

Lesson 7 Reteach

Solve Inequalities by Multiplication or Division

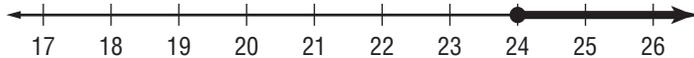
When you multiply or divide each side of an inequality by a positive number, the inequality remains true. However, when you multiply or divide each side of an inequality by a negative number, the direction of the inequality must be reversed for the inequality to remain true.

Example 1

Solve $\frac{t}{-6} \leq -4$. Then graph the solution set on a number line.

$$\begin{aligned} \frac{t}{-6} &\leq -4 && \text{Write the inequality.} \\ \frac{t}{-6}(-6) &\geq -4(-6) && \text{Multiply each side by } -6 \text{ and reverse the inequality symbol.} \\ t &\geq 24 && \text{Simplify.} \end{aligned}$$

To graph the solution, place a closed circle at 24 and draw a line and arrow to the right.



Example 2

Solve $\frac{4}{5}x - 5 < 23$.

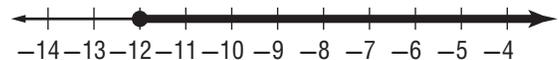
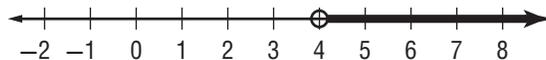
$$\begin{aligned} \frac{4}{5}x - 5 &< 23 && \text{Write the inequality.} \\ \frac{4}{5}x - 5 + 5 &< 23 + 5 && \text{Add 5 to each side.} \\ \frac{4}{5}x &< 28 && \text{Simplify.} \\ \left(\frac{5}{4}\right)\frac{4}{5}x &< \left(\frac{5}{4}\right)28 && \text{Multiply each side by } \frac{5}{4}. \\ x &< 35 && \text{Simplify.} \end{aligned}$$

Exercises

Solve each inequality. Then graph the solution on a number line.

1. $3a > 12$ $a > 4$;

2. $6 \geq \frac{r}{-2}$ $r \geq -12$;



Solve each inequality. Check your solution.

3. $-3.1c + 2 \geq 2$ $c \leq 0$

4. $13 > -\frac{2}{3}y - 3$ $y > -24$

5. $-\frac{h}{5} - 6 < -10$ $h > 20$

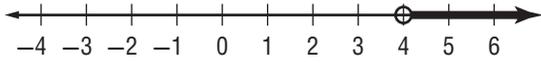
6. $6a + 13 \leq 31$ $a \leq 3$

Lesson 7 Skills Practice

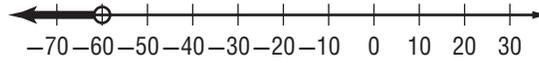
Solve Inequalities by Multiplication or Division

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

1. $3v > 12$ $v > 4$;



2. $\frac{p}{4} < -15$ $p < -60$;



3. $-12 \leq -3g$ $g \leq 4$;



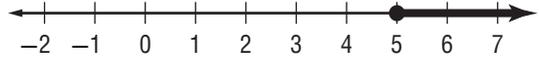
4. $60 \geq 12c$ $c \leq 5$;



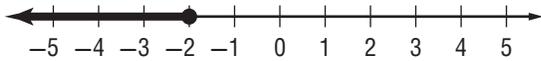
5. $\frac{a}{2} > -4$ $a > -8$;



6. $1 \leq \frac{u}{5}$ $u \geq 5$;



7. $-14 \geq 7n$ $n \leq -2$;



8. $-4d \geq -36$ $d \leq 9$;



Solve each inequality. Check your solution.

9. $3a + 6 < -10$ $a < -5\frac{1}{3}$

10. $\frac{b}{5} - 4 \geq -29$ $b \geq -125$

11. $\frac{m}{2} + 6 < 10$ $m < 8$

12. $\frac{2}{3} + \frac{1}{6}r > -1$ $r > -10$

13. $-6d + 7 \leq 1$ $d \geq 1$

14. $\frac{z}{-8} - 5 < -3$ $z > -16$

15. $-2y - 5 \leq 31$ $y \geq -18$

16. $2.1n \leq -4.6n + 13.4$ $n \leq 2$

17. $3x + 2 < x - 6$ $x < -4$

18. $y - 3 > 2y - 7$ $y < 4$

19. $\frac{a}{4} + 5 < a - 4$ $a > 12$

20. $1.5g - 12 > \frac{3g}{4}$ $g > 16$