

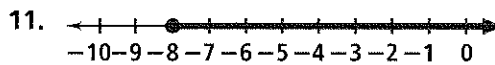
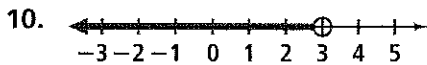
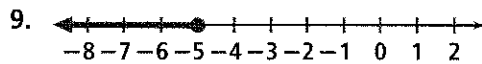
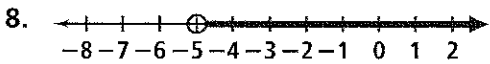
Practice 4-1

Inequalities and Their Graphs

Determine whether each number is a solution of the given inequality.

- | | | | |
|---------------------------|---------|----------|-------------------|
| 1. $x \leq -8$ | a. -10 | b. 6 | c. -8 |
| 2. $-1 > x$ | a. 0 | b. -3 | c. -6 |
| 3. $w < \frac{18}{7}$ | a. 5 | b. -2 | c. $3\frac{1}{2}$ |
| 4. $0.65 \geq y$ | a. 0.43 | b. -0.65 | c. 0.56 |
| 5. $2y + 1 > -5$ | a. -4 | b. -2 | c. 4 |
| 6. $7x - 14 \leq 6x - 16$ | a. 0 | b. -4 | c. 2 |
| 7. $n(n - 6) \geq -4$ | a. 3 | b. -2 | c. 5 |

Write an inequality for each graph.



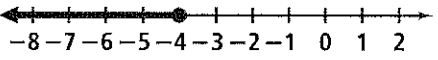
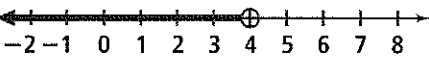
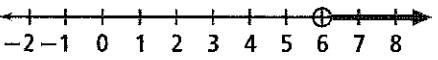
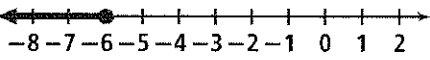
Graph each inequality.

- | | | |
|--------------|------------------|-----------------|
| 12. $x > 6$ | 13. $y \leq -10$ | 14. $8 \geq b$ |
| 15. $-4 < w$ | 16. $x < -7$ | 17. $x \geq 12$ |

Define a variable and write an inequality to model each situation.

18. The temperature in a refrigerated truck must be kept at or below 38°F.
19. The maximum weight on an elevator is 2000 pounds.
20. A least 20 students were sick with the flu.
21. The maximum occupancy in an auditorium is 250 people.
22. The maximum speed on the highway is 55 mi/h.
23. A student must have at least 450 out of 500 points to earn an A.
24. The circumference of an official major league baseball is at least 9.00 inches.

Match the inequality with its graph.

- | | | | |
|--|---|-------------|-----------------|
| 25. $6 < x$ | 26. $-6 \geq x$ | 27. $4 > x$ | 28. $x \leq -4$ |
| A.  | B.  | | |
| C.  | D.  | | |

Practice 4-2

Solving Inequalities Using Addition and Subtraction

Solve each inequality. Check the solution.

- | | | | |
|------------------------------------|--|----------------------|------------------------|
| 1. $n - 7 \geq 2$ | 2. $10 + y > 12$ | 3. $3.2 < r + 4.7$ | 4. $7 + b > 13$ |
| 5. $n + \frac{3}{4} > \frac{1}{2}$ | 6. $-\frac{5}{7} \geq c + \frac{2}{7}$ | 7. $g + 4.6 < 5.9$ | 8. $0 > d - 2.7$ |
| 9. $f + 4 \geq 14$ | 10. $x + 1 \leq -3$ | 11. $d - 13 \leq -8$ | 12. $m - 7 \geq -8$ |
| 13. $12 + v < 19$ | 14. $-4 \leq t + 9$ | 15. $6 < y - 3$ | 16. $a + 15 > 19$ |
| 17. $8 + d < 9$ | 18. $s + 3 \leq 3$ | 19. $9 + h \leq 5$ | 20. $7.6 \geq t - 2.4$ |

Write and solve an inequality that models each situation.

