

Possible Solutions

King is completing his math homework after school in the library. He is having difficulty with one of the questions that wants him to determine which of these solutions in the set $\{-4, -1, 2, 5\}$ make the inequality $7 - 2x \leq 11$ true. How could someone explain the problem so that King understands how to solve it?

Solution 1

Substitute -4 in place of x; $7 - 2(-4) \leq 11$ then simplify

$$7 + 8 \leq 11$$

$$15 \leq 11 \quad \text{false}$$

Substitute -1 in place of x; $7 - 2(-1) \leq 11$ then simplify

$$7 + 2 \leq 11$$

$$9 \leq 11 \quad \text{true}$$

Substitute 2 in place of x; $7 - 2(2) \leq 11$ then simplify

$$7 - 4 \leq 11$$

$$3 \leq 11 \quad \text{true}$$

Substitute 5 in place of x; $7 - 2(5) \leq 11$ then simplify

$$7 - 10 \leq 11$$

$$-3 \leq 11 \quad \text{true}$$

Solution 2

Solve the inequality for x.

$$7 - 2x \leq 11$$

$$7 - 7 - 2x \leq 11 - 7$$

$$-2x \leq 4$$

$$\underline{-2x} \leq \underline{4}$$

$$-2 \quad -2$$

$$x \geq -2$$

Subtract 7 from both sides

Simplify

Divide both sides by -2

Simplify; remember to reverse the inequality symbol when multiplying or dividing by a negative number.

Graph



Any number greater than or equal to -2 is a solution to the inequality; therefore,

-1, 2, 5 make the inequality true.

-4 makes the inequality false.