independent practice

NAME ______________________________

Module 5 Solving Linear Inequalities of One Variable

Lesson 3 Solving Two-Step Linear Inequalities

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

1. $3M + 2 \geq 8$ **$M \geq 2$**

2. $5M + 4 \leq 19$ **$M \leq 3$**

3. $7x + 6 < 20$ **$x < 2$**

4. $4x + 7 > 23$ **$x > 4$**

5. $3T + 3 > 12$ **$T > 3$**

6. $2T + 3 \leq 7$ **$T \leq 2$**

7. $3y + 4 \leq 10$ **$y \leq 2$**

8. $4y + 8 > 20$ **$y > 3$**

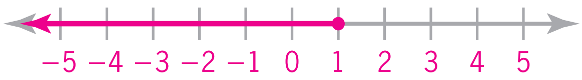
9. $-9c + 3 \geq 30$ **$c \leq -3$**

10. $-11A + 2 < 24$ **$A > -2$**

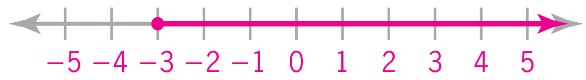
11. $\frac{x}{4} - 2 \leq 1$ **$x \leq 12$**

12. $\frac{N}{6} - 3 > -2$ **$N > 6$**

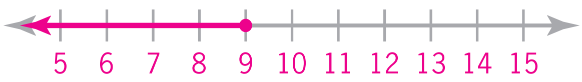
13. $-3z - 6 \geq -9$ **$z \leq 1$**



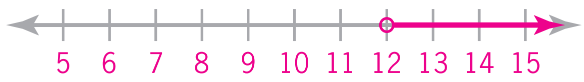
14. $-5V - 7 \leq 8$ **$V \geq -3$**



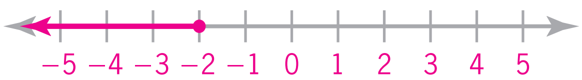
15. $\frac{x}{3} - 1 \leq 2$ **$x \leq 9$**



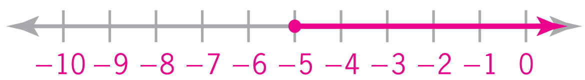
16. $\frac{N}{2} - 5 > 1$ **$N > 12$**



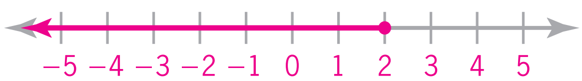
17. $-3z + 6 \geq 12$ **$z \leq -2$**



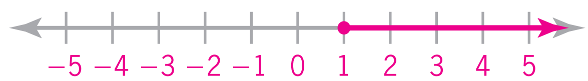
18. $-5V + 4 \leq 29$ **$V \geq -5$**



19. $-3z + 7 \geq 1$ **$z \leq 2$**



20. $-5V + 9 \leq 4$ **$V \geq 1$**



Journal

1. Explain why you undo addition and subtraction before multiplication and division when solving an inequality algebraically.
2. Describe how you would solve and graph the solution to the inequality $2x - 4 \geq 4$.
3. Fred says that the solution to the inequality $-2x + 3 < 7$ is $x < -2$. Sally says that the solution is $x > -2$. Who is correct and why?
4. Explain why you would use algebra instead of inspection for solving two-step inequalities.
5. Explain how to solve two-step inequalities.

Cumulative Review

Simplify each expression.

1. $\frac{7}{9} + \frac{2}{3}$ **$\frac{13}{9}$ or $1\frac{4}{9}$**

2. $\frac{3}{4} - \frac{2}{3}$ **$\frac{1}{12}$**

3. $\frac{4}{5} - \frac{1}{3}$ **$\frac{7}{15}$**

4. $\left(-\frac{3}{5}\right)\left(\frac{1}{5}\right)$ **$-\frac{3}{25}$**

5. $\frac{2}{3} - \frac{2}{5}$ $\frac{4}{15}$

6. $\frac{1}{3} - \frac{7}{9}$ $-\frac{4}{9}$

7. $\left(-\frac{1}{2}\right)\left(\frac{3}{7}\right)$ $-\frac{3}{14}$

8. $\left(\frac{2}{3}\right)\left(-\frac{1}{8}\right)$ $-\frac{1}{12}$

9. $\left(\frac{5}{12}\right)\left(\frac{4}{5}\right)$ $\frac{1}{3}$

10. $\frac{1}{2} \div \frac{1}{8}$ 4

Possible Journal Answers

1. When undoing operations, you reverse the order of operations. You can only perform operations to both sides of an inequality that keep an inequality true.
2. Add 4 to both sides of the inequality, giving $2x \geq 8$. Now divide both sides by 2, giving the solution $x \geq 4$. To graph the solution set, identify 4 on the number line with a closed circle and draw an arrow to the right to indicate the numbers greater than 4.
3. Sally is correct. She remembered to change the direction of the inequality sign when dividing by a negative number.
4. Inspection involves substituting numbers for the variable to determine what values will make the inequality true. This process is imprecise and would take longer to solve when dealing with inequalities that are more complex.
5. First undo any addition or subtraction. Next undo any multiplication or division. To undo an operation, perform its inverse operation to both sides of the inequality. For example, to undo multiplication by 2, you would divide both sides of the inequality by 2.