INTERPRETING INEQUALITIES

LEARNING GOAL

1. I can match an inequality to a situation it represents, solve it, and then explain what the solution means in the situation.

COMMON PHRASES FOR INEQUALITIES

Inequality symbol	Meaning	Other phrases
$<$	is less than	• is fewer than • is below
$>$	is greater than	• is more than • is above
$\leq$	is less than or equal to	• is at most • is no more than
$\geq$	is greater than or equal to	• is at least • is no less than

Choose the inequality that best matches the given situation. **Explain your reasoning.**

Example: The Chemistry Club is experimenting with different mixtures of water with a certain chemical (sodium polyacrylate) to make fake snow. To make each mixture, the students start with some amount of water, and then add $\frac{1}{7}$ of that amount of the chemical, and then 9 more grams of the chemical. The chemical is expensive, so there can't be more than a certain number of grams of the chemical in any one mixture.

1. $\frac{1}{7}x + 9 \leq 26.25$
2. $9x + \frac{1}{7} \leq 26.25$
3. $26.26x + 9 \leq \frac{1}{7}$
4. $\frac{1}{7}x + 26.25 \leq 9$

Explanation

Choose the inequality that best matches the given situation. **Explain your reasoning.**

1. The Garden Club is planting fruit trees in their school's garden. There is one large tree that needs 5 pounds of fertilizer. The rest are newly planted trees that need $\frac{1}{2}$ pound fertilizer each.

1. $25x + 5 \leq \frac{1}{2}$
2. $\frac{1}{2}x + 5 \leq 25$
3. $\frac{1}{2}x + 25 \leq 5$
4. $5x + \frac{1}{2} \leq 25$

Explanation

I think the inequality is saying that the amount of fertilizer they use must be less than 25 pounds.

Choose the inequality that best matches the given situation. **Explain your reasoning.**

2. The Hiking Club is on a hike down a cliff. They begin at an elevation of 12 feet and descend at the rate of 3 feet per minute.

go down

1. $37x - 3 \geq 12$
2. $3x - 37 \geq 12$
3. $12 - 3x \geq -37$
4. $12x - 37 \geq -3$

Explanation

I think the inequality is saying that the elevation stayed above -37 feet during the whole hike. The elevation started at 12 feet and went down, but stayed above -37 feet.

Choose the inequality that best matches the given situation. **Explain your reasoning.**

3. The Science Club is researching boiling points. They learn that at high altitudes, water boils at lower temperatures. At sea level, water boils at $212^\circ F$. With each increase of 500 feet in elevation, the boiling point of water is lowered by about $1^\circ F$.

1. $212 - \frac{1}{500}e < 195$
2. $\frac{1}{500}e - 195 < 212$
3. $195 - 212e < \frac{1}{500}$
4. $212 - 195e < \frac{1}{500}$

Explanation

ASSIGNMENT

Choose one of the situations from the previous 3 slides

1. Explain what the variable and each part of the inequality represent
2. Write a question that can be answered by the solution to the inequality
3. Show how you solved the inequality
4. Explain what the solution means in terms of the situation

1. Explain what the variable and each part of the inequality represent

- x is the amount of water used in the mixture
- $\frac{1}{7}x+9$ is the amount of the chemical used in the mixture
- 26.25 is the maximum amount of the chemical that could be used

2. Write a question that can be answered by the solution to the inequality

How much water must you use to make the mixture if the amount of the chemical is $\leq$ at most 26.25 g

3. Show how you solved the inequality

$\frac{1}{7}x + 9 \leq 26.25$

$-9 \quad -9.00$

$\frac{1}{7}x \leq 17.25 \cdot 7$

$x \leq 120.75$

5 1 3

17.25

7

120.75

4. Explain what the solution means in terms of the situation

The amount of water used to make the mixture can be at most 120.75 grams.