## 1-6 Skills Practice Solving Compound and Absolute Value Inequalities

Write an absolute value inequality for each graph.





Solve each inequality. Graph the solution set on a number line.



39



## **1-6 Word Problem Practice** Solving Compound and Absolute Value Inequalities

- AQUARIUM The depth *d* of an aquarium tank for dolphins satisfies |*d* 50| < 5. Write a compound inequality that describes the possible depth of the tank.</li>
  45 < d < 55</li>
- **4. NUMBERS** Amy is thinking of two numbers a and b. The sum of the two numbers must be within 10 units of zero. If a is between -100 and 100, write a compound inequality that describes the possible values of b.

-110 < *b* < 110

**5. AIRLINE BAGGAGE** Many airlines have a size limitation for carry–on luggage. The limitation states that the sum of the length, width, and height of the suitcase must not exceed 45 inches.



- a. Write an inequality that describes the airlines' carry-on size limitation.  $h + \ell + w \le 45$
- **b.** A passenger needs to bring a soil sample on the plane that is at least 1 cubic foot. The passenger is bringing it in a suitcase that is in the shape of a cube with side length n inches. Write an inequality that gives the minimum length for n.

## *n* ≥ 12

c. Write a compound inequality for *n* using parts a and b. Find the maximum and minimum values for *n*.

 $n \ge 12$  and  $3n \le 45$ ; *n* is at least 12 and at most 15

2. HIKING For a hiking trip, everybody must bring at least one backpack. However, because of space limitations, nobody is allowed to bring more than two backpacks. Let *n* be the number of people going on the hiking trip and *b* be the number of backpacks allowed. Write a compound inequality that describes how *b* and *n* are related.

 $n \leq b \leq 2n$ 

**3. CONCERT** Jacinta is organizing a large fund-raiser concert in a space with a maximum capacity of 10,000 people. Her goal is to raise at least \$100,000. Tickets cost \$20 per person. Jacinta spends \$50,000 to put the event together. Write and solve a compound inequality that describes *N*, the number of attendees needed to achieve Jacinta's goal.

 $20N - 50,000 \ge 100,000$  and  $N \le 10,000$ ; The attendance must be between 7,500 and 10,000 people, inclusive.