Got It? **4. a.** A club has a goal to sell at least 25 plants for a fundraiser. Club members sell 8 plants on Wednesday and 9 plants on Thursday. What are the possible numbers of plants the club can sell on Friday to meet their goal?

b. Reasoning Can you use the same inequality symbol to represent phrases like *at least*, *no less than*, and *greater than or equal to*? Explain.

Lesson Check

Do you know HOW?

Solve each inequality. Graph and check your solutions.

1. $p - 4 < 1$

2. $8 \geq d - 2$

3. $y + 5 < -7$

4. $4 + c > 7$

5. A cyclist takes her bicycle on a chairlift to the top of a slope. The chairlift can safely carry 680 lb. The cyclist weighs 124 lb, and the bicycle weighs 32 lb. What are the possible additional weights the chairlift can safely carry?

Do you UNDERSTAND? MATHEMATICAL PRACTICES

6. Writing How can you use the addition and subtraction properties of inequality to produce equivalent inequalities?

7. Reasoning What can you do to the first inequality in each pair in order to get the second inequality?

a. $x + 4 \leq 10; x \leq 6$

b. $m - 1 > 3; m > 4$

c. $5 \geq 3 + n; 2 \geq n$

d. $-6 < y - 2; -4 < y$

8. Compare and Contrast Suppose you solve the two inequalities $y + 4 \leq 6$ and $y - 4 \leq 6$. How are your methods of solving the inequalities similar? How are they different?

Practice and Problem-Solving Exercises MATHEMATICAL PRACTICES

A Practice

Tell what number you would add to each side of the inequality to solve the inequality.

See Problems 1 and 2.

9. $f - 6 \geq -3$

10. $1 < d - 7$

11. $a - 3.3 \geq 2.6$

12. $5 > -18 + m$

Solve each inequality. Graph and check your solutions.

13. $y - 2 > 11$

14. $v - 4 < -3$

15. $-6 > c - 2$

16. $8 \leq f - 4$

17. $t - 4 \geq -7$

18. $s - 10 \leq 1$

19. $9 < p - 3$

20. $-3 \geq x - 1$

21. $0 < -\frac{1}{3} + f$

22. $z - 12 \leq -4$

23. $-\frac{3}{4} > r - \frac{3}{4}$

24. $y - 1 \geq 1.5$

25. $4.3 > -0.4 + s$

26. $-2.5 > n - 0.9$

27. $c - \frac{4}{7} < \frac{6}{7}$

28. $p - 1\frac{1}{2} > 1\frac{1}{2}$

Tell what number you would subtract from each side of the inequality to solve the inequality.

See Problem 3.

29. $x + 3 > 0$

30. $9 < \frac{7}{5} + s$

31. $6.8 \geq m + 4.2$

32. $\ell + \frac{1}{3} \geq \frac{7}{3}$

Solve each inequality. Graph and check your solutions.

33. $x + 5 \le 10$

34. $n + 6 > -2$

35. $2 < 9 + c$

36. $-1 \ge 5 + b$

37. $\frac{1}{4} + a \ge -\frac{3}{4}$

38. $8.6 + z < 14$

39. $\frac{1}{3} < n + 3$

40. $3.8 \ge b + 4$

41. $\frac{3}{5} + d \ge -\frac{2}{5}$

42. Fitness Your goal is to take at least 10,000 steps per day. According to your pedometer, you have walked 5274 steps. Write and solve an inequality to find the possible numbers of steps you can take to reach your goal.   ◀ **See Problem 4.**

43. Fundraising The environmental club is selling indoor herb gardens for Earth Day. Each member is encouraged to sell at least 10 gardens. You sell 3 gardens on Monday and 4 gardens on Tuesday. Write and solve an inequality to find the possible numbers of gardens you can sell to reach your goal.

44. Monthly Budget You earn $250 per month from your part-time job. You are in a kayaking club that costs $20 per month, and you save at least $100 each month. Write and solve an inequality to find the possible amounts you have left to spend each month.

Ⓑ Apply

Tell what you can do to the first inequality in order to get the second.

45. $36 \le -4 + y; 40 \le y$

46. $9 + b > 24; b > 15$

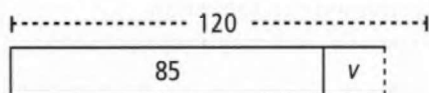**47.** $m - \frac{1}{2} < \frac{3}{8}; m < \frac{7}{8}$

Tell whether the two inequalities in each pair are equivalent.

48. $45 \le -5 + z; 40 \le z$

49. $7 + c > 33; c > 26$

50. $n - \frac{1}{4} < \frac{5}{4}; n < 1$

You can draw a model to represent an inequality. For example, the model below represents the inequality $85 + v < 120$. Draw a model to represent each inequality below.

```
├-------------- 120 ---------------┤
┌─────────────────────┬──────────┐
│         85          │    v     ┊
└─────────────────────┴──────────┘
```

51. $17 + x < 51$

52. $12 + y > 18$

53. $-3 + m \le 13$

Solve each inequality. Justify each step.

54. $y - 4 + 2 \ge 10$

55. $\frac{3}{5} + d \le 2\frac{3}{5}$

56. $z - 1.4 < 3.9$

57. $-5 > p - \frac{1}{5}$

58. $a + 5.2 < -4.6$

59. $-3.1 > z - 1.9$

60. $\frac{5}{8} + v - \frac{7}{16} > 0$

61. $-4p - 2 + 5p > 10$

62. $5y + 5 - 4y < 8$

63. $h - \frac{1}{8} \ge -1$

64. $8v - 7v - 3 \ge -6$

65. $5 \ge m - \frac{7}{16}$

66. Government The U.S. Senate is composed of 2 senators from each of the 50 states. In order for a treaty to be ratified, at least two thirds of the senators present must approve the treaty. Suppose all senators are present and 48 of them have voted in favor of a treaty. What are the possible numbers of additional senators who must vote in favor of the treaty in order to ratify it?