NAME

Module 5 Solving Linear Inequalities of One Variable
Lesson 2 Solving One-Step Linear Inequalities

Solve the following inequalities. Then graph each solution on a number line.

1. $M + 2 \geq 4$ **$M \geq 2$**

2. $M - 4 \leq -5$ **$M \leq -1$**

3. $3y \leq 9$ **$y \leq 3$**

4. $-4y > 20$ **$y < -5$**

5. $-10 < 5r$ **$-2 < r$**

6. $2r > -8$ **$r > -4$**

7. $-y \leq -7$ **$y \geq 7$**

8. $-6 \geq 3y$ **$-2 \geq y$**

9. $x + 2 < 0$ **$x < -2$**

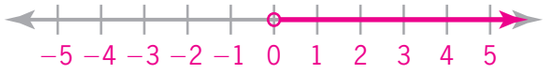
10. $N - 4 \geq 0$ **$N \geq 4$**

11. $w + 3 \geq 7$ **$w \geq 4$**

12. $6 - d < 12$ **$d > -6$**

13. $P - 12 \leq -7$ **$P \leq 5$**

14. $K + 2 > 2$ **$K > 0$**

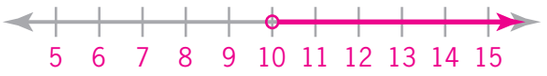


15. $9c \geq -54$ **$c \geq -6$**

16. $11A < 88$ **$A < 8$**

17. $\frac{x}{3} \leq 1$ **$x \leq 3$**

18. $\frac{N}{5} > 2$ **$N > 10$**



19. $-3z \geq -9$ **$z \leq 3$**

20. $-5V \leq 45$ **$V \geq -9$**

Journal

1. Explain, in your own words, why you change the inequality sign when you multiply or divide by a negative number when solving and inequality algebraically.
2. Describe how you would solve and graph the solution to the inequality $x - 4 \geq 4$.
3. Susan says that the solution to the inequality $-4x < 16$ is $x < -4$. Joseph says that the solution is $x > -4$. Who is correct and why?
4. What are advantages and disadvantages to solving one-step equations using algebra instead of inspection?
5. Explain how to solve one-step inequalities.

Cumulative Review

Simplify each expression.

1. $(-5)(2)(-7)$ **70**

2. $(-7)(3)$ **−21**

3. $\frac{-44}{-11}$ **4**

4. $(29)(0)(-13)$ **0**

5. $36 \div (-4)$ **–9**

6. $(-35) \div 5$ **–7**

7. $\frac{15}{0}$ **Undefined**

8. $\frac{-81}{9}$ **–9**

9. $0 \div (-6)$ **0**

10. $\frac{-12}{12}$ **–1**

Possible Journal Answers

1. **You can only do things to both sides of the inequality that keep the inequality true. For example, $-1 < 2$ is a true inequality. If we multiply both sides by –1, then we have the inequality $1 < -2$, which is not true. If we flip the inequality from $<$ to $>$, then the statement is true.**
2. **Adding 4 to both sides of the inequality gives us, $x \geq 8$. To graph the solution, identify the number 8 on the number line with a closed circle and draw an arrow to the right for the numbers that are greater than 8.**
3. **Joseph is correct. He remembered to flip the inequality sign after dividing by a negative number.**
4. **Using algebra is more precise than solving by inspection. With algebra we can solve inequalities systematically rather than trying to guess a correct answer.**
5. **Isolate the variable by adding, subtracting, multiplying, or dividing the same number to both sides. If you are multiplying or dividing a negative number, do not forget to change the direction of the inequality.**