- It will take at least 360 points for Kiko's team to win the math contest. The scores for Kiko's teammates were 94, 82, and 87, but one of Kiko's teammates lost 2 of those points for an incomplete answer. How many points must Kiko earn for her team to win the contest?
- This season, Nora has 125 at-bats in softball. By the end of the season she wants to have at least 140 at-bats. How many more at-bats does Nora need to reach her goal?
- The average wind speed increased 19 mi/h from 8 A.M. to noon. The average wind speed decreased 5 mi/h from noon to 4 P.M. At 4 P.M., the average wind speed was at least 32 mi/h. What is the minimum value of the average wind speed at 8 A.M.?
- Suppose it takes no more than 25 min for you to get to school. If you have traveled for 13.5 min already, how much longer, at most, might you take to get to school?
- Joan has started a physical fitness program. One of her goals is to be able to run at least 5 mi without stopping. She can now run 3.5 mi without stopping. How many more miles must she run non-stop to achieve her goal?
- Suppose you can get a higher interest rate on your savings if you maintain a balance of at least \$1000 in your savings account. The balance in your savings account is now \$1058. You deposit \$44.50 into your account. What is the greatest amount that you can withdraw and still get the higher interest rate?

Solve each inequality. Graph and check the solution.

- | | | | |
|---|--------------------------|--------------------------------------|-----------------------|
| 27. $\frac{3}{4} + z \geq -\frac{3}{4}$ | 28. $12 + d + 3 \leq 10$ | 29. $v - \frac{3}{4} > 1\frac{1}{4}$ | 30. $8 + m > 4$ |
| 31. $2 + f > -3$ | 32. $-27 \geq w - 24$ | 33. $b + \frac{1}{2} > \frac{3}{4}$ | 34. $12 + t < 4 - 15$ |
| 35. $-14 > -16 + u$ | 36. $-7 \leq -11 + z$ | 37. $38 \geq 33 + b$ | 38. $k - 27 < -29$ |
| 39. $a + 8 \leq 10$ | 40. $b + 6 > 17$ | 41. $13 < 8 + k - 6$ | 42. $j + 1.3 > 2.8$ |

Practice 4-3**Solving Inequalities Using Multiplication and Division**

Solve each inequality. Graph and check the solution.

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|-------------------------------------|--------------------------|----------------------------------|--------------------------------|
| 1. $\frac{15}{8} \leq \frac{5}{2}s$ | 2. $60 \leq 12b$ | 3. $-\frac{4}{5}r < 8$ | 4. $\frac{5}{2} < \frac{n}{8}$ |
| 5. $-9n \geq -36$ | 6. $\frac{n}{7} \geq -6$ | 7. $-7c < 28$ | 8. $16d > -64$ |
| 9. $-\frac{t}{3} < -5$ | 10. $54 < -6k$ | 11. $\frac{w}{7} > 0$ | 12. $2.6v > 6.5$ |
| 13. $-4 < -\frac{2}{5}m$ | 14. $17 < \frac{p}{2}$ | 15. $0.9 \leq -1.8v$ | 16. $-5 \leq -\frac{x}{9}$ |
| 17. $-1 \geq \frac{d}{7}$ | 18. $-3x \geq 21$ | 19. $\frac{c}{12} < \frac{3}{4}$ | 20. $\frac{a}{4} \leq -1$ |

Write and solve an inequality that models each situation.

- Suppose you and a friend are working for a nursery planting trees. Together you can plant 8 trees per hour. What is the greatest number of hours that you and your friend would need to plant at most 40 trees?
- Suppose the physics club is going on a field trip. Members will be riding in vans that will hold 7 people each including the driver. At least 28 people will be going on the field trip. What is the least number of vans needed to make the trip?
- You need to buy stamps to mail some letters. The stamps cost \$.34 each. What is the maximum number of stamps that you can buy with \$3.84?
- The Garcias are putting a brick border along one edge of their flower garden. The flower garden is no more than 31 ft long. If each brick is 6 in. long, what is the greatest number of bricks needed?
- Janet needs to travel 275 mi for a conference. She needs to be at the conference in no more than 5.5 h. What is the slowest average speed that she can drive and still arrive at the conference on time?

