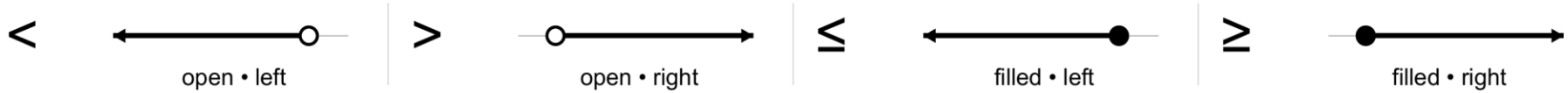
Multiply or divide by a negative: reverse order

Inspect before you think. Think before you write. Write before you answer. Explain how you know.

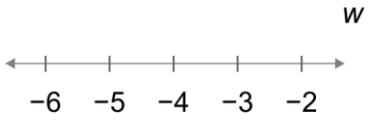
Graph the SOLVED inequality with the variable on the left.



1 Return to yesterday

$$3w \leq -12$$

Show the operation and solution. Then graph.



Divide by positive 3 → keep ≤.

2 Watch the order change

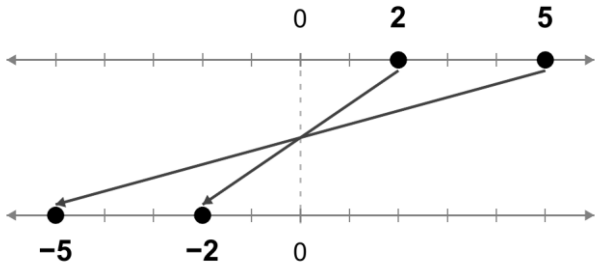
Before: $2 < 5$

Multiply BOTH sides by −1.
Reverse < to >.

$$(-1)(2) > (-1)(5)$$

Simplify: $-2 > -5$

−2 is to the right of −5.



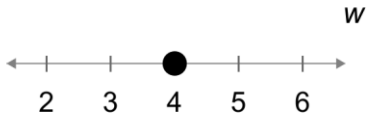
When you multiply or divide BOTH sides by a negative number, reverse the inequality sign.

3 The related equation locates the boundary

Equation → boundary

Divide BOTH sides by −3.

$$-3w = -12$$
$$\frac{-3w}{-3} = \frac{-12}{-3}$$
$$w = 4$$

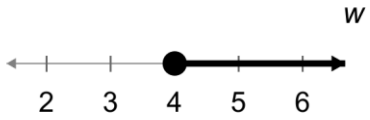


4 locates the boundary.

Inequality → all solutions

Divide BOTH sides by −3; reverse ≤.

$$-3w \leq -12$$
$$\frac{-3w}{-3} \geq \frac{-12}{-3}$$
$$w \geq 4$$



Include 4; every greater value works.

Check near the boundary

Use the ORIGINAL inequality:

$$-3w \leq -12$$

w = 3: −9 ≤ −12 FALSE

w = 4: −12 ≤ −12 TRUE

w = 5: −15 ≤ −12 TRUE

Below 4 fails. At 4 works.
Above 4 works. The ray goes right.

TOPIC ID: **23B-C1**	TOPIC TITLE: Multiplicative property of inequality		
NAME:		BLOCK:	DATE: October 8, 2026

FORESTHILL HIGH SCHOOL

LEARNING PAPER EVIDENCE

Solve and graph with positive or negative operations

Graph the SOLVED inequality with the variable on the left.

$<$	$>$	$\leq$	$\geq$
open • left	open • right	filled • left	filled • right

4 Model an ALEKS problem

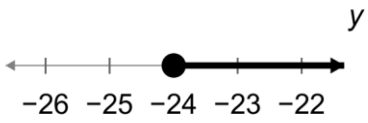
Multiply BOTH sides by −3. Reverse ≥ to ≤.

$$8 \geq \frac{y}{-3}$$

$$(-3)(8) \leq (-3)(\frac{y}{-3})$$

$$-24 \leq y$$

$$y \geq -24$$

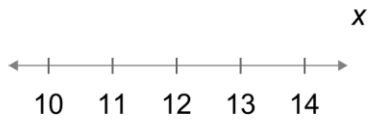


−24 ≤ y and y ≥ −24 are the SAME relationship.
The last line writes the variable first.

5 Solve with your teacher

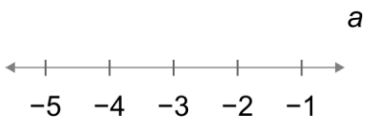
$$-3 < \frac{x}{-4}$$

Multiply BOTH sides by −4. Show your steps.
Write the variable first; then graph.

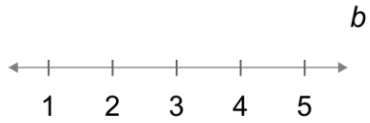


Your turn: show the operation on BOTH sides, then the solution. Complete each graph.

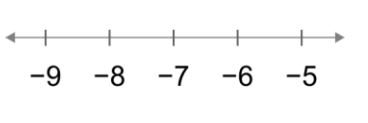
6 $4a \leq -12$



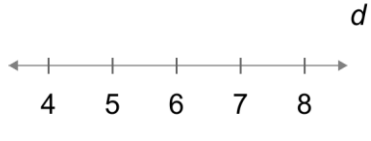
7 $-4b \leq -12$



8 $\frac{c}{3} > -2$



9 $\frac{d}{-3} > -2$



ALEKS: Multiplicative property of inequality with integers

Paper first: problem number + original inequality → operation on BOTH sides → solution. Keep your corrections.