Mai and the OR solution

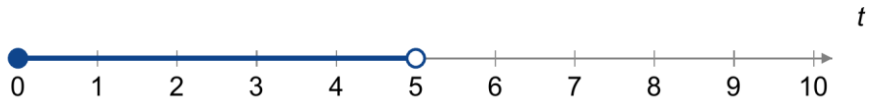
Mai's tank starts with 16 liters of water. She adds 4 liters per minute. When does it contain less than 36 liters OR more than 44 liters?

$$y = 4t + 16$$

t = time in minutes; y = water in liters.
Time starts at 0 and can be fractional: t ≥ 0.

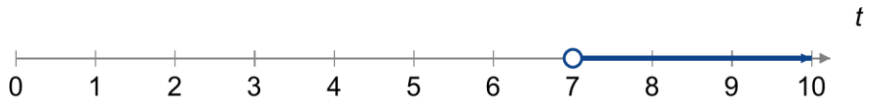
1 Less than 36 liters

$$4t + 16 < 36$$
$$4t + 16 - 16 < 36 - 16$$
$$\frac{4t}{4} < \frac{20}{4} \Rightarrow t < 5$$



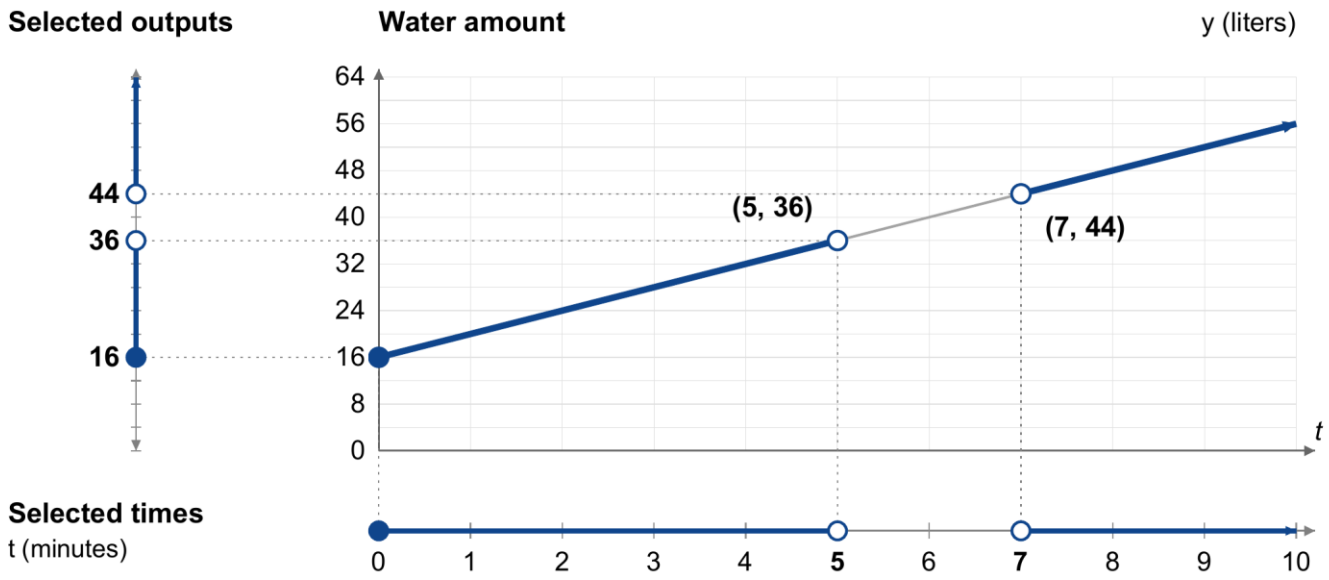
2 More than 44 liters

$$4t + 16 > 44$$
$$4t + 16 - 16 > 44 - 16$$
$$\frac{4t}{4} > \frac{28}{4} \Rightarrow t > 7$$



3 Combine with OR — keep times that meet either condition

$$0 \le t < 5 \text{ or } t > 7$$



Gray shows the model. Blue shows pairs meeting either water condition.

Check the boundaries

$$4(5) + 16 = 36$$
$$4(7) + 16 = 44$$

Exactly 36 or 44 meets neither condition. Both circles are open.

Check the start

$$4(0) + 16 = 16$$

t = 0 is included: 16 < 36.

