EXPLORATION

2-8 Solving Absolute-Value Equations and Inequalities

A carpenter prepares several wooden dowels whose lengths are 27 cm $\pm$ 0.3 cm.

1. What is the range of possible lengths for the dowels?

2. Use the number line to show the range of possible lengths.

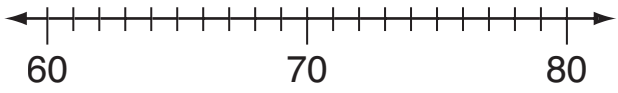
3. The carpenter writes the following to show the range of possible lengths.

$-0.3 \leq x - 27 \leq 0.3$

This is equivalent to the two inequalities $-0.3 \leq x - 27$ and $x - 27 \leq 0.3$. Solve the inequalities to show that they represent the same range of lengths.

THINK AND DISCUSS

4. **Describe** different ways to write the range of values shown on this number line.



5. **Demonstrate** how to write an inequality like the one in Problem 3 for the following situation: The weight of a Great Dane is within 5 pounds of 111 pounds.

EXPLORATION

2-8 Solving Absolute-Value Equations and Inequalities

A carpenter prepares several wooden dowels whose lengths are 27 cm $\pm$ 0.3 cm.

1. What is the range of possible lengths for the dowels?
   from 26.7 cm to 27.3 cm

2. Use the number line to show the range of possible lengths.

3. The carpenter writes the following to show the range of possible lengths.

   $-0.3 \leq x - 27 \leq 0.3$

   This is equivalent to the two inequalities $-0.3 \leq x - 27$ and $x - 27 \leq 0.3$. Solve the inequalities to show that they represent the same range of lengths. **$26.7 \leq x$; $x \leq 27.3$**

THINK AND DISCUSS

4. **Describe** different ways to write the range of values shown on this number line. **from 63 to 77; 70 ± 7; $-7 \leq x - 70 \leq 7$**

5. **Demonstrate** how to write an inequality like the one in Problem 3 for the following situation: The weight of a Great Dane is within 5 pounds of 111 pounds. **$-5 \leq x - 111 \leq 5$**