Lesson 8-4 · Session 1

Writing Inequalities

Name _____ Date _____ Period _____

Maryland Standard 6.AT.9 · Learning target — I can write an inequality that describes a constraint in a real situation.

Show a model, calculation, or explanation. Answer every part and label units when needed.

Exercises 1–12 earn 1 point for a correct response and 1 for supporting work. Spiral Review and Test Practice earn 1 point each.

Learn from a model

REMEMBER

- Inequalities compare using symbols: > (greater than), < (less than), ≥ (at least), ≤ (at most).
- Look for keywords: ‘at least’ means ≥, ‘at most’ means ≤, ‘more than’ means >, ‘fewer than’ means <.
- Watch out — “at least” and “more than” are different; only one includes the boundary value.
- Check it — test the boundary value in your inequality and see whether it should be allowed.

WORKED EXAMPLE

Writing an Inequality for a Constraint A club trip requires each member to save at least $45. Write an inequality for the amounts that work.

Step 1 Name the variable: let s = the dollars a member saves.

Step 2 Find the key phrase: ‘at least’ means the amount can equal 45 or be more.

Step 3 That phrase matches the symbol ≥, so write s ≥ 45.

Step 4 Test values: 45 works and 52 works, but 39 falls below the limit.

Answer s ≥ 45, so any amount of 45 dollars or more is a solution.

Practice

1. Write an inequality for: ‘A number x is at least 10.’ _____

Answer _____

SHOW YOUR THINKING

2. Write an inequality for: ‘A number n is fewer than 25.’ _____

Answer _____

SHOW YOUR THINKING

3. Write an inequality for: ‘You must be at least 12 years old, y, to ride.’

Answer _____

SHOW YOUR THINKING

4. Write an inequality for each sentence. Use the letter given.

a. A number x is at most 18. _____
b. A number n is more than 7. _____
c. A number p is no more than 40. _____
d. A number k is fewer than 6. _____
e. A number w is at least 55. _____

Answer _____

EXPLAIN WITH MATHEMATICAL EVIDENCE

5. Elevator Limit. An elevator sign says it may carry at most 16 riders. Write an inequality using r for the riders inside.

Answer _____

SHOW YOUR THINKING

6. Soccer Practice. A coach lets a player start the game only after the player attends more than 8 practices. Write an inequality using p, then name one attendance count that is not a solution.

Answer _____

SHOW YOUR THINKING

7. Food Truck Line. A food truck opens a second window whenever more than 20 people are waiting in line. Write an inequality using n, then explain whether 20 people in line opens the second window.

Answer _____

EXPLAIN WITH MATHEMATICAL EVIDENCE

8. A sign at a climbing gym reads: 'A harness may hold no more than 200 pounds.' Yusuf wrote $w < 200$ for the weights the harness holds. Explain which weight his inequality leaves out, then write the correct inequality.

Answer _____

EXPLAIN WITH MATHEMATICAL EVIDENCE

9. Write an inequality for "a score of at least 70 points."

Answer _____ the inequality

SHOW YOUR THINKING

10. Write an inequality for "no more than 25 students."

Answer _____ the inequality

SHOW YOUR THINKING

11. Two Rules. A load must weigh more than 200 pounds but at most 900 pounds. Write both inequalities.

Answer _____ both inequalities

SHOW YOUR THINKING

12. Find the Mistake. For "at least 18," Jo wrote $n > 18$. Explain the mistake.

Answer _____ the mistake and the inequality

EXPLAIN WITH MATHEMATICAL EVIDENCE

Spiral review

13. From Lesson 8-3 Session 1. Solve 4n = 52.

Answer _____

SHOW YOUR THINKING

14. From Lesson 7-6 Session 1. Find the distance from (2, 3) to (9, 3).

Answer _____

SHOW YOUR THINKING

15. From Lesson 6-6 Session 1. Simplify 7t + 4 + 2t.

Answer _____

SHOW YOUR THINKING

Test practice

16. "Fewer than 12" is written —

□ A. $n \leq 12$	□ B. $n < 12$
□ C. $n > 12$	□ D. $n \geq 12$

17. The symbol ≤ means —

- □ A. greater than
- □ B. at least
- □ C. at most
- □ D. not equal

18. “Maximum of 40” is written —

□ A. $n > 40$	□ B. $n < 40$
□ C. $n \geq 40$	□ D. $n \leq 40$

Check and revise

CHECK YOUR MATHEMATICS	HOW DID IT GO?
Use a filled point when the endpoint is included and an open point when it is excluded. Every part answered / Work shown / Units labeled when needed	I can do this: Independently / With a hint / With help Question to revisit: _____

One correction or question I want to discuss: _____

Test one proposed solution in the original equation or inequality. Show whether the statement is true.