LESSON MAKER PRO

Which Way Now?

Solve inequalities and show their solutions.

GRADE 7 · 7.AT.C.9.b

7.AT.C.9.b "Solve inequalities of these forms and graph the solution set on a number line."

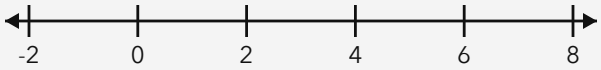
NAME _____ DATE _____

SOLVE, THEN GRAPH

Undo operations to get x alone. If you multiply or divide by a negative number, reverse the inequality sign. Use an open dot for < or > and a filled dot for ≤ or ≥.

WORKED EXAMPLE

Solve 7x - 10 ≥ 18. Graph the solution on this number line.



1. Add 10: 7x ≥ 28.
2. Divide by 7: x ≥ 4.
3. Put a filled dot at 4 and shade right.

Answer: x ≥ 4; filled dot at 4, shaded right

PRACTICE 4 problems

1 Solve 2x + 5 ≤ 17. Give the dot and shading direction.

ANSWER _____

2 Solve 8 - 3x < 23. Give the dot and shading direction.

ANSWER _____

3 Solve x/2 - 9 ≥ -1. Give the dot and shading direction.

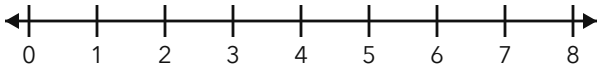
ANSWER _____

4 Solve -2x - 1 ≥ 15. Give the dot and shading direction.

ANSWER _____

APPLY IT Show your work

1 A game costs $8 plus $3 per extra level. You can spend at most $26. Let x be the number of extra levels. Write and solve an inequality, then graph the possible values of x on this number line.



ANSWER _____

2 A hike is at least 15 miles long. You have hiked 6 miles and will hike x more miles. Write and solve an inequality, then graph x on this number line.



ANSWER _____

CHALLENGE One step up

Solve -2x + 7 < 19. A student wrote x < -6. Explain the mistake, then give the correct dot and shading direction.

WORK SPACE AND ANSWER

ANSWER KEY

Which Way Now?

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Solve 2x + 5 ≤ 17. Give the dot and shading direction.	**x ≤ 6; filled dot at 6, shade left**
2	Solve 8 - 3x < 23. Give the dot and shading direction.	**x > -5; open dot at -5, shade right**
3	Solve x/2 - 9 ≥ -1. Give the dot and shading direction.	**x ≥ 16; filled dot at 16, shade right**
4	Solve -2x - 1 ≥ 15. Give the dot and shading direction.	**x ≤ -8; filled dot at -8, shade left**

PART 2 · APPLY IT

1. **8 + 3x ≤ 26; x ≤ 6. Plot dots at 0, 1, 2, 3, 4, 5, and 6.** Subtract 8, then divide by 3. Since x counts levels, graph only whole numbers from 0 through 6.
2. **6 + x ≥ 15; x ≥ 9. Filled dot at 9, shaded right.** Subtract 6 from both sides. Any distance of at least 9 more miles meets the goal.

CHALLENGE

Subtracting 7 gives -2x < 12. Dividing by -2 reverses the sign, so x > -6. Use an open dot at -6 and shade right.

Accept equivalent inequality notation and clear graph descriptions. For the game, accept a graph with only the seven whole-number values from 0 through 6.