LESSON MAKER PRO

Solve and Show

Equations, inequalities, and what their solutions mean

GRADE 7 · 7.EE.4

7.EE.4 "Apply the concepts of linear equations and inequalities in one variable to real-world and mathematical situations. Write and fluently solve linear equations of the form ax +b = c and a(x + b) = c where a, b, and c are rational numbers..."

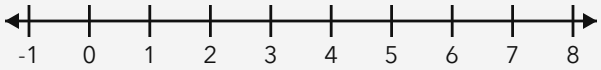
NAME _____ DATE _____

KEEP IT BALANCED

Undo addition or subtraction, then multiplication or division. If you multiply or divide an inequality by a negative number, reverse its sign. On a number line, use a closed circle for <= or >= and an open circle for < or >.

WORKED EXAMPLE

Solve 5x - 7 <= 18. Graph the solution on the number line.



1. Add 7: 5x <= 25.
2. Divide by 5: x <= 5.
3. Put a closed circle at 5.
4. Shade to the left.

Answer: x <= 5; closed circle at 5, shaded left

PRACTICE 4 problems

1 Solve 3(x + 4) = 30.

ANSWER _____

2 Solve 2(x - 3) + 4x = 36.

ANSWER _____

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

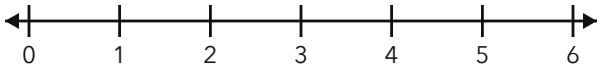
ANSWER _____

4 Solve -2x + 9 > 1.

ANSWER _____

APPLY IT Show your work

1 Your phone has 22% charge. Streaming uses 3% per hour. You need at least 10% left. Let x be streaming hours. Write and solve an inequality, then graph the possible hours on the number line.



ANSWER _____

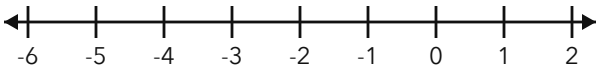
2 Three friends buy the same game pass. Together they pay $28, including a one-time $4 fee. Write an equation and find the cost of one pass.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Solve -3/2(x - 2) > 6. Graph the solution on the number line and explain why the inequality sign changes.



WORK SPACE AND ANSWER

ANSWER KEY # Solve and Show

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Solve 3(x + 4) = 30.	**x = 6**
2	Solve 2(x - 3) + 4x = 36.	**x = 7**
3	Solve (3/4)x + 2 = 8.	**x = 8**
4	Solve -2x + 9 > 1.	**x < 4**

PART 2 · APPLY IT

1. **22 - 3x >= 10; 0 <= x <= 4. Closed circles at 0 and 4, shaded between them.** Subtract 22, then divide by -3 and reverse the sign to get x <= 4. Hours cannot be negative.
2. **3x + 4 = 28; one pass costs $8.** Subtract the $4 fee from $28, then divide the remaining $24 by 3.

CHALLENGE

x < -2; open circle at -2, shaded left. Dividing by -3/2 reverses the inequality sign.

Accept equivalent equations and solution steps. For the phone problem, the graph must include 0 because streaming time cannot be negative.