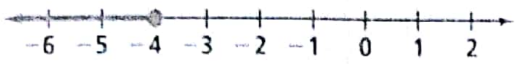
Review pg 223 #6, 8, 10, 11, 14, 15, 19, 21-23, 25, 28-31, 34, 37, 42-52

Quick Review

A **solution of an inequality** is any number that makes the inequality true. You can indicate all the solutions of an inequality on the graph. A closed dot indicates that the endpoint is a solution. An open dot indicates that the endpoint is *not* a solution.

Example

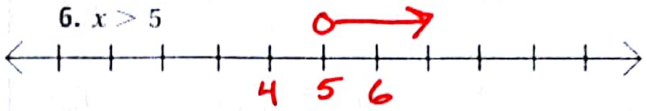
What is the graph of $x \leq -4$?



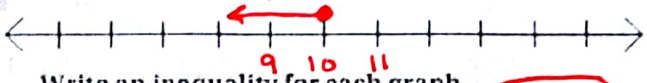
Exercises

Graph each inequality.

6. $x > 5$

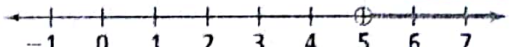


8. $10 \geq p$ → $p \leq 10$



Write an inequality for each graph. $x > 5$

10.



11. $x \leq -2$

Quick Review

You can use the addition and subtraction properties of inequality to transform an inequality into a simpler, equivalent inequality.

Example

What are the solutions of $x + 4 \leq 5$?

$x + 4 \leq 5$

$x + 4 - 4 \leq 5 - 4$ Subtract 4 from each side.

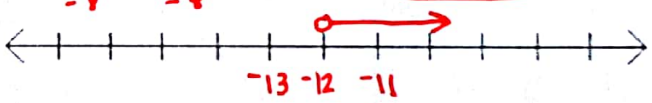
$x \leq 1$ Simplify.

Exercises

Solve each inequality. Graph your solutions.

14. $v - 6 < 4$ (+6 +6) $v < 10$

15. $-4 < t + 8$ (−8 −8) $-12 < t$ $t > -12$



19. **Allowance** You have at most \$15.00 to spend. You want to buy a used CD that costs \$4.25. Write and solve an inequality to find the possible additional amounts you can spend.

x = amount to spend

$\$4.25 + x \leq \$15$

$x \leq 10.75$

Quick Review

You can use the multiplication and division properties of inequality to transform an inequality. When you multiply or divide each side of an inequality by a negative number, you have to reverse the inequality symbol.

Example

What are the solutions of $-3x > 12$?

$-3x > 12$

$\frac{-3x}{-3} < \frac{12}{-3}$ Divide each side by -3. Reverse the inequality symbol.

$x < -4$ Simplify.

Exercises

Solve each inequality. Graph your solutions.

#21

21. $\frac{-6t}{-6} > \frac{18}{-6}$

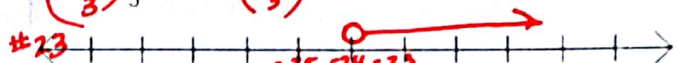
22. $\frac{y}{3} \leq 2(3)$

23. $-\frac{h}{4} < 6(-4)$

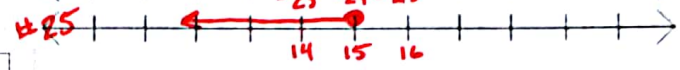
#22

25. $\frac{3}{5}n \geq -9\left(\frac{-5}{3}\right)$

#23



#25



28. **Part-Time Job** You earn $7.25 per hour baby-sitting. Write and solve an inequality to find how many full hours you must work to earn at least $200.

21	22
(flip) $t < -3$	$y \leq 6$

23	25	28
(flip) $h > -24$	(flip) $n \leq 15$	x = hours; $\$7.25x \geq \$200$; $\frac{7.25}{} \quad \frac{7.25}{}$; $x \geq 27.6$; 28 hours

Quick Review

When you solve inequalities, sometimes you need to use more than one step. You need to gather the variable terms on one side of the inequality and the constant terms on the other side.

Example

What are the solutions of $3x + 5 > -1$?

$3x + 5 > -1$

$3x > -6$ Subtract 5 from each side.

$x > -2$ Divide each side by 3.

Exercises

Solve each inequality.

