade right. B does not work.** Subtract 6 from both sides. At B, 6 + 12 = 18, which is less than 19.

CHALLENGE

6 + 4x ≤ 18; x ≤ 3. You can buy at most 3 add-ons.

For number lines, accept any clear marking of the requested solutions. In the sticker problem, x must be a whole number of packs.