TOPIC ID: 25A-C1	TOPIC TITLE: Compound inequalities and graphs	FORESTHILL HIGH SCHOOL
NAME:	BLOCK: DATE: October 12, 2026	

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Ryan and the OR solution

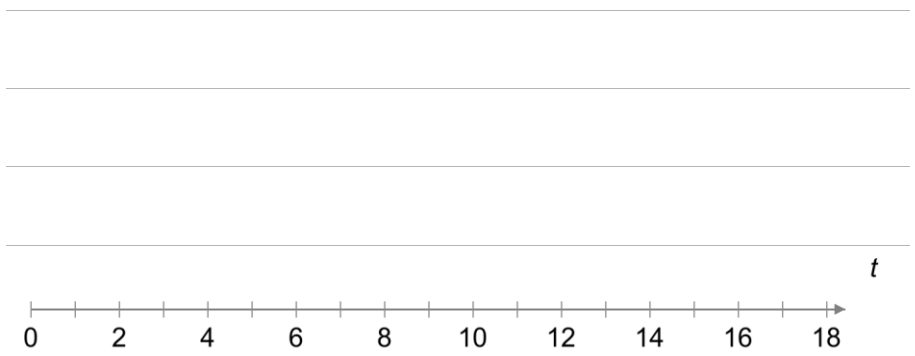
Ryan earns $8 per hour trimming trees and pays a one-time $5 equipment fee. When are his net earnings less than $91 OR more than $107?

$$y = 8t - 5$$

t = time in hours; y = net earnings in dollars.
Time starts at 0 and can be fractional: t ≥ 0.

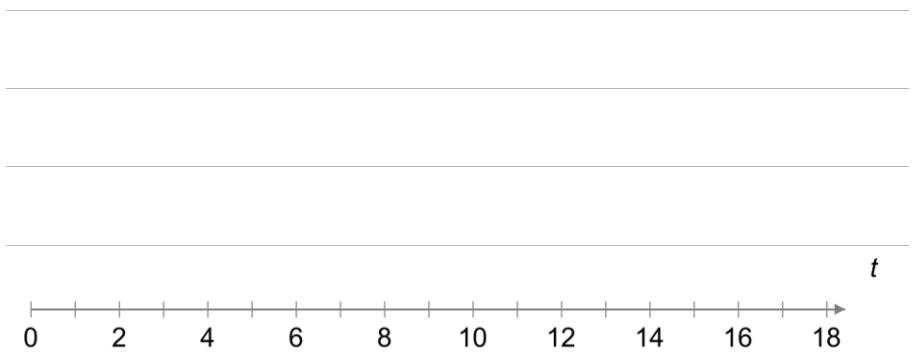
1 Less than $91

Write, solve, and graph. Show each algebra step.



2 More than $107

Write, solve, and graph. Show each algebra step.



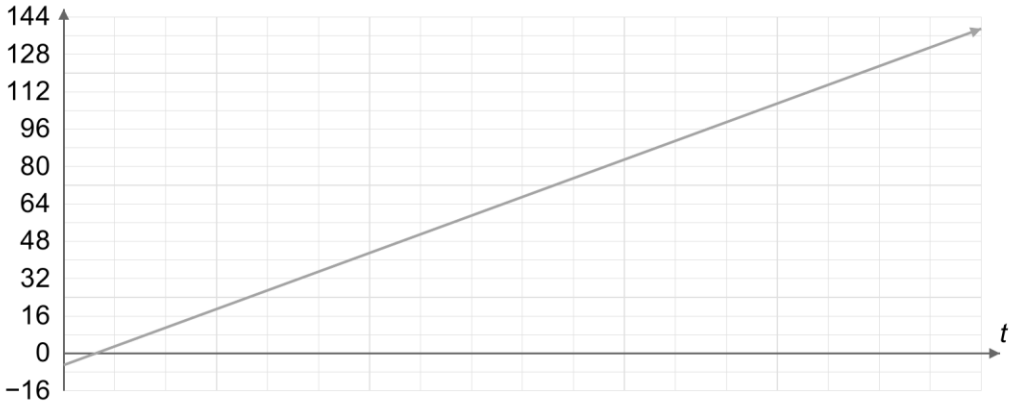
3 Combine with OR — keep times that meet either condition

Combined time solution: _____

Selected outputs

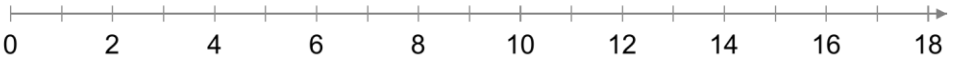
Net earnings

y (dollars)



Selected times

t (hours)



Complete the graph

Mark times, label the boundary points, and highlight the matching portions of the line and output axis.

Check one boundary

At t = 0, y = _____

Is t = 0 included? _____

Use open or filled circles.