Inequality systems: overlap and feasible choices

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Worked example 1

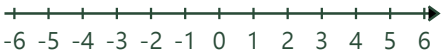
A club pays a fixed 5 dollars plus 2 dollars per visit, has at most 27 dollars and needs at least 3 visits. Let x be the integer visit count. Form the restrictions and find all feasible counts.

Guided attempt 2

Solve the system of inequalities; require every condition to hold.

$$\begin{cases} x > -1 \\ x \leq 4 \end{cases}$$

1. The first condition keeps values to the ____ of −1; that endpoint is open.
2. The second keeps values at or to the ____ of 4; that endpoint is filled.
3. Complete the overlap $-1 \square x \square 4$ and draw it.



Use the stated conditions and the labelled scales.

Prerequisite 3

“x is at most 7” means which inequality?

A. $x \geq 7$

B. $x < 7$

C. $x \leq 7$

Prerequisite 4

Is 2 included in $2 < x \leq 5$?

A. Yes; both endpoints are always included.

B. No; the lower inequality is strict.

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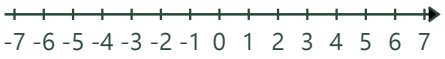
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Independent practice 5

Solve the system of inequalities; require every condition to hold.

$$\begin{cases} 3x - 2 > 4 \\ 2x + 1 \le 11 \end{cases}$$



Use the stated conditions and the labelled scales.

Independent practice 6

Solve the system of inequalities; require every condition to hold.

$$\begin{cases} x > 4 \\ x \le 2 \end{cases}$$

Independent practice 7

Notebooks cost 3 dollars each with one fixed 2-dollar wrapping fee. With 20 dollars, buy at least one notebook. Let x be the count; find all feasible counts.

Independent practice 8

Solve the system of inequalities; require every condition to hold.

$$\begin{cases} x \ge 3 \\ x \le 3 \end{cases}$$

Exit question 9

List the integer solutions of $\frac{5}{2} < x < 6$.

$$\begin{cases} x > 5/2 \\ x < 6 \end{cases}$$

Exit question 10

A costs 2n dollars; B costs 10+n dollars. For n=14 and budget 25 dollars, which is feasible?

A. Only B: 24 dollars; A costs 28.
B. Both, because B is cheaper.
C. Only A.