Inequality Boundaries and Solution Sets

TOPIC 4 / MATHEMATICS

Write. Represent. Explain.

45-minute lesson • Original classroom examples

What will we learn today?

- Distinguish strict and inclusive inequalities by checking boundary values.
- Use an equation, inequality, table, or diagram to justify your reasoning.
- Explain your answer using mathematical vocabulary and units.

5-minute warm-up

Discuss with a partner: What previous algebra or number skill will help with today’s lesson?

Show one calculation or example in your notebook.

Why this lesson matters

A trail admits children aged 12 or older. Is a child aged 12 eligible?

What is known? What is unknown? Which quantities are related?

Represent the relationship

A trail admits children aged 12 or older. Is a child aged 12 eligible?

$$a \geq 12$$

Explain the meaning of the variable, numbers, and operations.

Worked example

Compare whether 12 satisfies $a \geq 12$ and $a > 12$.

$$12 \geq 12 \quad \checkmark$$

Check: Does the result match the original relationship?

Independent practice

1. Does -2 satisfy $x \geq -2$?

2. Does 6 satisfy $n < 6$?

Check your reasoning

Question 1

$$-2 \geq -2 \quad \checkmark$$

Question 2

$$6 < 6 \quad \text{false}$$

Group challenge

A sign says “under 50 kg.” Decide whether 49.9, 50, and 51 qualify.

Each group member must explain one step or defend one claim.

Group challenge • solution

$$m < 50 \Rightarrow 49.9 \text{ only}$$

Compare methods. Does the answer make sense in context?

Additional Practice — If Time Allows

Does 6 satisfy n < 6?

Extension: Create a similar problem with different numbers.

2-minute exit ticket

Does 0 satisfy $x \leq 0$?

Work independently. Show enough steps to explain your thinking.

Exit ticket • answer

$$0 \leq 0 \quad \checkmark$$

Reflect: What would you check before moving to the next lesson?