ELO C1 Four Hot Topics

Read 8 → 10 → 23 → 24. Do the same operation to both sides. Then turn over and try the two problems.

8 Solve with the variable on both sides

Solve for y. Subtract 6y; add 14; divide by 3.

$$\begin{aligned} 9y - 14 &= 6y - 2 \\ 9y - 14 - 6y &= 6y - 2 - 6y \\ 3y - 14 + 14 &= -2 + 14 \\ 3y &= 12 \\ \frac{3y}{3} &= \frac{12}{3} \\ y &= 4 \end{aligned}$$

Check in the original: both sides must match.

$$9(4) - 14 = 22 \quad and \quad 6(4) - 2 = 22$$

Only y = 4 makes this equation true.

10 Solve for one letter; keep the others

Solve for x. Add 5y to both sides. Then divide by 2.

$$\begin{aligned} 2x - 5y &= z \\ 2x - 5y + 5y &= z + 5y \\ 2x &= z + 5y \\ \frac{2x}{2} &= \frac{z + 5y}{2} \\ x &= \frac{z + 5y}{2} \end{aligned}$$

The fraction bar divides ALL of z + 5y by 2.

The answer is a formula. The other letters stay.

Check backward: multiply by 2, then subtract 5y. You get the original equation again.

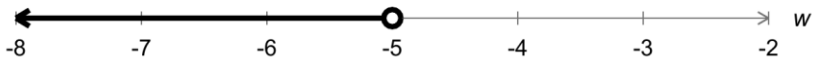
23 Solve an inequality

Solve for w. Divide BOTH sides by −4. Because −4 is negative, reverse the inequality sign.

$$\begin{aligned} 20 &< -4w \\ \frac{20}{-4} &> \frac{-4w}{-4} \\ -5 &> w \end{aligned}$$

Read with w first: w < −5. Same statement.

Open circle at −5; the solutions go left.



Check: w = −6 gives 20 < 24, which is true.

Multiply or divide by a positive number: keep the sign. By a negative number: reverse the sign.

24 Turn a story into an inequality

Ali earns $7 per hour trimming trees and pays a $5 equipment fee. He wants more than $79 after the fee. What numbers of hours work?

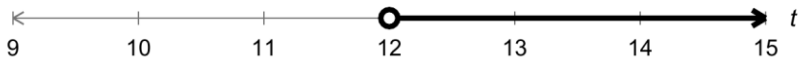
t = hours. Money after the fee: 7t − 5 dollars.

Rate: 7 dollars/hour. Fixed fee: subtract 5 dollars.

$$\begin{aligned} 7t - 5 &> 79 \\ 7t - 5 + 5 &> 79 + 5 \\ \frac{7t}{7} &> \frac{84}{7} \\ t &> 12 \end{aligned}$$

Ali must work more than 12 hours.

At 12 hours: 7(12) − 5 = 79. The boundary does not work: “more than” excludes exactly 79.



At 13 hours: 7(13) − 5 = 86. This works.

TOPIC ID: 8, 10, 23, 24	TOPIC TITLE: ELO C1 • Four Hot Topics	FORESTHILL HIGH SCHOOL
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Try it, then use your work to check it

Use the front if you need a reminder. Write each step below. Keep your paper beside you for the ALEKS review.

A Topic 8 — finish from this start

Solve for x. Simplify your answer.

$$2x + 5 = 4x + 13$$

Start: subtract 2x from BOTH sides.

$$2x + 5 - 2x = 4x + 13 - 2x$$

Simplify. Then get x alone.

Solution: x = _____

Check your value in BOTH sides of the original.

B Topic 24 — write, solve, and explain

A college charges $17 to reserve a meeting room, plus $6 per hour. The chemistry club wants to spend at most $89. What numbers of hours could it rent the room?

Use t for the number of hours. Write an inequality solved for t.

Word help: at most means less than or equal to (≤).

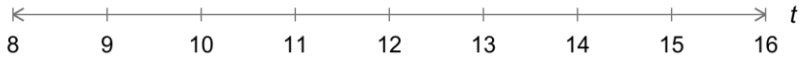
Write the cost, choose the sign, then solve. Show the operation on BOTH sides.

Inequality: _____

In words: _____

Check the boundary. Does it meet the $89 limit?

Graph the algebraic solution. Mark the boundary and draw the ray. Each tick is 1 hour.



In this story, time cannot be negative.

In ALEKS: show your steps on paper, enter your answer, and use the feedback to correct your work.