Solve each inequality. Graph and check the solution.

- | | | | |
|-----------------------------------|-------------------------|-----------------------------------|------------------------------------|
| 26. $\frac{1}{4}h < 4.9$ | 27. $\frac{7}{3}x < 21$ | 28. $-\frac{1}{9}a > 9$ | 29. $\frac{b}{6} \leq 2.5$ |
| 30. $-\frac{3}{5}q > 15$ | 31. $84 \leq 21b$ | 32. $\frac{c}{12} > -\frac{5}{6}$ | 33. $80.6 \leq -6.5b$ |
| 34. $-\frac{1}{9}p > \frac{1}{3}$ | 35. $-9z > 45$ | 36. $\frac{1}{7}y \leq 6$ | 37. $-\frac{5}{7} > -\frac{k}{14}$ |
| 38. $6.8 > \frac{y}{5}$ | 39. $75 \leq 15b$ | 40. $39 < -13k$ | 41. $2d < 8.8$ |
| 42. $8.5v > 61.2$ | 43. $-11n \geq -55$ | 44. $\frac{1}{4}y < 17$ | 45. $92 < -23k$ |

Practice 4-4

Solving Multi-Step Inequalities

Solve each inequality. Check the solution.

- | | | |
|-----------------------------|--|---------------------------------------|
| 1. $2z + 7 < z + 10$ | 2. $4(k - 1) > 4$ | 3. $1.5 + 2.1y < 1.1y + 4.5$ |
| 4. $h + 2(3h + 4) \geq 1$ | 5. $r + 4 > 13 - 2r$ | 6. $6u - 18 - 4u < 22$ |
| 7. $2(3 + 3g) \geq 2g + 14$ | 8. $2h - 13 < -3$ | 9. $-4p + 28 > 8$ |
| 10. $8m - 8 \geq 12 + 4m$ | 11. $5 + 6a > -1$ | 12. $\frac{1}{2}(2t + 8) \geq 4 + 6t$ |
| 13. $-5x + 12 < -18$ | 14. $2(3f + 2) > 4f + 12$ | 15. $13t - 8t > -45$ |
| 16. $2(c - 4) \leq 10 - c$ | 17. $\frac{1}{2}t - \frac{1}{3}t > -1$ | 18. $3.4 + 1.6v < 5.9 - 0.9v$ |

Write and solve an inequality that models each situation.

- Ernest works in the shipping department loading shipping crates with boxes. Each empty crate weighs 150 lb. How many boxes, each weighing 35 lb, can Ernest put in the crate if the total weight is to be no more than 850 lb?
- Beatriz is in charge of setting up a banquet hall. She has five tables that will seat six people each. If no more than 62 people will attend, how many tables seating four people each will she need?
- Suppose it costs \$5 to enter a carnival. Each ride costs \$1.25. You have \$15 to spend at the carnival. What is the greatest number of rides that you can go on?
- The cost to rent a car is \$19.50 plus \$.25 per mile. If you have \$44 to rent a car, what is the greatest number of miles that you can drive?
- The student council is sponsoring a concert as a fund raiser. Tickets are \$3 for students and \$5 for adults. The student council wants to raise at least \$1000. If 200 students attend, how many adults must attend?

Solve each inequality. Check the solution.