29. $4k - 1 \geq -3$

30. $6(c - 1) < -18$

31. $3t > 5t + 12$

34. $3x + 5 \leq 2x - 8$

37. **Commission** A salesperson earns $200 per week plus a commission equal to 4% of her sales. This week her goal is to earn no less than $450. Write and solve an inequality to find the amount of sales she must have to reach her goal.

29	30	31	34	37
$+1 \quad +1$; $\frac{4k}{4} \geq \frac{-2}{4}$; $k \geq -\frac{1}{2}$	$6c - 6 < -18$; $+6 \quad +6$; $\frac{6c}{6} < \frac{-12}{6}$; $c < -2$	$-5t \quad -5t$; $\frac{-2t}{-2} > \frac{12}{-2}$; $t < -6$	$-2x \quad -2x$; $x + 5 \leq -8$; $-5 \quad -5$; $x \leq -13$	x = sales; $\$200 + .04x \geq \$450$; $-200 \quad -200$; $.04x \geq 250$; $x \geq \$6,250$ in sales

Quick Review

Two inequalities that are joined by the word *and* or the word *or* are called **compound inequalities**. A solution of a compound inequality involving *and* makes both inequalities true. A solution of an inequality involving *or* makes either inequality true.

Example

What are the solutions of $-3 \leq z - 1 < 3$?

$-3 \leq z - 1 < 3$

$-2 \leq z < 4$ Add 1 to each part of the inequality.

Exercises

Solve each compound inequality.

42. $-2 \leq d + \frac{1}{2} < 4\frac{1}{2}$

43. $0 < -8b \leq 12$

44. $2t \leq -4$ or $7t \geq 49$

45. $5m < -10$ or $3m > 9$

46. $-1 \leq a - 3 \leq 2$

47. $9.1 > 1.4p \geq -6.3$

48. Climate A town's high temperature for a given month is 88°F and the low temperature is 65°F. Write a compound inequality to represent the range of temperatures for the given month.

$-2 \leq d + \frac{1}{2} < 4\frac{1}{2}$ $\quad 0 < -8b \leq 12$

42 $-\frac{1}{2}\ -\frac{1}{2}\ -\frac{1}{2}$ $-2\frac{1}{2} \leq d < 4$	43 $\frac{-8}{}\ \frac{-8}{}\ \frac{-8}{}$ $0 > b \geq -1\frac{1}{2}$ flip $-1\frac{1}{2} < b < 0$	44 $\frac{2t}{2} \leq \frac{-4}{2}$ or $\frac{7t}{7} \geq \frac{49}{7}$ $t \leq -2$ or $t \geq 7$	45 $\frac{5m}{5} < \frac{-10}{5}$ or $\frac{3m}{3} > \frac{9}{3}$ $m < -2$ or $m > 3$
46 $-1 \leq a-3 \leq 2$ $+3\ \ +3\ \ +3$ $2 \leq a \leq 5$	47 $\frac{9.1}{1.4} > \frac{1.4p}{1.4} \geq \frac{-6.3}{1.4}$ $6.5 > p \geq -4.5$ flip $-4.5 \leq p < 6.5$	48 $65° \leq x \leq 88°$	

Quick Review

Solving an equation or inequality that contains an absolute value expression is similar to solving other equations and inequalities. You will need to write two equations or inequalities using positive and negative values. Then solve the equations.

Example

What is the solution of $|x| - 7 = 3$?

$|x| - 7 = 3$

$|x| = 10$ Add 7 to each side.

$x = 10$ or $x = -10$ Definition of absolute value

Exercises

Solve each equation or inequality. If there is no solution, write *no solution*.

49. $|y| = 3$

50. $|n + 2| = 4$

51. $4 + |r + 2| = 7$

52. $|x + 3| = -2$

$-4 \quad -4$

$|r+2| = 3$

49 $y = 3 \quad y = -3$	50 $\frac{n+2}{-2} = \frac{4}{-2}$ $\quad \frac{n+2}{-2} = \frac{-4}{-2}$ $n = 2 \quad n = -6$	51 $\frac{r+2}{-2} = \frac{3}{-2}$ $\quad \frac{r+2}{-2} = \frac{-3}{-2}$ $r = 1 \quad r = -5$	52 $\lvert x+3 \rvert = -2$ Not possible No Solution