LESSON MAKER PRO

Inequality Line-Up

Write, graph, and test one-variable inequalities.

GRADE 6 · 6.PFA.4

6.PFA.4 "The student will represent a contextual situation using a linear inequality in one variable with symbols and graphs on a number line. Given the graph of a linear inequality in one variable on a number line..."

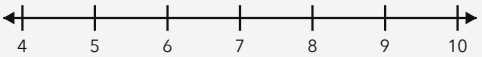
NAME _____ DATE _____

READ THE BOUNDARY

A closed circle means the endpoint is included, so use ≤ or ≥. An open circle means the endpoint is not included, so use < or >. Shade left for numbers less than the endpoint and right for numbers greater than the endpoint.

WORKED EXAMPLE

Graph x ≤ 7 on the number line.



1. The symbol ≤ means 7 is included.
2. Place a closed circle at 7.
3. Shade the line to the left of 7.

Answer: Closed circle at 7, shaded to the left.

PRACTICE 6 problems

1 Write x < -4 in an equivalent way with the number first.

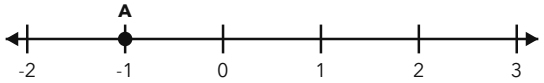
ANSWER _____

2 Graph x ≥ -2 on the number line.



ANSWER _____

3 Use point A on the number line. Does the value of A make x < 3 true? Write the comparison.



ANSWER _____

4 The school talent show can have no more than 12 acts. Let x be the number of acts. Write an inequality.

ANSWER _____

5 Which values in the set {-1, 2, 3} make x ≤ 2 true?

ANSWER _____

6 To enter a contest, a video must be at least 15 seconds long. Let x be the video length in seconds. Write an inequality.

ANSWER _____

APPLY IT Show your work

1 A robotics club needs at least 18 members to compete. Let x be the number of members. Write an inequality and graph it on the number line.



ANSWER _____

2 A game app charges $2 for each extra game level. You can spend no more than $14. Let x be the number of extra levels. Write an inequality. Then decide whether 8 extra levels is a solution.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Create one real-life situation that could be represented by $3x < 21$. Then list three whole-number values of x that make the inequality true. Explain using substitution.

WORK SPACE AND ANSWER

ANSWER KEY

Inequality Line-Up

GRADE 6 · 6.PFA.4

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Write $x < -4$ in an equivalent way with the number first.	**$-4 > x$**
2	Graph $x \geq -2$ on the number line.	**Closed circle at -2, shaded to the right.**
3	Use point A on the number line. Does the value of A make $x < 3$ true? Write the comparison.	**Yes. $-1 < 3$.**
4	The school talent show can have no more than 12 acts. Let x be the number of acts. Write an inequality.	**$x \leq 12$**
5	Which values in the set {-1, 2, 3} make $x \leq 2$ true?	**-1 and 2**
6	To enter a contest, a video must be at least 15 seconds long. Let x be the video length in seconds. Write an inequality.	**$x \geq 15$**

PART 2 · APPLY IT

1. **$x \geq 18$; closed circle at 18, shaded to the right.** The phrase "at least" includes 18 and all greater numbers. Use a closed circle because 18 is part of the solution set.
2. **$2x \leq 14$; no, 8 is not a solution.** The total cost is 2x, and it must be at most 14. Substituting 8 gives $2(8) \leq 14$, or $16 \leq 14$, which is false.

CHALLENGE

A game costs $3 per round, and x rounds cost less than $21. Three values are 0, 1, and 2 because 3(0) = 0, 3(1) = 3, and 3(2) = 6, and each is less than 21.

Accept equivalent symbol forms, such as $18 \leq x$ for $x \geq 18$. For graphs, accept an accurate closed or open endpoint and correct shading direction.