- | | | |
|--------------------------------|---|--|
| 24. $-18 < 2(12 - 3b)$ | 25. $5n + 3 - 4n < -5 - 3n$ | 26. $36 > 4(2d + 10)$ |
| 27. $2(5t - 25) + 5t < -80$ | 28. $3j + 2 - 2j < -10$ | 29. $\frac{2}{5}(5x - 15) \geq 4$ |
| 30. $7(2z + 3) > 35$ | 31. $2(3b - 2) < 4b + 8$ | 32. $\frac{1}{2}y + \frac{1}{4}y \geq -6$ |
| 33. $8(3f - 6) < -24$ | 34. $\frac{3}{4}k < \frac{3}{4} - \frac{1}{4}k$ | 35. $3(4g - 6) \geq 6(g + 2)$ |
| 36. $\frac{1}{2}(2g + 4) > -7$ | 37. $4(1.25y + 4.2) < 16.8$ | 38. $38 + 7t > -3(t + 4)$ |
| 39. $4(2d + 1) > 28$ | 40. $4(n - 3) < 2 - 3n$ | 41. $\frac{3}{4}d - \frac{1}{2} \leq 2\frac{1}{2}$ |

Practice 4-5

Compound Inequalities

Solve each compound inequality and graph the solution.

- | | |
|---------------------------------------|--|
| 1. $-5 < s + 5 < 5$ | 2. $1 < 3x + 4 < 10$ |
| 3. $k - 3 > 1$ or $k - 3 < -1$ | 4. $b - 2 > 18$ or $3b < 54$ |
| 5. $-4d > 8$ and $2d > -6$ | 6. $-4 < t + 2 < 4$ |
| 7. $-3 < 3 + s < 7$ | 8. $3j \geq 6$ or $3j \leq -6$ |
| 9. $-1 < \frac{1}{2}x < 1$ | 10. $g + 2 > -1$ or $g - 6 < -9$ |
| 11. $-6 < 9 + 3y < 6$ | 12. $3f > 15$ or $2f < -4$ |
| 13. $d - 3 > 4$ or $d - 3 < -4$ | 14. $1 > 2h + 3 > -1$ |
| 15. $7 + 2a > 9$ or $-4a > 8$ | 16. $2z > 2.1$ or $3z < -5.85$ |
| 17. $c - 1 \geq 2$ or $c - 1 \leq -2$ | 18. $h + 2.8 < 1.8$ or $h + 2.8 > 4.8$ |

Write and solve a compound inequality that represents each situation.

Graph your solution.

- The crowd that heard the President speak was estimated to be 10,000 people. The actual crowd could be 750 people more or less than this. What are the possible values for the actual crowd size?
- Susie has designed an exercise program for herself. One part of the program requires her to walk between 25 and 30 miles each week. She plans to walk the same distance each day five days a week. What is the range of miles that she should walk each day?
- A box of cereal must weigh more than 629.4 g and less than 630.6 g to pass inspection. The box in which the cereal is packaged weighs 5.5 g. What are the possible weights for the cereal?
- Carmen works in a sporting goods store. Her goal is to sell between \$500 and \$600 worth of sporting equipment every week. So far this week, she has sold \$395 worth of equipment. During the rest of the week, what dollar amount must Carmen sell in order to reach her goal?

Solve each compound inequality and graph the solution.

- | | |
|---|-------------------------------------|
| 23. $2n - 1 \geq 1$ or $2n - 1 \leq -1$ | 24. $2k - 3 > 3$ or $2k - 3 < -3$ |
| 25. $-1 < h - 2 < 1$ | 26. $2.2 + p > 1$ and $1.5p < -0.3$ |
| 27. $9 < x + 2 < 11$ | 28. $5m + 8 < 23$ or $6m > 48$ |
| 29. $-3 \leq \frac{3}{2}x + 6 \leq 3$ | 30. $7 > 5 - x > 6$ |
| 31. $\frac{1}{2}x + 1 > 1$ or $\frac{1}{2}x + 1 < -1$ | 32. $-2 \leq s - 4 \leq 2$ |
| 33. $w - 3 > 4$ or $w - 3 < -4$ | 34. $6 > 4x - 2 > -6$ |
| 35. $t + 5 < 2$ or $3t + 1 > 10$ | 36. $2g > 12$ and $3g < 24$ |
| 37. $6x - 3 \geq 3$ or $6x - 3 \leq -3$ | 38. $2y - 3 > -1$ or $5 - y > 4$ |

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