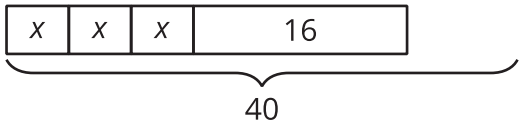
Unit 3, Lesson 16

Interpreting Inequalities

Let's write inequalities.

16.1 Notice and Wonder: Unequal

What do you notice? What do you wonder?



16.2 Club Activities Matching

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

1. The Garden Club is planting fruit trees in the school garden. There is one large tree that needs 5 pounds of fertilizer. The rest are newly planted trees that need $\frac{1}{2}$ pound of fertilizer each.
   A. $25x + 5 \leq \frac{1}{2}$
   B. $\frac{1}{2}x + 5 \leq 25$
   C. $\frac{1}{2}x + 25 \leq 5$
   D. $5x + \frac{1}{2} \leq 25$

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.

   A. $37x - 3 \geq 12$

   B. $3x - 37 \geq 12$

   C. $12 - 3x \geq -37$

   D. $12x - 37 \geq -3$

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°F. With each increase of 500 feet in elevation, the boiling point of water is lowered by about 1°F.

   A. $212 - \frac{1}{500}x < 195$

   B. $\frac{1}{500}x - 195 < 212$

   C. $195 - 212x < \frac{1}{500}$

   D. $212 - 195x < \frac{1}{500}$

16.3 Club Activities Display

Your teacher will assign your group *one* of the situations from the previous task. Create a visual display about your situation. In your display:

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

Are you ready for more?

$\{3, 4, 5, 6\}$ is a set of four consecutive integers whose sum is 18.

1. How many sets of three consecutive integers are there whose sum is between 51 and 60? Can you be sure you've found them all? Explain or show your reasoning.

2. How many sets of four consecutive integers are there whose sum is between 59 and 82? Can you be sure you've found them all? Explain or show your reasoning.

Lesson 16 Summary

Many real-world problems can be represented and solved by using inequalities. Writing inequalities is very similar to writing equations to represent a situation. The expressions that make up the inequalities can be thought of in much the same way as the expressions that make up equations. For inequalities, we also have to think about how expressions compare to each other—which one has a greater value, which one has a lesser value, and can they also be equal?

For example, a school fundraiser has a minimum target of $500. Faculty have donated $100 and there are 12 student clubs that are participating with different activities. How much money would each club need to raise if the 12 clubs shared the responsibility of meeting the goal equally? If n is the amount of money that each club raises, then the solution to $100 + 12n = 500$ is the amount each club has to raise to meet the goal. It is more realistic, though, to use the inequality $100 + 12n \geq 500$, since the more money raised, the more successful the fundraiser. There are many solutions because there are many different amounts of money the clubs could raise that would get them above their minimum goal of $500.